**Teck Resources Limited**
Canadian Legacy Properties
Bag 2000
Kimberley, B.C.  V1A 3E1

**Ray Proulx**
Site Manager

+1 250 467 3194 Direct
+1 250 427 8411 Tel
Ray.Proulx@teck.com

March 21, 2023

Todd Powell *(via file transfer)*
Director, Mineral Resources
Government of Yukon
PO Box 2703 (K-9)
Whitehorse, YT
Y1A 2C6

**Re: Sa Dena Hes Mine – 2022 Annual Quartz Mining License Report for QML-0004**

On behalf of the Sa Dena Hes Mine Operating Corporation please find enclosed one copy of the 2022 Annual Quartz Mining License Report for the Sa Dena Hes Mine as required under QML-0004.

We trust this submission complies with the requirements of the license. Should you have any questions or concerns please contact me at 250-467-3194 or email: Ray.Proulx@teck.com.

Thank you for your time and consideration.

Sincerely,

Ray Proulx
Site Manager
Teck Resources Limited

Attachment (1)
Cc:  Travis Stewart - Director of Lands, Liard First Nation, travis.stewart@liardfirstnation.ca

# Annual Quartz Mining License Report for 2022

| | |
|---|---|
| Property: | Sä Dena Hes Mine |
| Permit #: | QML-0004 |
| Company: | Sä Dena Hes Operating Corporation c/o Teck Resources Limited |
| Prepared By: | Ray Proulx B.Sc., Site Manager |
| Issued Date: | March 21, 2023 |

# Executive Summary

The Annual Reclamation Report for 2022 for the Sä Dena Hes (SDH) mine site was prepared by Teck Resources Limited on behalf of Sä Dena Hes Mining Corporation, as required in accordance with Yukon Quartz Mining License QML-0004. This annual report describes the progress of closure and reclamation related activities at the Sä Dena Hes Mine in 2022.

The Sä Dena Hes (SDH) property is the site of a former lead-zinc mine that operated from 1991 to 1992. The property is located 45 km north of Watson Lake in the Yukon Territory and is owned by the Sä Dena Hes Mining Corporation which is a joint venture between Teck Resources Limited (Teck) and Pan-Pacific Metal Mining Corp., a wholly owned subsidiary of Korea Zinc. Teck is the operator under the joint venture agreement for the site.

Permanent closure and decommissioning activities commenced in 2013 and were completed in 2015. Reclamation activities conducted at the site includes applying a simple cover, using natural glacial till materials, to most mine disturbed areas limiting the release of contaminants to the air, water and land. Surface contouring and vegetation have been completed for protection against water erosion. A revegetation program was implemented once the cover system was finished in 2015.

In 2022, samples from most of the required water quality monitoring stations met the standards in water use licence QZ16-051 for all water quality parameters. In December 2022, there was one exceedance of the receiving water quality standard in a receiving environment station on North Creek. Water quality monitoring was also conducted under the Adaptive Management Plan (AMP) as part of the Water Licence. Although there were a few specific performance threshold exceedances, review of available water quality data, and information from subsequent sampling events, no additional actions were deemed necessary.

Routine physical work conducted at the site in 2022 included maintenance on the main access road culverts, north creek channel, and north tailings facility drainage swale. More notably, non-routine physical work was completed on a portion of north embankment of the Tailings Storage Facility at Sa Dena Hes (North Dam) to repair surface material that was displaced during an erosion event that occurred sometime in early June.

The 2022 inspection indicated that all the geotechnical structures are stable and are functioning in accordance with the closure design parameters.

# Contents



## EMBEDDED TABLES



## LIST OF ATTACHMENTS

# 1.0 Introduction

The Sä Dena Hes (SDH) property is the site of a former lead-zinc mine that operated from 1991 to 1992. The property is located 45 km north of Watson Lake in the Yukon Territory and is owned by the Sä Dena Hes Mining Corporation which is a joint venture between Teck Resources Limited (Teck) and Pan-Pacific Metal Mining Corp., a wholly owned subsidiary of Korea Zinc. Teck is the operator under the joint venture agreement for the site.

Teck submitted notice to begin “Permanent Closure” to the Ministry of Energy, Mines and Resources (EMR) on February 17, 2012. The Detailed Decommissioning and Reclamation Plan (DDRP) (Teck, 2012) (Teck, 2013) was revised to plan for permanent closure. Permanent closure and decommissioning activities were carried out in 2014 and in 2015. A final DDRP was submitted in August 2015 (Teck, 2015) to account for amendments issued in 2014 and 2015. In 2015 Teck amended the Quartz Mining License (QML-0004), which expires on December 31, 2040. The current status of the site is Permanent Closure and Reclamation.

The objectives of the decommissioning and reclamation plan are to ensure the:

- Protection of public health and safety;
- Implementation of environmental protection measures that minimize adverse environment impacts;
- Land use is commensurate with surrounding lands;
- Post closure monitoring of the site is completed to assess effectiveness of closure measures for the long term.

Reclamation activities conducted at the site includes applying a simple cover, using natural glacial till materials, to most mine disturbed areas, thereby limiting the release of contaminants to the air, water and land. Surface contouring and vegetation have been completed for protection against water erosion. A revegetation program was implemented once the cover system was finished in 2015.

The Yukon Water Board regulates water management of the mine site. Water Use Licence QZ16-051 addressing permanent closure came into effect on April 1, 2017. Teck retains a Surface Lease 105A10-011 on the property and was renewed in 2021 with an expiry 2041.

# 2.0 2022 Decommissioning and Reclamation Activities

The QML and Water Use Licence both require post-reclamation environmental monitoring, physical/geotechnical inspections, and maintenance of constructed/engineered structures to be completed under the *Environmental Monitoring, Surveillance and Reporting Plan* (EMSRP, Alexco, 2017) and Adaptive Management Plan (AMP, Alexco, 2018).

The following summarizes the activities with details further discussed within the subsequent sections:

- Surface Water and Groundwater Quality Monitoring/Sampling
  - Bi-monthly/quarterly surface water and groundwater monitoring and sampling was conducted from January to December as per the Water Use Licence QZ16-051. Access to some of the locations are conducted using helicopter/snowmobiles in the winter months and an all-terrain vehicle in the snow free months.
  - Due to extreme weather conditions and the associated safety hazard, two sampling events in Q1 2022 could not be completed for sample locations that are only accessible by helicopter. In Q2 one sample site could not be accessed due to avalanche hazard and another could not be sampled as it was flooded due to beaver damming activity that also prevented access to the same site in Q3. In Q4, three sites accessed by helicopter were not sampled due to extreme cold weather.
- Terrestrial Monitoring
  - The five-year re-vegetation assessment is considered complete. There were no activities other than to take photographs at the eight permanent photo hubs that were installed in 2020.
- Aquatic Resources Monitoring
  - Aquatic resource monitoring occurred through the completion of the biennial program under QZ16-051 that took place in August 2022.
- Physical/geotechnical inspections
  - Spring and fall routine site inspections of physical/geotechnical features were completed by Teck and the site caretaker.
  - The 2022 Annual Mine Waste Facilities Inspection was completed by the engineer of record on August 16 and 17, 2022. As per the QML-0004, the Annual Inspection report was submitted in December 2022.
- Maintenance of constructed/engineered structures or access road
  - Inspection of and removal of debris from access road culverts;
  - Installation of beaver screens on the access road culverts to prevent future blockages;
  - Inspections of the North Pond drainage swale and clearing any blockages if encountered.

## 3.0 2023 Decommissioning and Reclamation Activities

There are no planned physical activities in 2023 other than monitoring the reclaimed areas and completing maintenance of any areas that may be identified following freshet.

The post closure monitoring as outlined in the EMSRP and AMP will be conducted in 2023 as per the Water Licence issued in April 2017.

## 4.0 Effectiveness of the Remediation Measures

All the physical remediation and revegetation activities were completed in 2015. Based on the current monitoring programs, the remediation measures appear to be effective. All the engineered structures remain to be in good condition with no signs of surficial movement or erosion with the exception of a few small areas identified in previous reports and the aforementioned erosion event that occurred on the North Dam. The erosion observed along the North Creek channel is due to high flows and beaver activity at the inlet of the channel, however it has been determined to allow the creek to erode until it will eventually sustain itself without maintenance. Beaver dams are removed as required to minimize the water level of the pond.

## 5.0 Map showing the status of all decommissioning and reclamation activities

All the physical remediation and revegetation activities were completed in 2015. In the 2015 Annual Report, several drawings were included within the AMEC 2015 As-built report. Due to the limited physical work and revegetation completed in 2022 there are no updated maps included within this report.

## 6.0 Inspection of Engineered Structures

The 2022 geotechnical inspection of the structures and features associated with the Tailings Management Area at SDH was completed by SRK Consulting (SRK) on August 16 and 17, 2022. The inspection report *Sä Dena Hes Mine, Yukon Territory 2022 Annual Facility Performance Review, dated November 2022,* (SRK, 2021) was submitted to EMR in December 2022.

The report presents SRK's observations of the following structures and features, identifies any deficiencies and provides recommendations where appropriate:

- The North Dam;
- The decommissioned North Creek Dyke and Second Crossing;
- The relocated Camp Creek Channel;
- The North Channel and South Channel;
- The Sediment Retaining Structure (SRS);
- The Burnick Portals (1200 and 1300) and Waste Rock Dumps;
- The Jewelbox and Main Zone Waste Rock Dump and Portal areas.

The South and Reclaim Dams including the tailings were decommissioned in 2014. The Camp Creek Diversion and Exit Chute were decommissioned in 2015. The North Creek Dyke and spillway including a second crossing culvert system on North Creek downstream below the dyke were decommissioned in 2015.

The North Dam remains as an earthen embankment that retains the stored tailings. A variable depth till cover was placed over the tailings in 2014 as a growth medium and to control the migration of windblown tailings. No resloping of the downstream dam face was needed.

The SRS is an approximately 5 m high berm that was formed during the decommissioning and removal of the South Dam. The berm was designed to retain sediment in runoff from the till tailings cover and incorporates a riprap lined spillway. The spillway has capacity for a 1 in 1000-year flood event.

The Burnick 1200 and 1300 Portals were capped in 2015 with locally available waste rock and graded with a gently sloped face to provide long term stability. The crests of the associated waste rock dumps were recontoured to provide added stability. No resloping of the downstream face of the dumps was required.

The 2022 inspection indicated that all the geotechnical structures are stable and are functioning in accordance with the closure design parameters.

The North Dam settlement gauges were last surveyed on July 24, 2020. The survey was discontinued after that due to no unexpected settlement over the 27-year monitoring period. The gauges remain operational and will be surveyed following any major seismic event.

The 2022 *Annual Facility Performance Review* Recommendations and timelines:

- 2022-2: Tailings Cover – Erosion gully formed in cover north of SRS pond exposing geotextile – replace fill and armour gully– Q4 2024
- 2022-3: North Dam – Drainage channel blockages on cover during snowmelt resulted in formation of a pond adjacent to embankment, and the pond overtopped the north dam, forming an erosion gully on the dam. Modify the embankment to eliminate this risk in the future – Q4 2024
- 2022-4: North Dam and Tailings Cover – Update the Operations, Maintenance, Surveillance Manual to include monitoring for development of pond against embankment, and maintenance to clear drainage pathways on the tailings cover during snowmelt period – Q1 2023

As noted in the recommendations, there was an erosion event in 2022 that caused significant erosion through the north embankment. This event is explained in more detail in SRK's above referenced report. The erosion has since been repaired, and the recommendations address future improvements to prevent similar occurrences from happening in the future.

# 7.0 Results of Studies and Monitoring Programs

## 7.1 Water Licence Monitoring

The water quality standards and monitoring requirements are managed under Water Licence QZ16-051 Effective Date April 1, 2017 with the expiry date of December 31, 2040.

The licence describes the water quality monitoring program for post closure monitoring, which is the applicable program for the current status of the SDH (Permanent Closure and Reclamation). The water quality program outlines the sampling sites, frequency and required water quality parameters.

As required by Licence QZ16-051, water quality data is reported quarterly to the Yukon Territory Water Board. The 2022 monitoring results are discussed in the annual report prepared by Ensero Solutions entitled *Sä Dena Hes – 2022 Annual Report Yukon Water Licence QZ16-051 dated March 2023* (Ensero Solutions, 2023). The report provides a detailed analysis of data and is included as Attachment 2. Surface and groundwater water quality monitoring conducted under the AMP are also included in the water licence monitoring requirements. The AMP describes a means of interpreting data to indicate if water quality is changing from conditions observed over the past 20 years. The plan also describes when and how changes in water quality require a response.

In 2022, samples from most of the required water quality monitoring stations met the standards in licence QZ16-051 for all water quality parameters. In December 2022, there was one exceedance of a single copper concentration was greater than the permitted limit for the receiving site (North Creek). Stream volume was very low at the time the sample was taken and it is believed that a larger contribution of particulate in the sample resulted in the measured concentration. The dissolved concentration of copper in the same sample was an order of magnitude lower. It was determined that no further action was required. While exceedances of the AMP thresholds did occur, however following a review of available water quality data, and information from subsequent sampling events, no additional actions were deemed necessary.

## 7.2 Environmental Effects Monitoring

The biennial biological effects monitoring at the site was completed and reported in the 2022 Water Licence report. The next monitoring event will occur in 2024.

## 7.3 Vegetation Monitoring

In 2015, a total 27,000 plugs were planted of *Salix alaxensis, S. bebbiana, S. barclayi, S. planifolia* and *Populus balsamifera* were installed in several discrete areas throughout the reclaim, south pond, north pond and mill areas. The remaining open areas of these sites were planted with approximately 70,000 alder (*Alnus viridis crispa*) plugs. The alder were planted at a much lower density than the other tree species.

The fifth year of revegetation monitoring was conducted in 2020 by Laberge Environmental Services. The detailed results of the monitoring are included in the attached report entitled *"Revegetation Monitoring at the Reclaimed Sä Dena Hes Mining Site, 2020"* dated January 2021 (Laberge, 2021). Monitoring of the plots is not required until 2025, however eight permanent photo hubs were established in 2020 throughout the revegetated areas to document growing conditions each summer. The locations of the photo plots are displayed in Figure 1 in Appendix A. Although the photo plots weren't established until 2020, photographs have been taken of each site previously and have been included for comparison purposes in Appendix A.

**Table 1 – Locations of Permanent Photo Hubs, July 2020**

| Hub # | Latitude | Longitude | Site Description | Bearing (º) |
|---|---|---|---|---|
| PH-1 | 60.53885º | 128.85624º | At Revegetation sign at the north dam | 70 to 80 |
| PH-2 | 60.53144º | 128.85213º | North end of South tailings facility near VMP-2; near old access road | 360 view |
| PH-3 | 60.52005º | 128.87726º | Jewel box, at MW13-02 and GP3 | 346 |
| PH-4 | 60.54871º | 128.85471º | Landfill at MW14-02 | 360 view |
| PH-5 | 60.53388º | 128.85292º | South end of north tailings facility near VMP-4 | 5 and 65 |
| PH-6 | 60.52305º | 128.86575º | Mill area near access road | 360 view |
| PH-7 | 60.52457º | 128.84914º | Reclaim and Borrow pit G – near osprey nest | 360 view |
| PH-8 | 60.55294º | 128.87687º | Burnick, GP-6 & MW13-06 | 220 |

VMP – Vegetation monitoring plot; GP – Grass monitoring plot

## 8.0 Invasive Plants

There were no formal assessments completed in 2022. It is expected the areas that were previously identified as containing invasive species will decrease in size as individual plants continue to be removed manually. Similar to past observations, the most common invasive species encountered was *Crepis tectorum*, (narrowleaf hawksbeard) and was generally found sporadically along the roadsides within the study area and has increased near monitoring plot VMP-9 at the landfill site (Laberge 2021). As the alders increase in size on site, the hawksbeard should eventually die off. These areas continue to be monitored and any individual invasive plants discovered across the site are hand-pulled to ensure that the remaining population is manageable.

## 9.0 Spills and Accidents

There were no reportable spills or accidents in 2022.

## 10.0 Wildlife Incidents and Other Accidents

There were no direct wildlife incidents or other accidents reported in 2022 other than notable activity of beavers plugging road culverts along the main access road and North Creek Channel.

## 11.0 Site Improvements to address Sediment and Erosion

There were no signs of major erosion in any of the capped areas in 2020. Erosion has been observed in the North Creek channel, but it is recommended to let it sustain itself without maintenance. In 2020, seepage was observed above the North Drainage Channel which triggered subsidence of the channel. To prevent flow from possibly creating a collapse of the channel and disturbing the covered tailings, the site's representative geotechnical engineer recommended buttressing the downstream portion of the channel which was completed in 2020. This area was monitored and photographed in 2021 with no significant changes although water appears to continue to trickle under repaired section of the North Diversion channel.

Following the erosion event that occurred on the North Dam in 2022 a recommendation has been made by the facility's engineer of record to raise the dam's crest to prevent future overtopping events caused by pooled water arising from the spring melt. An engineered design for this enhancement will be developed in 2023 and reviewed with applicable regulatory authorities before commencing work that is currently contemplated to occur in 2024.

## 12.0 Closing

I trust this report meets the requirements under Part 5, Section 11.4 of QML-0004. Please contact Ray Proulx at (250) 467-3194 or Ray.Proulx@teck.com if you have any questions regarding this report.

Ray Proulx, B.Sc.
Ray Proulx, Site Manager
Teck Legacy Properties

# 13.0 References

Alexco. (2017). *Sa Dena Hes Mine – Environmental Monitoring, Surveillance and Reporting Plan, June 28, 2017.*

Alexco. (2018). *Sa Dena Hes Mine - Post-Reclamation Adaptive Management Plan, dated February 12, 2018.*

Ensero Solutions. (2023). *Sä Dena Hes – 2022 Annual Report Yukon Water Licence QZ16-051 dated March 2023.*

Laberge. (2021). *Revegetation Monitoring at the Reclaimed Sä Dena Hes Mining Site, 2020, prepared by Laberge Environmental Services, dated January 2021.*

SRK. (2022). *Sä Dena Hes Mine, Yukon Territory, 2022 Annual Facility Performance Review, prepared by SRK Consulting (Canada) Inc., dated , 2022.*

Teck. (2012). *Sa Dena Hes Mine, Detailed Decommissioning and Closure Plan, Jan. 2012 update, prepared by Teck Resources Limited, Jan. 28, 2012.*

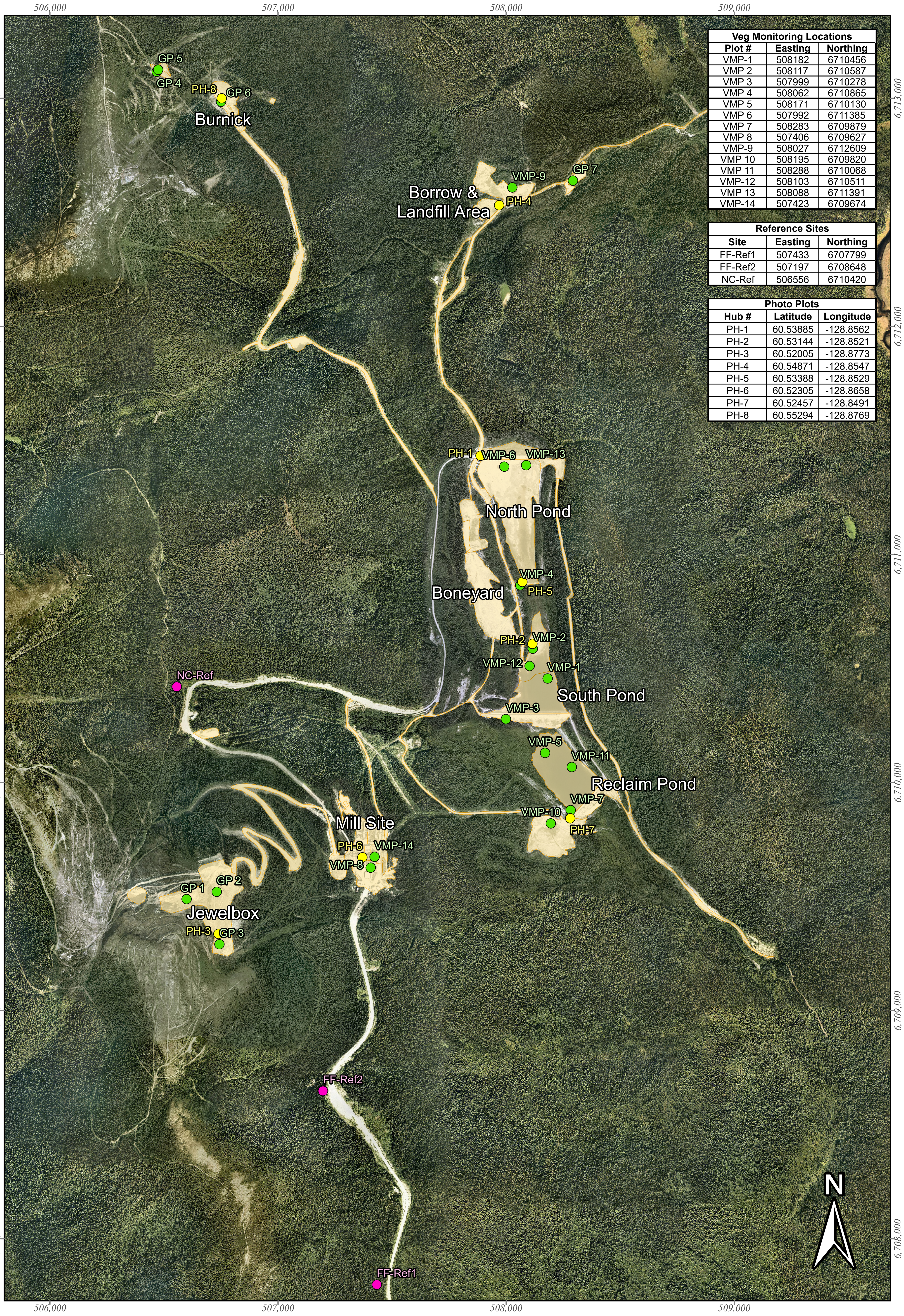
Teck. (2013). *Sa Dena Hes Mine, Detailed Decomissioning and Closure Plan, March 2013 Update-Final, prepared by Teck Resources Limited .*

Teck. (2015). *Sa Dena Hes Mine, Detailed Decommissioning and Reclamation Plan August 2015 Update. Prepared by Teck Resources Limited, August 31, 2015.*

Teck. (2018). *Water Licence #QZ16-051 – Sa Dena Hes Mine – Submission of Revised Adaptive Management Plan, dated March 7, 2018.*

# Attachment 1

## Revegetation Monitoring Plots and Photos




| Veg Monitoring Locations | | |
|---|---|---|
| Plot # | Easting | Northing |
| VMP-1 | 508182 | 6710456 |
| VMP 2 | 508117 | 6710587 |
| VMP 3 | 507999 | 6710278 |
| VMP 4 | 508062 | 6710865 |
| VMP 5 | 508171 | 6710130 |
| VMP 6 | 507992 | 6711385 |
| VMP 7 | 508283 | 6709879 |
| VMP 8 | 507406 | 6709627 |
| VMP-9 | 508027 | 6712609 |
| VMP 10 | 508195 | 6709820 |
| VMP 11 | 508288 | 6710068 |
| VMP-12 | 508103 | 6710511 |
| VMP 13 | 508088 | 6711391 |
| VMP-14 | 507423 | 6709674 |

| Reference Sites | | |
|---|---|---|
| Site | Easting | Northing |
| FF-Ref1 | 507433 | 6707799 |
| FF-Ref2 | 507197 | 6708648 |
| NC-Ref | 506556 | 6710420 |

| Photo Plots | | |
|---|---|---|
| Hub # | Latitude | Longitude |
| PH-1 | 60.53885 | -128.8562 |
| PH-2 | 60.53144 | -128.8521 |
| PH-3 | 60.52005 | -128.8773 |
| PH-4 | 60.54871 | -128.8547 |
| PH-5 | 60.53388 | -128.8529 |
| PH-6 | 60.52305 | -128.8658 |
| PH-7 | 60.52457 | -128.8491 |
| PH-8 | 60.55294 | -128.8769 |

Teck



# Sa Dena Hes Vegetation Monitoring Plots

- Vegetation Monitoring Locations
- Reference Sites
- Photo Plots
- Reclaimed Areas

*** Aerial photography was obtained from McElhanney from August 15, 2012 LiDAR survey and represents the site prior to reclamation.

0 100 200 300 400 Meters

1:15,000

| | |
|---|---|
| DATE: 1/8/2021 | MINE OPERATION: Sa Dena Hes |
| DRAWN BY: goulton | COORDINATE SYSTEM: NAD 1983 UTM Zone 9N |

Document Path: C:\Users\goulton\OneDrive - Teck Resources Limited\TLPGIS\Mapping\Sa Dena Hes\2020 Veg Plots\2020 Veg Plots.aprx

## Photo Hub 1 – At Revegetation Sign at the North Dam

August 2015 planting


August 2018

July 2020


August 2021

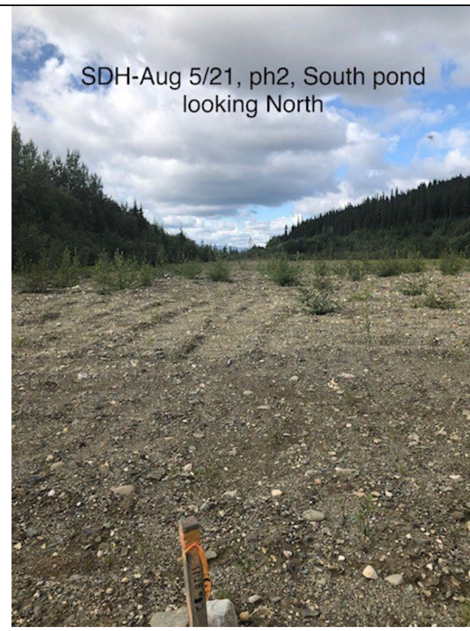

August 2022

## Photo Hub 2 – North End of South Tailings Facility Near VMP-2

Aug 2015, planting alder

July 2018

July 2020



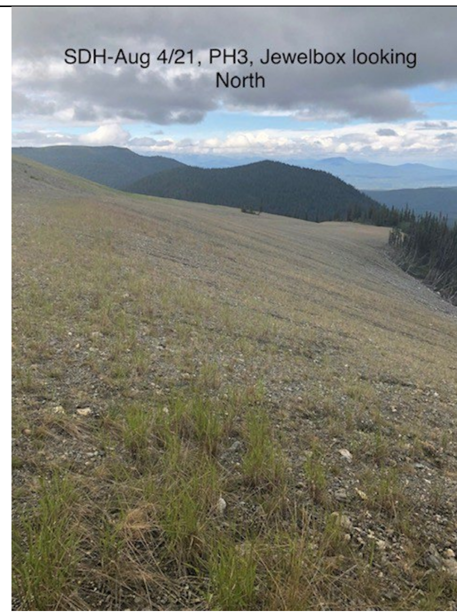

August 2021


August 2022

## Photo Hub 3 – Jewelbox Near GP3 and MW13-02

August 2018

July 2020




August 2021


August 2022

## Photo Hub 4 – Landfill at MW14-02 and VMP-9

August 2015 Planting

August 2018

July 2020


August 2021

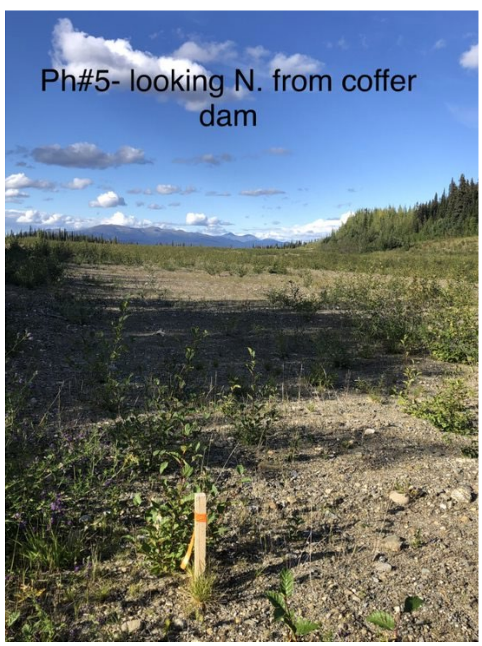
August 2022

## Photo Hub 5 – South End of North Tailings Facility (VMP-4)

August 2015 planting

August 2018

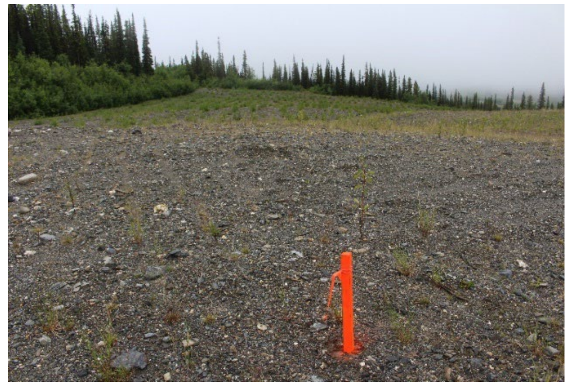
July 2020




August 2022

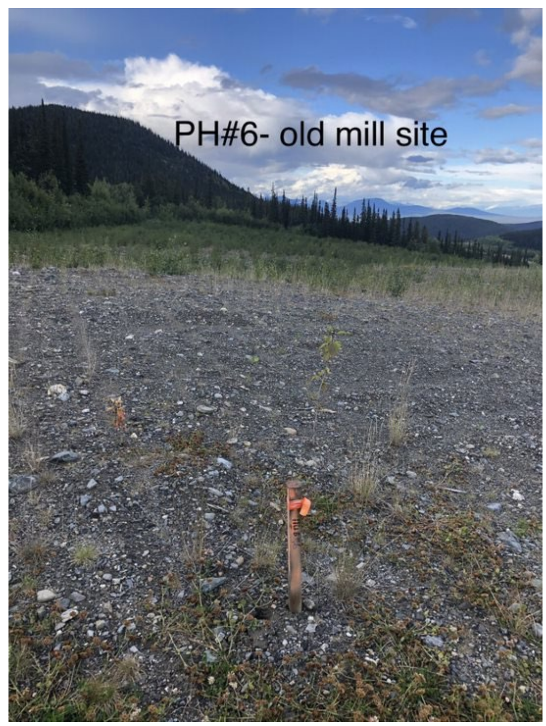
# Photo Hub 6 – Mill Site

August 2015 planting



July 2020


August 2021




August 2022

## Photo Hub 7 – Reclaim Pond

August 2015 planting

July 2020


August 2021

August 2022

## Photo Hub 8 – Burnick, GP-6, and MW13-06

July 2016

July 2020

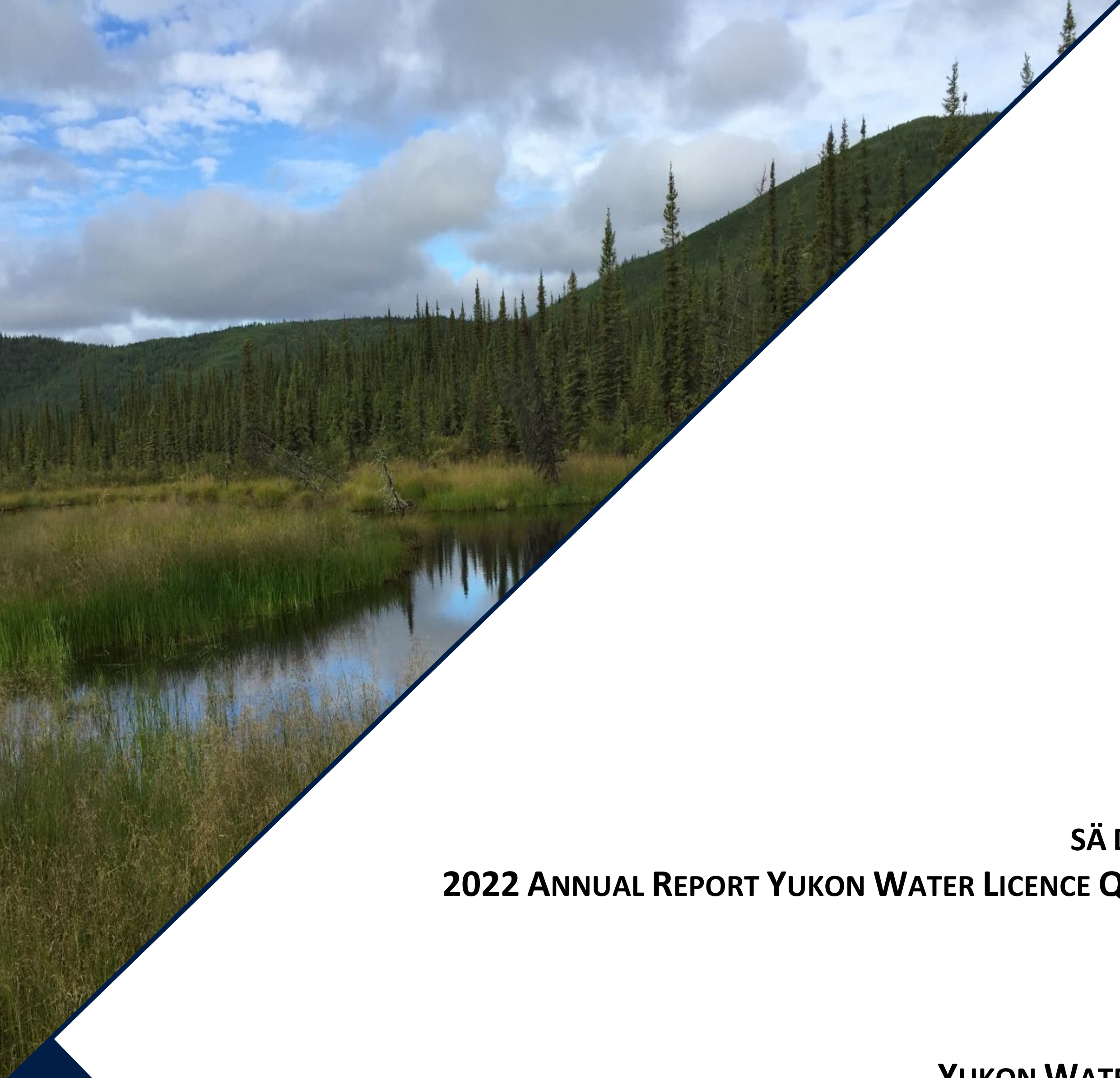

August 2021

August 2022

# Attachment 2

Sä Dena Hes – 2022 Annual Report Yukon Water Licenses QZ16-051 dated March 2023, prepared by Ensero Solutions

*(electronically submitted as separate file)*



# SÄ DENA HES
# 2022 ANNUAL REPORT YUKON WATER LICENCE QZ16-051

**Prepared for:**

## YUKON WATER BOARD

**Date:**

**March 20, 2022**

ENSERO solutions

Yukon Water Board
attn.: Chairperson
Y106-419 Range Road
Whitehorse, YT

Dear Chairperson:

**Regarding:**

On behalf of Sä Dena Hes Operating Corporation c/o Teck Resources Limited and in accordance with Water Use Licence QZ16-051 Part H Clause 65 please find attached the required report for 2022 for the Sä Dena Hes Mine.

If you have any questions regarding this report, please contact the undersigned at (867) 335-0798.

Sincerely,
**Ensero Solutions**

Kalina Malowany, M.Sc, P.Geo. Senior Hydrogeologist

## DISTRIBUTION LIST

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|---|---|
| 1 | Teck Resources Limited |
| 1 | Yukon Water Board |

## REVISION HISTORY

| Revision Date: | Issued By: | Revision Status: | Description: |
|---|---|---|---|
| | | | |
| | | | |

## ENSERO SOLUTIONS CANADA LTD. SIGNATURES

Report prepared by: 3/22/2023

Alex Zheng, B.Sc.
Junior Environmental Scientist

Report reviewed by: 3/22/2023

Kalina Malowany, M.Sc, P.Geo.
Senior Hydrogeologist

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# LIST OF ACRONYMS

| Acronym | Description |
|---|---|
| AMP | Adaptive Management Plan |
| BCMoE | British Columbia Ministry of Environment |
| CCME | Canadian Council of Ministers of the Environment |
| DDRP | Detailed Decommissioning and Reclamation Plan |
| EMSRP | Environmental Monitoring Surveillance and Reporting Plan |
| Ensero | Ensero Solutions |
| MAC | Maximum Acceptable Concentration |
| masl | Meters above Sea Levl |
| MDL | Method Detection Limit |
| PQL | Practical Quantitative Limit |
| QA/QC | Quality Assurance / Quality Control |
| RPD | Relative Percent Difference |
| SDH | Sa Dena Hes |
| SDHOC | Sa Dena Hes Operating Corp |
| Teck | Tech Resources Limited |
| TSS | Total Suspended Solids |
| WUL | Water Use Licence |
| YCSR | Yukon Contaminated Sites Regulations |
| YG | Government of Yukon |

# 1 Introduction

The Sä Dena Hes (SDH) property is the site of a former lead-zinc mine that operated from 1991 to 1992. The property is located 45 km north of Watson Lake (Figure 2-1) in the Yukon Territory and is owned by the Sä Dena Hes Operating Corporation (SDHOC) which is a joint venture between Teck Resources Limited (Teck) and Pan-Pacific Metal Mining Corp., a wholly owned subsidiary of Korea Zinc. Teck is the operator under the joint venture agreement for the site.

The Yukon Waterboard regulates water management of mine sites within Yukon Territory with site-specific Water Use Licences. Water Use Licence QZ16-051 (Appendix A) addressing permanent closure came into effect on April 1, 2017. A requirement of QZ16-051 is that annual reports addressing the terms of the licence be submitted to the Water Board. Ensero Solutions (Ensero) was retained by Teck to prepare the 2022 report.

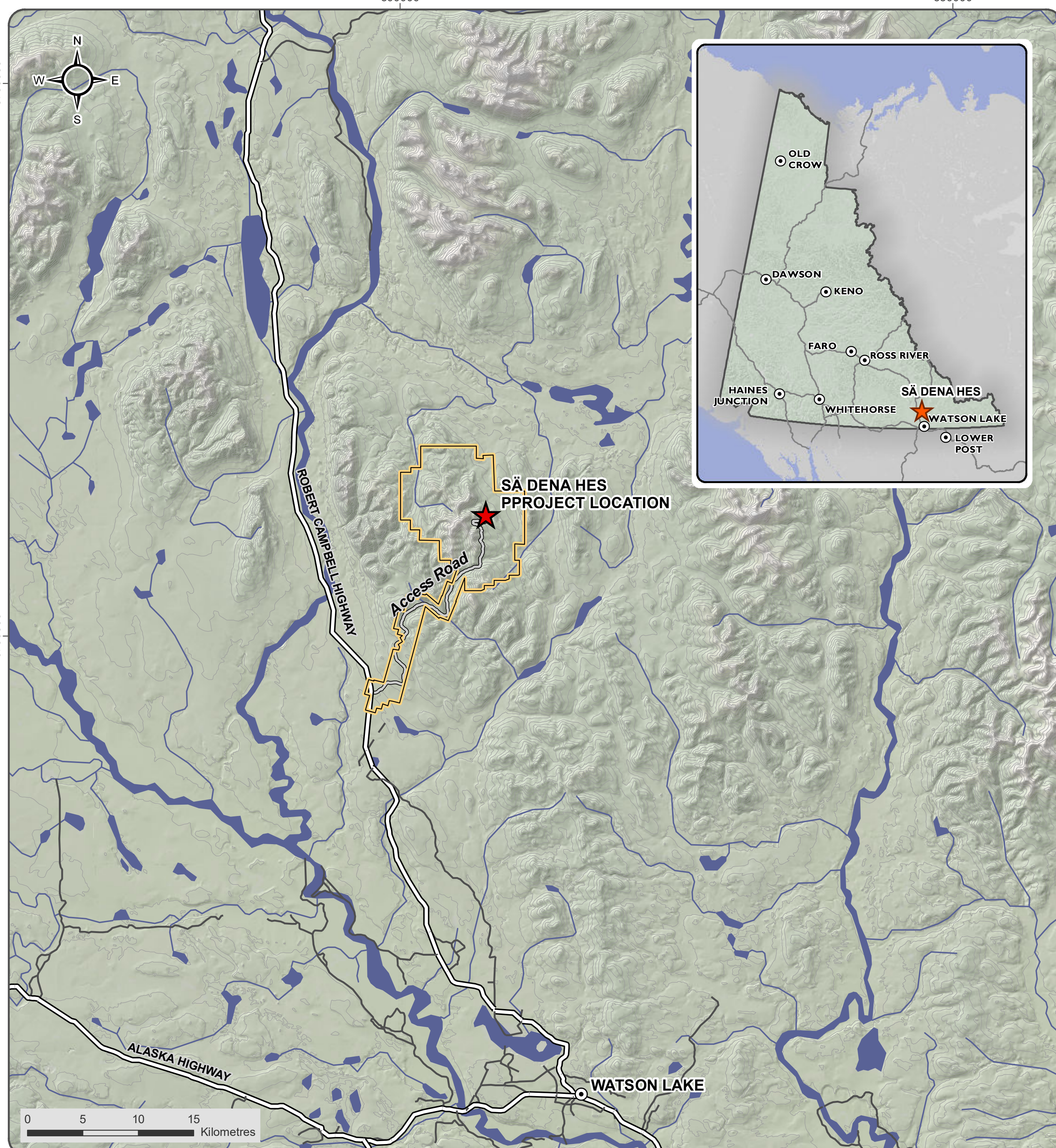
As per clause 65 of QZ16-051, this annual report provides the following information about the water quality and environmental monitoring work conducted at SDH. The 2022 annual report includes discussion on water quality data from the surface water and groundwater programs; updates on any major post-reclamation maintenance work carried out at the SDH property; documentation of activities carried out at the site including the 2022 Aquatic Resources Monitoring Program, which was required by the Environmental Monitoring, Surveillance and Reporting Plan EMSRP; Teck, 2017); additional reporting on the AMP; and updates to the Physical Monitoring Program conducted at the North Dam Tailings Storage Facility as well as any recommendations and/or actions that were implemented.

## 2 CLOSURE STATUS

The SDHOC c/o Teck submitted notice to begin "Permanent Closure" to the Ministry of Energy, Mines and Natural Gas on February 17, 2012. The Detailed Decommissioning and Reclamation Plan (DDRP; Teck 2012, 2013) was revised to plan for permanent closure. Permanent closure and decommissioning activities were carried out in 2014 and in 2015. A final DDRP was submitted in August 2015 (Teck, 2015) to account for amendments issued in 2014 and 2015. In 2015, Teck amended the Quartz Mining Licence (QML-0004), which expires on December 31, 2040. The status of the site is Permanent Closure and Reclamation.

Reclamation activities at SDH were completed in 2015 and all reclamation activities have been documented in the submissions.

Environmental Monitoring and Adaptive Management Planning are part of a comprehensive system of identifying and managing potential adverse effects through the post-reclamation phase of the SDH Mine. Post-reclamation environmental monitoring, physical/geotechnical inspections, and maintenance of constructed/engineered structures are undertaken at the site in the post-closure period as described in the Environmental Monitoring, Surveillance and Reporting Plan (EMSRP; Teck, 2017) and WUL QZ16-051.




Project Location
Community

Quartz Claim Boundary
Waterbody
Watercourse

Primary road
Secondary Road
Access Road
Topographic Contour (200ft)

**SÄ DENA HES MINE**

**FIGURE 2-1**

**PROJECT LOCATION**


Datum: NAD 83; Projection: UTM Zone 9N



Teck

JANUARY 2023

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# 3 Water Quality Monitoring

The Water Quality Monitoring Program is a key monitoring program for the post-reclamation condition of the SDH mine site, and includes licensed monitoring for the Water Use License (WUL) QZ16-051 and the Adaptive Management Plan for the site (Teck, 2018; Alexco, 2018). The water monitoring program includes monitoring of the mine discharge sources, downstream stations which are potentially influenced by mine discharge (compliance stations), and downstream reference stations which are not influenced by mine discharge. Ensero was retained by Teck to conduct the water quality monitoring and quarterly reports.

## 3.1 Water Use Licence QZ16-051

### 3.1.1 Surface Water

The SDH mine is divided into three catchments, based on their loading sources: North Dam Seepage, Burnick Portal and 1380 Portal. Along each of these sources, metal loading occurs by infiltrating into the ground, then travels along groundwater flow paths, until they reach surface water features downstream. Under the current water licence, ten surface water monitoring stations are sampled bi-monthly, amongst the three catchments (Table 3-1).

Stations MH-11 (Upper False Canyon Creek), MH-12 (East Fork of Tributary E), and MH-15 (West Fork of Tributary E) are compliance points and are monitored against the receiving water quality standards of the WUL (Table 3-2). The conceptual loading flowpaths from these stations are presented in Figure 3-2.

The following mine discharge source monitoring stations are part of the surface water program and monitored under the AMP, but do not have specific water quality standards under the WUL.:

- MH-02 (North Dam seepage);
- MH-22 (Burnick 1200 Portal discharge); and
- SDH-S21 (1380 Portal discharge as seep in the downslope waste rock dump).

Additional surface water monitoring stations located downstream of the mine site are also part of the monitoring program to detect potential changes to baseline water quality but are not compared to any specific water quality standards under the AMP or the WUL. These comprise of:

- MH-13 (False Canyon Creek 10 km downstream of the former reclaim pond);
- MH-04 (Camp Creek headwaters above former reclaim pond);
- MH-29 (Access Creek upstream of Camp Creek); and
- MH-30 (unnamed tributary upstream of False Creek Canyon).

[1] In the past (2001 to 2014), the Main Zone 1380 Portal (MH-25) monitored the discharge. It can no longer be sampled since it was decommissioned during closure. SDH-S2 is sampled instead of MH-25, as it receives drainage from the 1380 Portal. It is present as a seep in the waste rock downslope of the portal.

### Table 3-1: Surface Water Stations monitored in 2022

| Monitoring Station | Station Category | Catchment | Applicable Standard or Threshold for Comparison |
|---|---|---|---|
| **MH-11** | WUL Compliance | 1380 Portal | WUL AMP |
| **MH-12** | | North Dam Seepage | |
| **MH-15** | | Burnick Portal | |
| **MH-02** | Discharge | North Dam Seepage | AMP |
| **MH-22** | | Burnick Portal | |
| **SDH-S2** | | 1380 Portal | |
| **MH-04** | Additional Stations | 1380 Portal | No required standard or threshold for comparison |
| **MH-13** | | 1380 Portal | |
| **MH-29** | | Background | |
| **MH-30** | | Background | |

The receiving water quality standards are compiled in Part F of the WUL (Teck, 2018) and summarized in Table 3-2. In this report, the water quality measured at the collection points, where the WUL does not apply, are compared to the generic Canadian Council of Ministers of the Environment water quality guidelines (CCME, 2019) for the protection of aquatic life and the British Columbia Ministry of Environment water quality guidelines for the protection of aquatic life (BCMOE, 2021) for reference purposes only.

### Table 3-2: QZ16-051 Receiving Water Quality Standards for MH-11, MH-12, and MH-15

| Parameter | Maximum Concentration in a Grab Sample |
|---|---|
| Aluminum, dissolved | if pH ≥ 6.5 = 0.05 mg/L<br>if pH < 6.5 = e[1.6 - 3.327(median pH)+0.402(median pH)^2] |
| Antimony, total | 9 µg/L |
| Arsenic, total | 5 µg/L |
| Beryllium, total | 0.13 µg/L |
| Cadmium, dissolved | = e^[0.736 x ln(hardness) - 4.943) in µg/L |
| Chromium VI, total | 1 µg/L |
| Cobalt, total | 4 µg/L |
| Copper, total [1] | if hardness ≤ 50 mg/L = 2µg/L<br>if hardness > 50 mg/L = 0.04 x (hardness) (in µg/L) |
| Iron, total [2] | 1 mg/L |
| Lead, total [3] | **MH-12/MH-15** (µg/L) = {3.31 + e^[1.273 x ln(hardness) -4.704]}<br>**MH-11** (µg/L) = 1.928 x {3.31 + e^[1.273 x ln(hardness) + 1.06]} |
| Molybdenum, total | 0.073 mg/L |
| Nickel, total | if hardness ≤ 60 mg/L or unknown = 25 µg/L<br>if hardness > 60 mg/L and ≤ 180 mg/L = {e^[0.76 x ln(hardness) + 1.06]} (µg/L)<br>if hardness > 180 mg/L = 150 µg/L |
| Selenium, total | 2 µg/L |
| Silver, total | 0.25 µg/L |

| Parameter | Maximum Concentration in a Grab Sample |
|---|---|
| Sulphate, total | if hardness ≤ 30 mg/L = 128 mg/L<br>if hardness > =30 mg/L and ≤ 75 mg/L = 218 mg/L<br>if hardness > 75 mg/L and ≤ 180 mg/L = 309 mg/L<br>if hardness > 180 mg/L = 429 mg/L |
| Thallium, total | 0.8 µg/L |
| Zinc, total [3] | **MH-12/MH-15**<br>if hardness ≤ 90 mg/L = 7.5 µg/L<br>if hardness > 90 mg/L = {7.5 + 0.75(hardness - 90)} µg/L<br>**MH-11**<br>if hardness ≤ 90 mg/L = 18.75 µg/L<br>if hardness > 90 mg/L = {2.5 x [7.5 + 0.75 (hardness - 90)]} µg/L |

*Hardness is measured in mg/L $CaCO_3$*

*[1] Standard for Copper during month of May is 4 µg/L if hardness ≤ 50 mg/L or 0.08 x [hardness] if hardness > 50 mg/L*

*[2] Standard for Iron during month of May is 3.9 mg/L*

*[3] Apply to dissolved fraction when TSS is 4 mg/L or higher*

The 2022 monitoring schedule was designed to meet the requirement of Water Use Licence (WUL) QZ16-051, which came into effect on April 1, 2017. Table 3-3 shows the sampling effort for 2022 by month for the surface water quality stations. In addition to the WUL monitoring, additional surface water samples were collected at MH-02 and MH-12 in June 2022 as part of an additional environmental plan, in response to an area of surface erosion that was identified on the north embankment of the North tailings storage dam. Further details are discussed in Section 3.1.1.1 and attached as Appendix F.

**Table 3-3: Routine WUL Monitoring Surface Water Samples Collected, 2022**

| | Feb | Apr | Jun | Aug | Oct | Dec | Total Samples 2022 |
|---|---|---|---|---|---|---|---|
| MH-02 | – [1] | Sampled | Sampled | Sampled | Sampled | Sampled | 5 |
| MH-04 | Sampled | Sampled | Sampled | Sampled | Sampled | Sampled | 6 |
| MH-11 | Sampled | Sampled | Sampled | Sampled | Sampled | Sampled | 6 |
| MH-12 | Sampled | Sampled | Sampled | Sampled | Sampled | Sampled | 6 |
| MH-13 | Sampled | Sampled | Sampled | Sampled | Sampled | Sampled | 6 |
| MH-15 | Sampled | Sampled | Sampled | Sampled | Sampled | Sampled | 6 |
| MH-22 | – [3] | – [2] | Sampled | Sampled | Sampled | Sampled | 4 |
| MH-29 | Sampled | Sampled | Sampled | Sampled | Sampled | Sampled | 5 |
| MH-30 | Sampled | Sampled | – [4] | – [4] | Sampled | Sampled | 4 |
| SDH-S2 | – [4] | – [4] | Sampled | – [1] | – [1] | – [4] | 1 |

*1. Dry/Frozen*

*2. Could not complete due to extreme weather conditions*

*3. Not accessible in winter due to avalanche risk*

*4. Inaccessible due to flooding*

#### 3.1.1.1 North Dam Erosion Repair Monitoring

In addition to the regular WUL monitoring, an environmental monitoring plan was prepared and implemented following an area of surface erosion which was identified on the north embankment of the North tailings storage facility on June 17, 2022. Additional water quality monitoring in response to the North Dam erosion was undertaken at the north dam seepage (MH-02) and the downstream receiving environment (MH-12) to monitor the effectiveness of the repair activities.

It was determined that the impacted material was dam embankment material only and no release of tailings from the impoundment occurred. The 'sand and gravel' eroded material flowed to the valley bottom, with most of the displaced mass retained above the MH-02 seepage monitoring station (located approximately 35 m downstream of the dam toe), with minor amounts of sediment deposition visible at the outlet of the former eastern diversion channel.

The Natural Resources Inspector was also notified of the event and proposed repair work.

As part of the repair work, an environmental monitoring plan was prepared and implemented during construction:

- Sediment and erosion control measures included:
    - Try to avoid working under wet/flowing conditions.
    - Install sediment controls including silt fencing below the work area. The fencing must be secured so that water and sediment could not bypass the area (flow under or around).
    - Ongoing maintenance shall be conducted, if/when required, and removal of any accumulated sediments shall occur prior to removal of the dam(s); and
    - Oil absorbent spill booms should also be available on site in case of releases to water.

- Water quality monitoring locations are relevant to the erosional event included:
    - MH-02 - Source sampling location -– North Tailings Dam Seepage
    - MH-12 -Compliance sampling location - located at the East Fork of Tributary E – of False Canyon Creek, approximately 2 km downstream of the north tailings dam

Prior to commencement of repair activities, baseline water quality sampling at MH-02 was conducted on June 17th-19th and at MH-12 on June 21st for the following parameters:

- Field parameters; and

- Laboratory analysis of physical parameters (pH, specific conductance, total alkalinity, TSS, TDS, hardness) and analytical parameters (anions and nutrients, dissolved organic carbon, total and dissolved metals, and total hexavalent chromium).

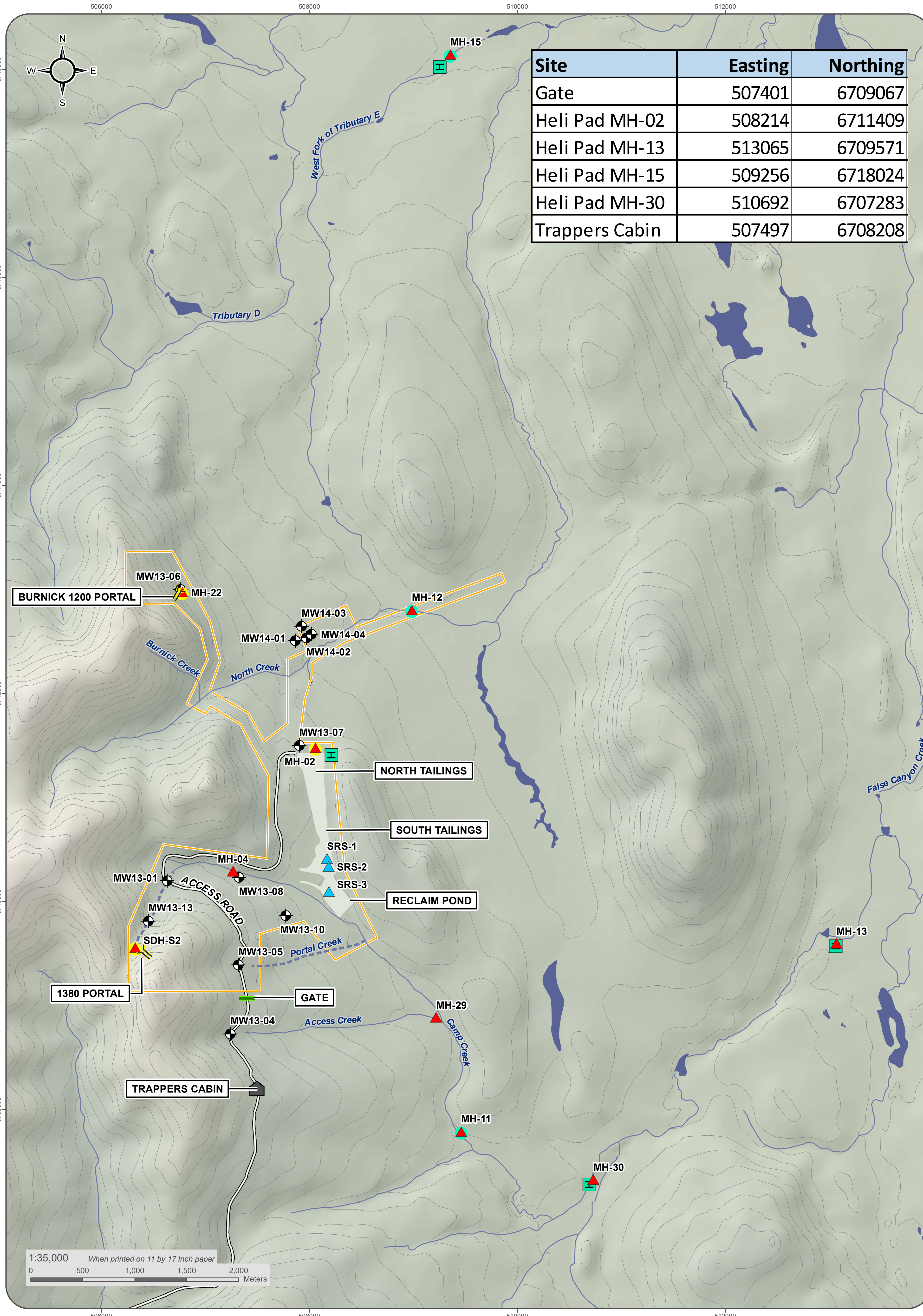
The following observations were made during all the water quality sampling events conducted as part of this program:

- Mine source water quality parameters measured at station MH-02 were below the specific thresholds (ST), as defined by the adaptive management plan (AMP).

- All constituents were below the Receiving Water Quality Standards (QZ16-051 Clause 40) at receiving environment station MH-12.

- Estimated flow volume and turbidity were measured at MH-02 and MH-12 at least 3 times per day. Photographs, weather conditions, and appearance were recorded.

A detailed memo describing the event, repair and monitoring activities was provided with the 2022 Q2 Quarterly Report, submitted on September 9, 2022 and is attached as Appendix F. Based on the additional results there were no measured changes to the receiving water quality. Additional information regarding the geotechnical work completed is provided in Section 5.




| Site | Easting | Northing |
|---|---|---|
| Gate | 507401 | 6709067 |
| Heli Pad MH-02 | 508214 | 6711409 |
| Heli Pad MH-13 | 513065 | 6709571 |
| Heli Pad MH-15 | 509256 | 6718024 |
| Heli Pad MH-30 | 510692 | 6707283 |
| Trappers Cabin | 507497 | 6708208 |

Sediment Retention Structure Monitoring
Surface Water Quality Source Monitoring Station
Water License Compliance Surface Water Quality Monitoring Station
Surface Water Quality Station
Groundwater Monitoring Well
Portal
Gate
Heli Pad
Trappers Cabin
Reclaimed Ponds
Sä Dena Hes Land Lease
Waterbody
Watercourse
Seasonal Surface Flow
Access Road
Contours (100ft)

SÄ DENA HES MINE

**FIGURE 3-1**

**MONITORING STATION LOCATIONS**

JANUARY 2023



Datum: NAD 83; Projection: UTM Zone 9N



Teck

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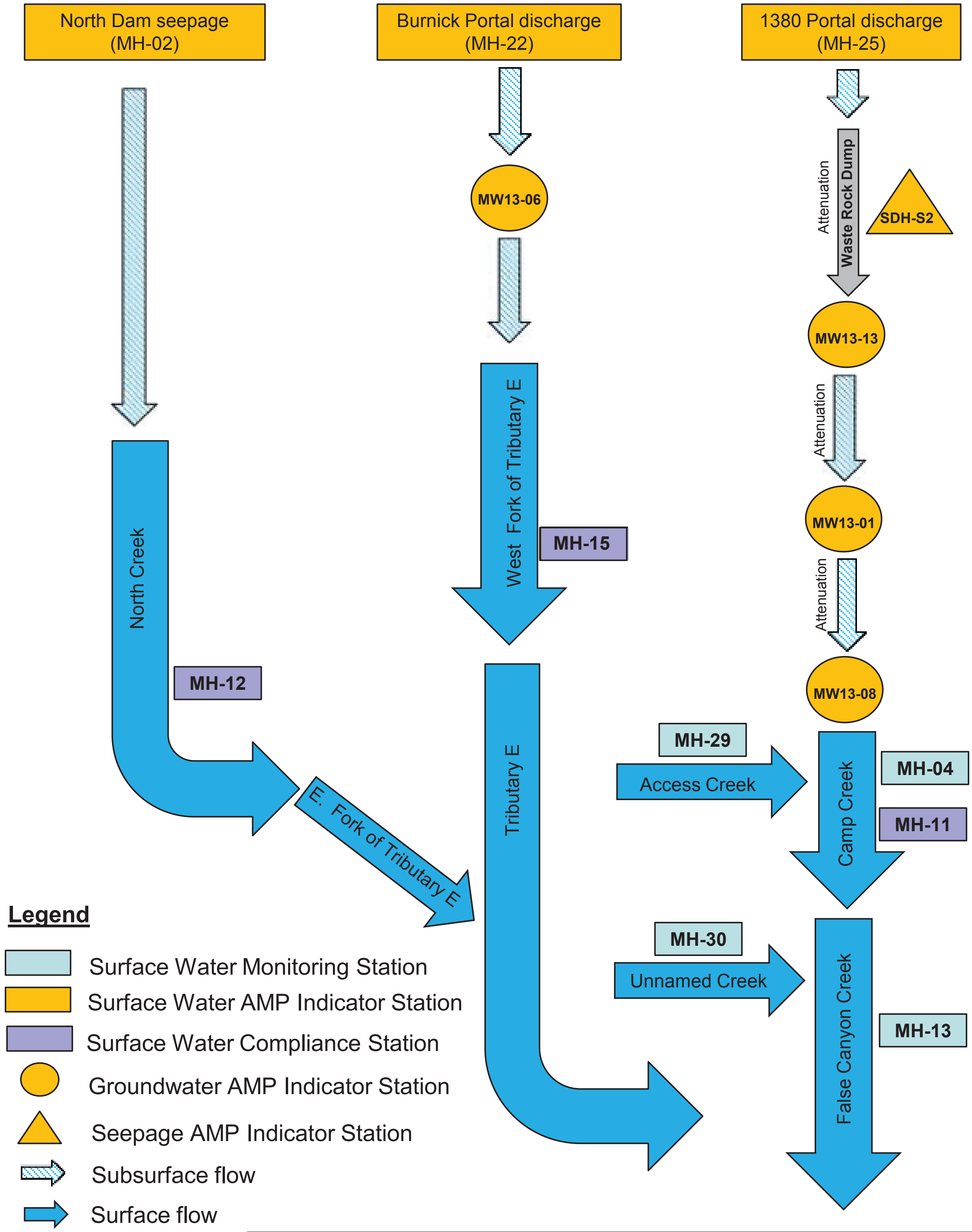


| srk consulting | Teck | Sä Dena Hes<br>FIGURE 3-2<br>CONCEPTUAL LOADING DIAGRAM |
|---|---|---|
| Job No: 1CT008.043<br>Filename: AdaptiveManagementPlanFigures_1CT008.043_Rev01_LMC_LNB.pptx | Sä Dena Hes | Date: Sept 26, 2014 / Approved: LNB / Figure: 4-2 |

### 3.1.2 Groundwater

There are three post-reclamation groundwater monitoring programs as part of the EMSRP. The first is designed to monitor downgradient of mine-influenced loading sources. These mine loading monitoring wells are located along the flow path of the 1380 Portal and Burnick Portal mine sources and are used to help determine if mine source water quality is deteriorating. The second groundwater monitoring program is the contaminated sites regulatory monitoring (CSR monitoring), which monitors wells that were installed downgradient of where soil contamination has been identified and used to detect if a hydrocarbon plume or metal leaching is present from the soil contamination areas. If presence of hydrocarbons or metal leaching is detected in a CSR monitoring well, it will ultimately impact surface water quality prior to compliance sites MH-11 and MH-12. The third groundwater monitoring program is the landfill monitoring wells, used to monitor the landfill area. The locations and rationale for each location are summarized in Table 3-4.

**Table 3-4: Groundwater Monitoring Program Summary**

| Station ID | Station Description | Monitoring Program - Purpose |
|---|---|---|
| **Mine source flow path groundwater monitoring wells** | | |
| MW13-01 | Jewelbox/Main Zone – in 1380 Gully, downgradient of 1380 Portal. | To monitor groundwater flow and quality from Jewelbox/Main Zone towards Camp Creek. |
| MW13-06 | Burnick 1200 Portal | To monitor groundwater flow and quality from Burnick Zone. |
| MW13-08 | Downgradient of 1380 Portal | To monitor groundwater flow and quality from Jewelbox/Main Zone towards Camp Creek |
| MW13-13 | Downgradient of 1380 Portal | To monitor groundwater flow and quality from Jewelbox/Main Zone towards Camp Creek |
| **Contaminated site assessment groundwater monitoring wells** | | |
| MW13-04 | Main Access Road | Background reference well |
| MW13-05 | Main Access Road – south of the Mill Site on the Main Access Road. | To monitor groundwater flow and quality from Jewelbox/ Main Zone. |
| MW13-07 | North Dam – north of the North Dam and tailings pond area. | To monitor groundwater flow and quality from the tailings pond area. |
| MW13-10 | Mill site - northeast of the Mill Site | To monitor groundwater flow and quality from the Mill Site and Jewelbox/ Main Zone. |
| **Landfill groundwater monitoring wells** | | |
| MW14-01 | In proximity to the landfill. | Background reference well for the landfill |
| MW14-02 | In proximity to the landfill. | To monitor groundwater flow from the landfill. |
| MW14-03 | In proximity to the landfill. | To monitor groundwater flow from the landfill. |
| MW14-04 | In proximity to the landfill. | To monitor groundwater flow from the landfill. |

All groundwater stations are visited and sampled on a quarterly basis. The 2022 monitoring schedule was designed to meet the requirement of Water Use Licence (WUL) QZ16-051, which came into effect on April 1, 2017.Table 3-5 shows the sampling effort for 2022 by quarter for the groundwater quality stations.

**Table 3-5: Groundwater Samples Collected in 2022**

| | Q1 (Feb) | Q2 (Jun) | Q3 (Aug) | Q4 (Oct) | Total Samples 2022 |
|---|---|---|---|---|---|
| MW13-01 | Sampled | Sampled | Sampled | Sampled | 4 |
| MW13-04 | —[1] | Sampled | Sampled | —[1] | 2 |
| MW13-05 | —[1] | Sampled | —[2] | —[1] | 1 |
| MW13-06 | —[3] | Sampled | Sampled | Sampled | 3 |
| MW13-07 | Sampled | Sampled | Sampled | Sampled | 4 |
| MW13-08 | Sampled | Sampled | Sampled | Sampled | 4 |
| MW13-10 | Sampled | Sampled | Sampled | Sampled | 4 |
| MW13-13 | —[3] | Sampled | Sampled | Sampled | 3 |
| MW14-01 | —[2] | Sampled | Sampled | Sampled | 3 |
| MW14-02 | —[1] | Sampled | Sampled | Sampled | 3 |
| MW14-03 | —[1] | —[1] | Sampled | Sampled | 2 |
| MW14-04 | Sampled | Sampled | Sampled | Sampled | 4 |

1. *Dry*
2. *Insufficient water volume to sample*
3. *Site inaccessible*

## 3.2 ADAPTIVE MANAGEMENT PLAN

The Water Use Licence QZ16-051 required the submission of an updated Adaptive Management Plan (AMP) to the Yukon Water Board. A requirement of the water licence QZ16-051 is that the annual report include a detailed assessment of the parameters being measured at AMP indicator stations and identification of any additional indicator parameters that should be incorporated into the AMP. The AMP (Appendix B) was prepared by Alexco Environmental Group and submitted in June 2017 (Alexco, 2017) and revised in February 2018 due to transcription errors detected in 2017 (Alexco, 2018; Teck, 2018).

The AMP is a critical component for evaluating and responding to emerging or changing conditions on site. The AMP describes a means of interpreting data to indicate if water quality is changing from conditions observed over the past 20 years. The plan also describes when and how changes in water quality necessitate a response. The AMP outlines the conceptual geochemical model and associated risks and identifies monitoring stations, specific indicators, and associated numerical water quality specific performance thresholds. If a specific performance threshold is exceeded, the AMP outlines the required responses.

Receiving environment surface water quality, mine source water, and groundwater quantity and quality are the AMP components that have been identified as having the potential for unexpected conditions during the post-reclamation period for which the DDRP may not provide adequate mitigation against potential effects to the environment or human health and safety. Any activities carried out at the site under the DDRP or the AMP are included in the Annual Report, as well as any updates to the AMP.

The objective of the mine source flow path AMP monitoring program is to detect changes from existing conditions that may have the potential to adversely affect receiving aquatic environments. Water quality is monitored to observe any potential changes indicative of loading from the North Dam, Burnick Portal, and 1380 Portal. The mine source AMP indicator stations include the North Dam Seepage (MH-02), Burnick 1200 Portal Discharge (MH-22), and the 1380 Portal drainage present as a seep in the downgradient waste rock dump (SDH-S2).

The specific indicators used to detect changes from existing conditions are cadmium, lead, zinc, and sulphate. Stations MH-02 and MH-22 have specific performance thresholds for sulphate and total cadmium, lead, and zinc. Stations MH-11, MH-12, and MH-15 have specific performance thresholds for sulphate, total lead and zinc, and dissolved cadmium. Stations SDH-S2, MW13-01, MW13-08, and MW13-13 have specific performance thresholds for sulphate and dissolved cadmium, lead, and zinc. Station MW13-06 has specific performance thresholds for dissolved cadmium, lead, and zinc. A summary of AMP specific indicators and performance thresholds is presented in Table 3-6 and are described further in Appendix B.

All the stations monitored under the AMP are included in the water licence monitoring requirements. Instances where the AMP was triggered in 2022 are presented in Table 3-9: and Table 3-10:, and discussed in Section 3.5 for each of the three mine sources, landfill groundwater monitoring, and contaminated sites groundwater monitoring.

**Table 3-6: AMP summary of Monitored Stations and Parameters**

| AMP Reference | Station | Parameter Monitored | ST1 | ST2 | ST3 | ST4 |
|---|---|---|---|---|---|---|
| Mine Source Water Quality, Table 2-2. | MH-02 | Zn-T | 0.40 mg/L | 0.48 mg/L | n/a | |
| | | Cd-T | 0.014 mg/L | 0.016 mg/L | | |
| | | Pb-T | 0.006 mg/L | 0.007 mg/L | | |
| | | $SO_4$ | 600 mg/L | 720 mg/L | | |
| | MH-22 | Zn-T | 2.3 mg/L | 2.7 mg/L | | |
| | | Cd-T | 0.011 mg/L | 0.013 mg/L | | |
| | | Pb-T | 0.05 mg/L | 0.06 mg/L | | |
| | | $SO_4$ | 134 mg/L | 161 mg/L | | |
| | SDH-S2 | Zn-D | 15.3 mg/L | 18.3 mg/L | | |
| | | Cd-D | 0.13 mg/L | 0.15 mg/L | | |
| | | Pb-D | 0.51 mg/L | 0.61 mg/L | | |
| | | $SO_4$ | 290 mg/L | 348 mg/L | | |
| Mine Loading Source Discharge Wells – Camp Creek, Table 2-5. | MW13-01<br>MW13-08 | Zn-D | 3 consecutive monitoring results with progressively increasing concentrations **or** 4 of the last 6 monitoring events show progressively increasing concentrations. | 0.5 mg/L | A sustained increase in concentration over 3 sampling events that has resulted in a concentration increase greater than the ST2 levels. | n/a |
| | | Cd-D | | 0.005 mg/L | | |
| | | Pb-D | | 0.035 mg/L | | |
| | | $SO_4$ | | 55 mg/L | | |
| | MW13-13 | Zn-D | | 0.5 mg/L | | |
| | | Cd-D | | 0.02 mg/L | | |
| | | Pb-D | | 0.035 mg/L | | |
| | | $SO_4$ | | 110 mg/L | | |
| Mine Loading Source Discharge Wells – West Fork of Tributary E, Table 2-5. | MW13-06 | Zn-D | | 0.5 mg/L | | |
| | | Cd-D | | 0.001 mg/L | | |
| | | Pb-D | | 0.015 mg/L | | |
| | | $SO_4$ | | No concentration threshold. The source (MH-22) concentration is less than well (MW13-06) concentration | | |

| AMP Reference | Station | Parameter Monitored | ST1 | ST2 | ST3 | ST4 |
|---|---|---|---|---|---|---|
| Receiving Environment Surface Water Quality, Table 2-8 and 2-9. | MH-11<br>MH-12<br>MH-15 | Cd-D [1]<br>Pb-D [1]<br>Zn-D [1] | 75% of calculated WUL Effluent Quality Standard (EQS) | 90% of calculated WUL Effluent Quality Standard (EQS | 2 consecutive ST2 exceedances or a single exceedance of WUL EQS | 2 consecutive exceedances of WUL EQS |
| | | $SO_4$ (75>Hardness ≤180mg/L) | 232 mg/L | 278 mg/L | 2 consecutive ST2 exceedances or a single exceedance of WUL EQS (309 mg/L) | 2 consecutive exceedances of WUL EQS (309 mg/L) |
| | | $SO_4$ (Hardness > 180mg/L) | 322 mg/L | 386 mg/L | 2 consecutive ST2 exceedances or a single exceedance of WUL EQS (429 mg/L) | 2 consecutive exceedances of WUL EQS (429 mg/L) |
| | | TSS | MH-30 TSS + 10 mg/L | MH-30 TSS + 20 mg/L | MH-30 TSS + 25 mg/L | n/a |
| Landfill Groundwater Quality, Table 3-2, 3-3, 3-4 and 3-5 | MW14-01<br>MW14-02<br>MW14-03<br>MW14-04 | Cd-D [1] | Two consecutive samples exceeding: 0.075-0.45 µg/L | Two consecutive samples exceeding: 0.09-0.54 µg/L | A single exceedance of: 0.1-0.6 µg/L | n/a |
| | | Pb-D [1] | Two consecutive samples exceeding: 30-120 µg/L | Two consecutive samples exceeding: 36-144 µg/L | A single exceedance of: 40-160 µg/L | |
| | | Zn-D [1] | Two consecutive samples exceeding: 56.25-1800 µg/L | Two consecutive samples exceeding: 67.5-2160 µg/L | A single exceedance of: 75-2400 µg/L | |
| | | Hydrocarbons | Refer to Table 3-3 of the AMP (AEG, 2018) | | | |
| | | Groundwater Elevation | Water table measurements are **within 3.5 m** of the base of the landfill for 2 sampling events at one or both indicator wells. | Water table measurements are **within 3.5 m** of the base of the landfill for 3 consecutive sampling events (scheduled or re sampled) at all the indicator wells. | Water table measurements are **within 3.0 m** of the base of the landfill for 1 sampling event (scheduled or re-sampled) at all the indicator wells. | |
| General Site Groundwater Quality, Table 3-7 | MW13-05<br>MW13-07<br>MW13-10 | Cd-D [1] | Two consecutive samples exceeding: 0.075-0.45 µg/L | Two consecutive samples exceeding: 0.09-0.54 µg/L | A single exceedance of: 0.1-0.6 µg/L | n/a |
| | | Pb-D [1] | Two consecutive samples exceeding: | Two consecutive samples exceeding: | A single exceedance of: 40-160 µg/L | |

| AMP Reference | Station | Parameter Monitored | ST1 | ST2 | ST3 | ST4 |
|---|---|---|---|---|---|---|
| | | | 30-120 µg/L | 36-144 µg/L | | |
| | | Zn-D [1] | Two consecutive samples exceeding: 56.25-1800 µg/L | Two consecutive samples exceeding: 67.5-2160 µg/L | A single exceedance of: 75-2400 µg/L | |
| | | Hydrocarbons | Refer to Table 3-3 of the AMP (AEG, 2018) | | | |

[1] *Value is dependent on hardness*

## 3.3 Methodology

At each of the surface water monitoring stations, *in situ* field measurements were made prior to sampling at each surface water station. Field parameters (pH, specific conductance (SPC), oxidation-reduction potential (ORP), dissolved oxygen (DO) and temperature) were measured and recorded at each station using a calibrated YSI Professional Plus multimeter to assess *in situ* water chemistry. Lab results are presented in Appendix C. *In situ* measurements are presented along with the analytical data in Appendix D.

Water quality samples were collected in accordance with Canadian Council of Ministers of the Environment (CCME) *Proposals for Manual Water Quality Sampling in Canada* (CCME, 2011). Clean nitrile gloves and sample bottles provided by the analytical laboratory specific to the analytes being tested were used. Dissolved metals, dissolved mercury and dissolved organic carbon (DOC) water samples were filtered using a 0.45 µm syringe filter in the field at the time of sample collection. During the winters, sub-zero temperatures made it impossible to field filter the dissolved samples, due to the water freezing in the syringe. During these months, an additional sterile lab bottle is provided to collect additional water to filter in a warm environment at the day's end. Preservatives were added to the sample bottles for the analysis of total and dissolved metals, total and dissolved mercury, TOC, DOC, and nutrients, as directed by the analytical laboratory (ALS Environmental [ALS]). Samples were kept in coolers with ice packs and sent to ALS, Burnaby, BC for analysis with an accompanying chain of custody form specifying the analyte(s) to be tested.

Groundwater quality samples were collected after a minimum of three well volumes were purged from the well. If, during a trip, a groundwater well is dry before three well volumes are fully purged, then they are sampled once they recharge as it is understood that the stagnant water in the well has been successfully purged. All monitoring wells were purged using dedicated Waterra™ tubing for each well to avoid cross-contamination between wells, either using a Powerpack™ or Hydrolift™ actuating pump, or hand purge method. Field parameters (pH, SPC, ORP, DO and temperature) were noted regularly throughout the purging process using a calibrated YSI Professional Plus multimeter to assess water chemistry stabilization. Field parameters were recorded once the parameters stabilized, then water quality samples were collected. A copy of field parameter measurements recorded after stabilization is available in Appendix D. Standard practice sampling methods were followed to maintain sample integrity: clean, disposable nitrile gloves were worn during collection and only sample bottles provided by the analytical laboratory, specific to the analytes being tested were used. Dedicated tubing was used at each monitoring well location. Dissolved metals, dissolved mercury and DOC water samples were filtered using a 0. 45 µm syringe filter or 0. 45 µm in-line high turbidity filter in the field at the time of sample collection when possible or immediately upon return from the field each evening during freezing conditions. Preservatives were added to the sample bottles for the analysis of dissolved metals, dissolved mercury, DOC and nutrients, as directed by the analytical laboratory (ALS). Samples were kept cool in coolers with ice packs and sent to ALS, Burnaby, BC for analysis with an accompanying chain of custody form specifying the analytes to be tested.

## 3.4 Quality Assurance/ Quality Control Program

The monitoring program included a comprehensive quality assurance and quality control (QA/QC) program to verify validity of the data collected, including data quality objectives and documentation of sample variability due to natural variability and analytical variability. The QA/QC program included the following:

- All field staff followed work methods for surface water and groundwater monitoring and sample collection that are based on generally accepted best industry practices (CCME, 2011). The sampling procedures included measures to avoid sample contamination in the field during sample collection, as well as during sample handling and shipping;
- Blind field duplicates collected at a rate of at least one duplicate per 10 samples (10%) during each groundwater and surface water event. The field duplicates were linked to one of samples and recorded in field notes but were not indicated on the chain of custody forms. Field duplicates were subsequently evaluated for variability by evaluating the relative percent difference (RPD);
- Field blanks and trip blanks were collected during each sampling event;
- Following each sampling event, all analytical and QA/QC results received from the laboratory were reviewed to verify data quality and to flag any potential issues (e.g., data quality issues from the information provided by the lab, high ion balance percent difference).

The above QA/QC procedures were followed during every event and data quality objectives were established to evaluate sample variability resulting from natural conditions or as a function of sampling or analytical procedures.

### 3.4.1 Analytical Variability

Laboratory duplicates were used to measure laboratory analytical variability. Results of quality assurance analysis are included in Appendix C within the laboratory reports. All laboratory duplicates met the lab quality control limit of 20% relative percent difference (RPD) for all parameters tested. ALS Environmental also ran analyses on matrix spikes, spiked blanks, and method blanks with internal Data Quality Objectives achieved for all samples ensuring data precision and accuracy.

### 3.4.2 Field Variability

During the monitoring program, field duplicates were collected to measure field variability between simultaneous grab samples. 18 field duplicates were collected from the 125 samples in 2022. The Relative Percent Difference (RPD) is used to determine variability. RPD was calculated for every analyte of each sample-duplicate couple according to the following formula:

$$RPD\ (\%) = \left| \frac{\left(Result_{Sample} - Result_{Replicate}\right)}{\left(\frac{Result_{Sample} + Result_{Replicate}}{2}\right)} \right| x\ 100$$

RPD is not considered further where one or both results being compared are less than the practical quantitation limit (PQL). The PQL is five times the Method Detection Limit (MDL) and is defined as the minimum concentration that can be measured within specified limits of precision and accuracy. A constituent with results below the PQL means that the constituent being analyzed is not present in a sufficient amount to be reliably quantified. Typically, as parameters approach their detection limit, high variability is more likely to occur. Where applicable, the RPD of <25% can be used as a benchmark whereby an RPD greater than 25% warrants further comment or consideration.

The parameters with RPD values greater than 25% that met the PQL are shown in Table 3-7. The RPD range (26% to 106%) is relatively limited and reflects natural variation of the concentration of these parameters at each station rather than laboratory or sampling error. High RPDs typically occur when flows are typically at their lowest or during freshet as there is often a higher amount of silt and sediment that can get unevenly distributed to the samples, often resulting in more interference between replicate samples.

**Table 3-7: Parameters with RPD values greater than 25% and met the PQL**

| Site | Date | Parameter with value greater than 25% that met the PQL | MDL | Parent Sample Result | Dup Sample Result | PQL [1] | RPD |
|---|---|---|---|---|---|---|---|
| MH-02 | 06-Apr-22 | Total Aluminum | 0.003 | 0.0386 | 0.0298 | 9.93 | 26% |
| MH-02 | 27-Jun-22 | Dissolved Lead | 0.00005 | 0.000388 | 0.00066 | 7.76 | 52% |
| MW13-13 | 29-Jun-22 | Dissolved Manganese | 0.0001 | 0.00231 | 0.00077 | 7.7 | 100% |
| SDH-S2 | 29-Jun-22 | Dissolved Selenium | 0.00025 | 0.00372 | 0.00266 | 10.6 | 33% |
| MW13-06 | 29-Jun-22 | Dissolved Lead | 0.00005 | 0.000399 | 0.000821 | 7.98 | 69% |
| MW14-04 | 30-Jun-22 | Dissolved Manganese | 0.0001 | 0.00076 | 0.00055 | 5.5 | 32% |
| MW13-08 | 08-Aug-22 | Dissolved Manganese | 0.0001 | 0.00051 | 0.00165 | 5.1 | 106% |
| MW14-03 | 09-Aug-22 | Dissolved Copper | 0.0002 | 0.00119 | 0.00185 | 5.95 | 43% |
| | | 2-Bromobenzotrifluoride | 1 | 84 | 63.6 | 63.6 | 28% |
| MW13-10 | 10-Aug-22 | Total Suspended Solids | 1.5 | 828 | 553 | 369 | 40% |
| MW14-03 | 25-Oct-22 | Sulphate | 0.3 | 19.8 | 35.3 | 66 | 56% |
| | | Nitrate | 0.005 | 0.154 | 0.223 | 30.8 | 37% |
| MH-04 | 04-Dec-22 | Total Manganese | 0.0001 | 0.00095 | 0.00053 | 5.3 | 57% |

*All values in mg/L unless otherwise stated*
[1] *PQL of the lowest result is shown for each duplicate.*

### 3.4.3 FIELD AND TRAVEL BLANKS

Additional field quality control samples include field blanks and trip blanks, where de-ionized water is handled, processed, and analyzed in the same manner as the site water samples. Blanks can provide an indication of sample contamination occurring in the field (field blank) or laboratory (method blanks) and at any point in between (trip blanks). Concentrations of parameters should not be detectable, though a use of a blank reporting threshold of two-times the MDL allows for slight "noise" around the detection limit.

A field blank is processed by taking de-ionized water (analyte free media) to the sample station, opening it, and exposing it to ambient air and 'collecting' it in the sample bottles. These samples are treated the same as the actual water samples, preserved and filtered as necessary, and their analysis can provide an indication of contamination that may be affecting the actual samples. Nine field blanks were analyzed in 2022 for quarterly groundwater and bi-monthly surface sampling events. The field blank data are provided in Appendix C. In 2022 ten field blank parameters were detected in concentrations >2x the MDL. Many of these parameters were detected during the April and June 2022 monitoring events.

Trip blanks (sample of de-ionized water) are supplied and prepared by the lab and are intended to accompany the sample bottles provided by the lab for the monitoring program. The trip blank travels with the sample bottles to the sample stations and is returned unopened back to the lab with the collected samples. The purpose of the trip blank is to identify any potential contamination (e.g., cross contamination from other samples or ambient air conditions) to which the samples may be exposed. Five trip blanks were analyzed in 2022 for the February, April, August, October, and December sampling events (Table 3-8). The lab failed to provide a useable trip blank during the June 2022 sampling event. The results of the trip blanks are presented in the laboratory certificates of analysis provided in Appendix C. In 2022, only two trip blank parameters returned results over twice the MDL. Both total suspended solids and ammonia were detected during the August 2022 trip blank.

Overall, the replicate and blank data indicate the data collected in 2022 are suitable for use.

**Table 3-8: Field and Trip Blanks Results Greater than Twice the MDL**

| Site | Date | Analyte | Units | Result | MDL | PQL |
|---|---|---|---|---|---|---|
| Field Blank | 10-Feb-22 | Total Molybdenum | mg/L | 0.000131 | 0.000050 | 2.62 |
| Field Blank | 07-Apr-22 | Dissolved Molybdenum | mg/L | 0.00464 | 0.000050 | 92.8 |
| Field Blank | 07-Apr-22 | Dissolved Cadmium | mg/L | 0.268 | 0.050 | 5.36 |
| Field Blank | 07-Apr-22 | Dissolved Strontium | mg/L | 0.00099 | 0.00020 | 4.95 |
| Field Blank | 07-Apr-22 | Dissolved Barium | mg/L | 0.00028 | 0.00010 | 2.8 |
| Field Blank | 28-Jun-22 | Dissolved Molybdenum | mg/L | 0.000248 | 0.000050 | 4.96 |
| Field Blank | 28-Jun-22 | Dissolved Lead | mg/L | 0.000196 | 0.000050 | 3.92 |
| Field Blank | 28-Jun-22 | Total Ammonia | mg/L | 0.0123 | 0.0050 | 2.46 |
| Field Blank | 28-Jun-22 | Dissolved Sodium | mg/L | 0.114 | 0.050 | 2.28 |
| Field Blank | 28-Oct-22 | Total Ammonia | mg/L | 25.7 | 1.0 | 25.7 |
| Trip Blank | 11-Aug-22 | Total Suspended Solids | mg/L | 0.0163 | 0.0050 | 3.26 |
| Trip Blank | 11-Aug-22 | Ammonia | mg/L | 0.0486 | 0.0050 | 9.72 |

## 3.5 RESULTS AND DISCUSSION

The following sections discuss the three mine source flow paths and the two groundwater programs. Each section addresses all three elements required by the WUL (Appendix A):

- WUL exceedances;
- AMP triggers and responses (when applicable); and
- Long-term water quality trends.

WUL exceedances as well as AMP responses are summarised in Table 3-9: and Table 3-10: then discussed in further detail below. All the results from the 2022 monitoring are available in Appendix D. Where constituent concentrations were below the MDL, a value of half the MDL was used for figure plotting purposes.

Clause 65a of licence QZ16-051 states that any variances from baseline conditions or from the previous year's data should be discussed. This section of the report compares the 2022 data to the long-term trends for selected parameters and stations.

For this report, the parameters included in the discussion were selected based on the following rationale:

- pH, sulphate, and total alkalinity as indicators of acid rock drainage, sulphide oxidation, and buffering capacity;
- Hardness – this parameter is used to calculate some WUL QZ16-051 water quality standards (e.g., cadmium, copper, lead, nickel, zinc, and sulphate) as well as some AMP thresholds;
- Cadmium[2] – this parameter historically exceeded the licence standard at MH-25 between 2001 and 2014, before the Main Zone 1380 Portal was decommissioned. MH-25 can no longer be monitored, therefore, SDH-S2 has been monitored instead. Cadmium have also regularly triggered the AMP at the groundwater wells;
- Copper – this parameter had one exceedance of the Receiving Water Quality Standards Maximum Grab Sample concentration for total copper in the December 2022 monitoring event;
- Lead – this parameter had one historical exceedance of the AMP ST2 in 2021 at the North Dam seepage (MH-02) and regularly trigger the AMP ST1 at the groundwater wells; and
- Zinc – this parameter had multiple groundwater monitoring wells which have triggered the AMP ST1 in recent years.

*[2] Cadmium analytical detection limits have decreased over time. Detection limits were higher and more variable before 2005. A few samples had concentrations at 0.002 and 0.003 mg/L prior to 2005. These were not entered as below detection limits in the database but are likely within the range of analytical error of instrumentation. Since 2005, detection limits have been as low as 0.00001 mg/L but occasionally have been higher (0.0001 mg/L) due to matrix effects. The varying limits confound interpretation of long-term trends for stations that have lower cadmium levels (e.g. MH-04 and MH-11).*

**Table 3-9: WUL Responses for Surface Water in 2022**

| Station | Date | WUL Exceedance | Response |
|---|---|---|---|
| MH-12 | 01-Dec-2022 | Total Copper – Exceeded the WUL Maximum Allowable Concentration in a Grab Sample. | **Notification**<br>• Teck Representative/Environmental Monitor completed by email on December 22, 2022<br>• Yukon government inspector notified by email on January 6, 2023<br>• Include in scheduled annual reporting in Section 3.4.3<br>**Review**<br>• Request Laboratory re-run results – results were confirmed by laboratory re-analysis.<br>• Review laboratory QA/QC report: results were validated using internal QA/QC methods.<br>**Evaluation**<br>• Compare with upstream and receiving environment water quality results. This was completed and results discussed in the Q4 report dated January 15, 2023.<br>• Results were compared with upstream mine source water quality results. Further monitoring is required to determine if this exceedance is the result of deteriorating water quality at the mine source or if this result is an anomaly. This will be reported on in the next Quarterly Report following the February 2023 monitoring event.<br>**Action**<br>• During next scheduled sampling event conduct a duplicate at monitoring site that exceeded the WUL MAC.<br>**Follow-up**<br>• Follow-up actions are planned for the February 2023 monitoring event. |

**Table 3-10: AMP Responses for Groundwater in 2022**

| Station | Date | AMP Trigger | Specific Response |
|---|---|---|---|
| MW13-01 – Downstream of Mine Source Groundwater Quality (1380 portal) | Feb 2022 | Sulphate - triggered AMP ST1 with three consecutively increasing concentrations | **Notification**<br>• Teck Representative/Environmental Monitor completed by email on March 23, 2022<br>• Include in scheduled annual reporting in Section 3.4.5<br>**Review**<br>• Review laboratory QA/QC report: results were validated using internal QA/QC methods<br>**Evaluation**<br>• Compare with upstream and receiving environment water quality results. This was completed and results discussed in the Q1 report dated March 31, 2022.<br>**Action**<br>• During next scheduled sampling event conduct a duplicate at monitoring site that exceeded ST1. Results were compared with upstream and receiving environment water quality results.<br>**Follow-up**<br>• A duplicate was collected at the next sampling event to verify the result in the following monitoring event. |
| MW13-08 - Downstream of Mine Source Groundwater Quality (1380 Portal) | Feb 2022 | Sulphate, Dissolved Lead and Dissolved Zinc - triggered AMP ST1 with three consecutively increasing concentrations. | **Notification**<br>• Teck Representative/Environmental Monitor completed by email on March 23, 2022<br>• Include in scheduled annual reporting in Section 3.4.5<br>**Review**<br>• Review laboratory QA/QC report: results were validated using internal QA/QC methods<br>**Evaluation**<br>• Compare with upstream and receiving environment water quality results. This was completed and results discussed in the Q1 report dated March 31, 2022.<br>**Action**<br>• During next scheduled sampling event conduct a duplicate at monitoring site that exceeded ST1. Results were compared with upstream and receiving environment water quality results.<br>**Follow-up**<br>• A duplicate was collected at the next sampling event to verify the result in the following monitoring event. |
| MW13-01 - Downstream of Mine Source Groundwater Quality (1380 portal) | Jun 2022 | Sulphate - triggered AMP ST1 with three consecutively increasing concentrations | **Notification**<br>• Teck Representative/Environmental Monitor completed by email on July 28, 2022<br>• Include in scheduled annual reporting in Section 3.4.5<br>**Review**<br>• Review laboratory QA/QC report: results were validated using internal QA/QC methods<br>**Evaluation**<br>• Compare with upstream and receiving environment water quality results. This was completed and results discussed in the Q2 report dated August 8, 2022. |

| Station | Date | AMP Trigger | Specific Response |
|---|---|---|---|
| | | | **Action**<br>Results were compared with upstream and receiving environment water quality results.<br>**Follow-up**<br>• A duplicate was collected at the next sampling event to verify the result in the following monitoring event. |
| MW13-08 - Downstream of Mine Source Groundwater Quality (1380 Portal) | Jun 2022 | Dissolved Cadmium, Dissolved Lead and Dissolved Zinc - triggered AMP ST1 with three consecutively increasing concentrations. | **Notification**<br>• Teck Representative/Environmental Monitor completed by email on July 28, 2022<br>• Include in scheduled annual reporting in Section 3.4.5<br>**Review**<br>• Review laboratory QA/QC report: results were validated using internal QA/QC methods<br>**Evaluation**<br>• Compare with upstream and receiving environment water quality results. This was completed and results discussed in the Q2 report dated August 8, 2022.<br>**Action**<br>Results were compared with upstream and receiving environment water quality results.<br>**Follow-up**<br>• A duplicate was collected at the next sampling event to verify the result in the following monitoring event. |
| MW13-01 - Downstream of Mine Source Groundwater Quality (1380 portal) | Oct 2022 | Dissolved Zinc - triggered AMP ST1 with three consecutively increasing concentrations | **Notification**<br>• Teck Representative/Environmental Monitor completed by email on July 28, 2022<br>• Include in scheduled annual reporting in Section 3.4.5<br>**Review**<br>• Review laboratory QA/QC report: results were validated using internal QA/QC methods<br>**Evaluation**<br>• Compare with upstream and receiving environment water quality results. This was completed and results discussed in the Q4 report dated January 16, 2023<br>**Action**<br>Results were compared with upstream and receiving environment water quality results.<br>**Follow-up**<br>• A duplicate was collected at the next sampling event to verify the result in the following monitoring event. |
| MW13-06 - Downstream of Mine Source Groundwater Quality | Oct 2022 | Sulphate - triggered AMP ST1 with three consecutively increasing concentrations. | **Notification**<br>• Teck Representative/Environmental Monitor completed by email on November 28, 2022<br>• Include in scheduled annual reporting in Section 3.4.4<br>**Review**<br>• Review laboratory QA/QC report: results were validated by internal QA/QC methods.<br>**Evaluation** |

| Station | Date | AMP Trigger | Specific Response |
|---|---|---|---|
| (Burnick Portal) | | | • Compare with upstream and receiving environment water quality results. This was completed and results discussed in the Q4 report dated January 16, 2023<br>**Action**<br>Results were compared with upstream and receiving environment water quality results.<br>**Follow-up**<br>• A duplicate was collected at the next sampling event to verify the result in the following monitoring event. |

### 3.5.1 NORTH DAM SEEPAGE

During operations, tailings were discharged to the North Tailings Impoundment. Currently, there is no ponded water behind the North Tailings Dam. The tailings are saturated within a metre of the surface. Seepage from the toe of the North Dam was routinely monitored at MH-02 as required by the existing WUL QZ16-051. The seepage at MH-02 is tailings porewater that mixes with groundwater from the valley sides and runoff from the North Dam face (SRK, 2000). Seepage from the North Tailings Dam flows throughout the entire year. Flow at MH-02 is highest during freshet and lowest during the winter. The seepage flows above ground for a short distance from the North Dam before infiltrating into the ground. It then flows as groundwater before eventually discharging to North Creek and the headwaters of the East Fork of Tributary E. From the East Fork of Tributary E, the water flows to Tributary E and then to False Canyon Creek. The monitoring stations and conceptual flow path are shown in Figure 3-1 and Figure 3-2. MH-12 is a receiving water quality collection point and located approximately 2 km downstream of the tailings on North Creek.

#### 3.5.1.1 WUL

In 2022, there was one exceedance of the receiving water quality standard in the receiving environment station MH-12 on North Creek. In December 2022, total copper concentrations exceeded the WUL standard (Table 3-2) with a concentration of 0.0176 mg/L. This concentration was confirmed by a laboratory duplicate and re-analysis, following the original distribution of the results. Total copper concentrations at MH-12 have historically been near or below the detection limit (see Figure 3-4), except for one event in April 2015 that was recorded above the WUL Maximum Allowable Concentration (MAC). Since that event, copper concentrations at MH-12 have declined and have been reported near the detection limit (0.00050 mg/L) in recent years. Total copper concentrations at all other surface water stations were below the detection limit in 2022.

During the December sampling event, it was noted that the stream volume at MH-12 was very low. When stream volumes are low, it increases the possibility that surface water samples collect more particulates, which may contain elevated concentrations of trace metals, as it becomes increasingly difficult to avoid disturbing the stream bottom when collecting a water sample. The December MH-12 sample returned TSS concentrations of 5.1 mg/L, which suggests that the presence of particulates in the sample. When comparing the total and dissolved copper concentration reported at MH-12 for December 2022 (Figure 3-4), the total copper concentrations were nearly twice as high as the dissolved concentrations, suggesting that suspended sediment may be skewing the copper concentrations higher. Total copper concentrations in the North Dam source and receiving environment stations, MH-02 and MH-12, respectively, are typically present in concentrations below the analytical detection limit (Figure 3-3 and Figure 3-4). During the December 2022 monitoring event, detectable dissolved copper concentrations were also reported at North Dam outlet station MH-02, but an order of magnitude lower than at the receiving environment. In addition, the copper concentration observed at MH-02 during the December 2022 monitoring event was within the historical range of copper concentrations observed previously at this station (Figure 3-3). Currently, there is not enough data to determine whether the WUL exceedance from MH-12 is the result of deteriorating water quality from mine source station MH-02. Copper concentrations will be closely monitored at this station to determine if copper concentrations are continuing to increase at MH-02 and MH-12, or if this exceedance of the WUL was anomalous.

None of the six surface water samples taken at the receiving water collection point on North Creek (MH-12) in 2022 exceeded the receiving water quality standard for any other parameter prescribed by the water licence (Table 3-11). Table 3-11 presents a summary of select parameters compared to the WUL in 2022. A full list results are compiled in Appendix D.

**Table 3-11: MH-12 Select Water Quality Parameters Compared to the WUL, 2021**

| Station | Date | Hardness | TSS | Dissolved Cadmium | Total Copper | Total Iron | Total Lead | Total Selenium | Total Zinc |
|---|---|---|---|---|---|---|---|---|---|
| | | WUL Standard | | 0.00027 - 0.0034 [1] | 0.0064 – 0.0077 [1] | 1 | 0.0081 – 0.011 [1] | 0.002 | 0.43 – 0.84 [1] |
| MH-12 | 05-Feb-22 | 190 | 4 | 0.0000393 | <0.00050 | 0.02 | <u>0.000064</u> | 0.000862 | <u>0.0036</u> |
| MH-12 | 05-Apr-22 | 192 | 2.8 | 0.0000346 | <0.00050 | 0.014 | 0.000188 | 0.000737 | 0.013 |
| MH-12 | 27-Jun-22 | 138 | 5.1 | 0.0000427 | <0.00050 | 0.155 | <u>0.00024</u> | 0.000658 | <u>0.0058</u> |
| MH-12 | 09-Aug-22 | 160 | 1 | 0.0000416 | <0.00050 | 0.012 | 0.000281 | 0.000579 | *<0.0030* |
| MH-12 | 25-Oct-22 | 181 | <1.0 | 0.0000419 | <0.00050 | <0.010 | 0.000084 | 0.000641 | *<0.0030* |
| MH-12 | 01-Dec-22 | 167 | 5.1 | 0.0000422 | 0.0176 | 0.044 | <u>0.000072</u> | 0.000719 | <u>0.0054</u> |

All units are in mg/L
Values that are underlined indicate that the dissolved fraction was used due to TSS > 4 mg/L.
[1] WUL ranges are based on 2022 hardness (167 mg/L to 192 mg/L)

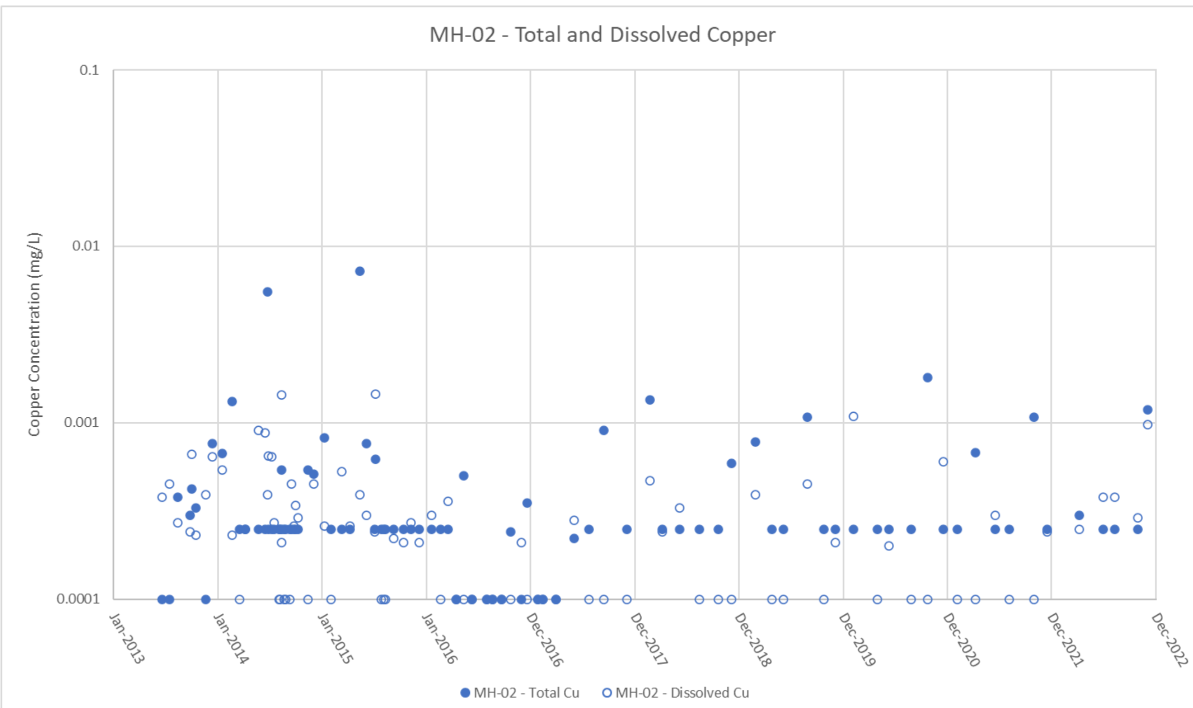


**Figure 3-3: MH-02 - Total and Dissolved Copper**

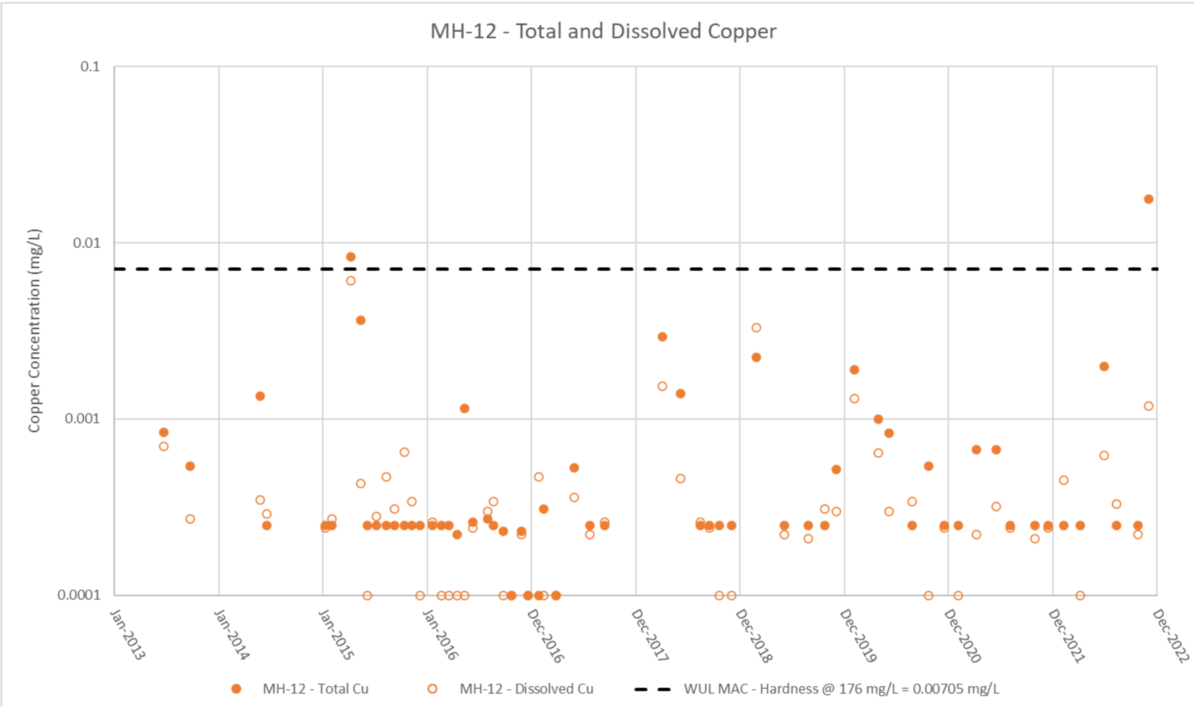


**Figure 3-4: MH-12 – Total and Dissolved Copper**

### 3.5.1.2 AMP

This section discusses the comparison of AMP water quality data to the specific performance thresholds for the North Dam Seepage mine source flow path. The objective of the AMP for the North Dam seepage is to detect any deterioration in water quality in the tailings dam seepage and manage and mitigate these changes before any effects are observed in the downstream receiving surface waters. AMP monitoring locations include tailings seepage monitoring at MH-02 located at the toe of the dam and surface water monitoring station MH-12 in North Creek.

Monitoring MH-02 would detect any changes in water quality to the loading source. Downstream of this station, tailings seepage flows as groundwater. Any potential change in surface water quality in the receiving waters would therefore be a function of groundwater reactive transport. In 2022, there were no exceedances of any AMP parameters at either of the North Dam stations.

MH-02 has previously triggered the AMP ST2 thresholds in October 2020 and April 2021. Lead concentrations returned to levels below the AMP specific thresholds in the following sampling events, after these exceedances and it was also noted that TSS concentrations were elevated during these exceedances. In 2022, all lead concentrations were below the AMP specific thresholds.

### 3.5.1.3 Water Quality Trends

Plots showing historical and current surface and groundwater constituent concentrations are available in Appendix E. Below is a discussion of water quality trends in key parameters for the site.

Samples collected in the North Dam seepage MH-02 had pH levels ranging from 7.40 to 8.28, with a 2022 annual average of 7.70, which is consistent with the historical average (2013 to 2021 dataset) of 7.60. The pH for the receiving environment monitoring station MH-12 ranged between 8.07 and 8.42 with an annual average of 8.23, consistent with the historical average of 7.99. Downstream at MW13-07, the pH had an annual average of 7.54, comparable to the historical average of 7.28.

Alkalinity at MH-02 was as high as 450 mg/L in the 1990s but has since decreased in recent years. In 2022, MH-02 had an average alkalinity of 304 mg/L. Alkalinity at MH-12 in 2021 averaged at 163 mg/L which is in line with the historical average of 165 mg/L. Alkalinity at MW13-07 averaged at 222 mg/L in 2021, compared to the historical average of 229 mg/L.

Sulphate concentrations at the North Dam seepage (MH-02) have remained stable at approximately 300 mg/L since 2002. In 2022, the average sulphate concentration at MH-02 was 294 mg/L, comparable to the historical average of 280 mg/L. At the receiving water monitoring station (MH-12), the 2022 average sulphate concentration was 8.94 mg/L, which is slightly lower than the historical average of 11.5 mg/L. Sulphate at MW13-07 averaged at 30.4 mg/L in 2021, which was lower than the historical average of 39.1 mg/L. In 2022, sulphate concentrations at MW13-07 were consistently between 29 and 31 mg/L, however historically, concentrations have reached as high as 56 mg/L (in 2014). Sulphate concentrations at MW13-07 have shown a gradual decrease from 2014 to 2021 and appear to have stabilised in 2022.

North Dam Seepage (MH-02) total hardness has historically ranged between 200 mg/L and 744 mg/L, with a historical average of 550 mg/L, which is comparable to the 2022 annual average of 570 mg/L. The receiving environment monitoring location MH-12 had a 2022 annual average hardness of 171 mg/L, which is comparable to the historical average of 177 mg/L. The 2022 hardness average at MW13-07 was 240 mg/L, comparable to the historical average of 238 mg/L.

Cadmium concentrations at the North Dam seepage (MH-02) were elevated in 2022 with an annual average of 0.000129 mg/L, compared to the historical average of 0.0000627 mg/L. Cadmium concentrations at MH-02 were still at least two orders of magnitude below the prescribed AMP specific threshold of 0.014 mg/L during each sampling event in 2022, however cadmium concentrations will continue to be monitored to determine if cadmium concentrations continue to increase. Downstream at the receiving environment (MH-12), cadmium concentrations were stable, with a 2022 annual average for total cadmium of 0.0000505 mg/L, compared to the historical average of 0.0000708 mg/L. Despite observing elevated cadmium concentrations at the MH-02, cadmium concentrations at MH-12 were unaffected. Dissolved cadmium concentrations at MW13-07 were all below the detection limit in 2022, which is consistent with past results.

Copper concentrations at MH-02 were stable in 2022 and consistent with what has historically been observed at this station. The 2022 annual average total copper concentration at MH-02 was 0.000448 mg/L, which was slightly lower than the historical average of 0.000495 mg/L. At MH-12, total copper concentrations, in 2022, observed a new maximum concentration of 0.0176 mg/L, during the December monitoring event, which triggered the WUL MAC. This exceedance was discussed previously in Section 3.5.1.1. Prior to this exceedance, total copper concentrations at MH-12 were below or close to the detection limit of 0.00050 mg/L in 2022 (Table 3-11). It is inconclusive to determine whether the December 2022 concentration at MH-12 is the beginning of an increasing trend for copper at this station, especially given that the North Dam seepage concentrations do not appear to give indication of an increasing trend (Figure 3-3). At MW13-07, dissolved copper concentrations were below the detection limit or barely above detect (<0.00020 mg/L to 0.00023 mg/L) in 2022. Copper concentrations will be closely monitored at this station during the following sampling events in 2023.

Total lead concentrations varied at MH-02 in 2022, ranging from 0.000153 mg/L to 0.00400 mg/L. The total lead annual average was 0.00115 mg/L in 2022, which was slightly lower than the historical average of 0.00174 mg/L.

Lead concentrations at MH-02 have observed a slightly decreasing trend since 2020 and appear to be stabilising as the 2022 minimum and maximum concentrations show less variability than recent years. At MH-12, the 2022 total lead average was 0.000716 mg/L, and was lower than the historical average of 0.00148 mg/L. The groundwater samples taken at MW13-07 in 2022 returned dissolved lead concentrations below the detection limit for three of the four samples collected. Overall, no increasing trend in total lead was observed at any of the surface and groundwater monitoring stations within the North Dam catchment, following the AMP exceedances in 2020 and 2021.

Total zinc concentrations at the North Dam seepage (MH-02) had an average of 0.0207 mg/L in 2022, compared to the historical average of 0.0368 mg/L. The 2022 average total zinc concentration at MH-02 was higher than the 2020 and 2021 annual averages of 0.00330 mg/L and 0.0153 mg/L, respectively, and could be the indication of a re-surging increasing trend. Concentrations will need to continue to be monitored to determine if zinc concentrations have stabilised or will continue to increase. Downstream at the receiving environment monitoring station (MH-12) the 2022 average total zinc concentration was 0.00870 mg/L, compared to the historical average of 0.0130 mg/L and well below the WUL MAC standard of 0.560 mg/L. At MW13-07, the 2022 average dissolved zinc concentration was 0.00108 mg/L, which was lower than the historical average of 0.0164 mg/L.

### 3.5.2 Burnick Portal Discharge

The objective of the AMP for the Burnick Portal discharge is to detect any deterioration in water quality in the drainage flowing from the Burnick Portal and downgradient surface water. AMP monitoring locations include the Burnick Portal drainage (MH-22), groundwater monitoring well MW13-06 adjacent to and downgradient of the Burnick Portal, and the receiving surface water quality monitoring station MH-15 in the West Fork of Tributary E. The monitoring stations and conceptual flow path are shown in Figure 3-1 and Figure 3-2.

#### 3.5.2.1 WUL

None of the six surface water samples taken at the receiving water collection point in West Fork of Tributary E (MH-15) in 2022 exceeded the receiving water quality standard prescribed by the water licence. Table 3-12 presents a summary of select water quality parameters at MH-15 compared to the WUL. Detailed results are presented in Appendix D.

Manual groundwater level monitoring of the mine source monitoring wells is required under water licence QZ16-051. Water levels at MW13-06 ranged from 1178.43 masl to 1185.68 masl from 2013 to 2022, typically peaking in the summer and fall, with the lowest levels occurring in the winter and early spring (Table 3-13). There are no water quality standards for this well outlined in the current water licence; however, AMP thresholds are defined for this well (Appendix B).

### Table 3-12: MH-15 Select Water Quality Parameters Compared to the WUL, 2022

| Station | Date | Hardness | TSS | Dissolved Cadmium | Total Copper | Total Iron | Total Lead | Total Selenium | Total Zinc |
|---|---|---|---|---|---|---|---|---|---|
| | | WUL Standard [1] | | 0.00032 – 0.00036 | 0.0070 – 0.0084 | 1 | 0.0099 – 0.000 | 0.002 | 0.072 – 0.097 |
| MH-15 | 07-Feb-22 | 207 | 2.0 | 0.0000108 | <0.00050 | 0.258 | <0.000050 | 0.000740 | <0.0030 |
| MH-15 | 07-Apr-22 | 209 | 1.7 | <0.0000050 | <0.00050 | 0.222 | <0.000050 | 0.000755 | <0.0030 |
| MH-15 | 28-Jun-22 | 176 | 1.6 | 0.0000099 | <0.00050 | 0.068 | <0.000050 | 0.000363 | <0.0030 |
| MH-15 | 09-Aug-22 | 188 | 1.3 | 0.0000092 | <0.00050 | 0.172 | <0.000050 | 0.000427 | <0.0030 |
| MH-15 | 27-Oct-22 | 197 | 2.1 | 0.0000070 | <0.00050 | 0.157 | <0.000050 | 0.000471 | <0.0030 |
| MH-15 | 03-Dec-22 | 190 | <1.0 | 0.0000053 | <0.00050 | 0.101 | <0.000050 | 0.000521 | <0.0030 |

All units are in mg/L

[1] WUL ranges are based on 2022 hardness (176 mg/L to 209 mg/L)

### Table 3-13: Burnick Portal Manual Groundwater Levels (masl [1])

| Well ID | 2022 | | | | 2022 Average | 2021 Average | 2020 Average | Historical Average [2] |
|---|---|---|---|---|---|---|---|---|
| | Feb | Jun | Aug | Oct | | | | |
| **MW13-06** | – [3] | 1185.46 | 1182.18 | 1179.88 | 1182.51 | 1181.79 | 1182.84 | 1181.72 |

*[1] masl denotes metres above sea level*

*[2] Average using data from 2013 to 2021*

*[3] Unable to sample well due to weather.*

### 3.5.2.2 AMP

The AMP ST1 for the mine source groundwater wells is triggered when three consecutive monitoring events or four of the last six monitoring events show progressively increasing concentrations of sulphate, dissolved cadmium, lead, or zinc. In 2022, the AMP ST1 was triggered by MW13-06 for sulphate during the October monitoring event. This trigger, as well as previous AMP ST1 triggers, have been linked to natural variations of these concentrations at this monitoring well and are discussed below.

#### MW13-06 Sulphate

Mine source groundwater monitoring well MW13-06 met the AMP ST1 for sulphate in October 2022, with three consecutive monitoring results that returned progressively increasing sulphate concentrations in June 2021, August 2021, and October 2022 (Figure 3-5). This AMP trigger was reported in the 2022 Q4 Quarterly report, submitted in January 2023. As per the AMP, the upstream and receiving environment sites were reviewed to determine if there were any water quality changes to the catchment, and a duplicate is planned to be collected during the next sampling event, in February 2023. The AMP ST1 trigger at MW13-06 is thought to be linked to seasonal variations that have been observed at this station since 2016. At this groundwater station, sulphate concentrations tend to be at their minimum during the early summer (June) and increase throughout the year until reaching their peak concentrations in the winter (December/February). This seasonal increase typically results in at least one AMP trigger for sulphate, at MW13-06, each year.

As per the AMP, an evaluation of upstream and downstream water quality was conducted. The closest water quality monitoring location upstream is at the Burnick Portal (MH-22). MH-15, on the West Fork of Tributary E, is the downstream receiving water monitoring station. Sulphate concentrations upstream at station MH-22 (43.7 mg/L in October 2022) were consistent with the historical average (39.3 mg/L). There is a seasonal trend in the sulphate levels measured at MH-22 with gradual increasing concentrations observed yearly starting in the early summer until winter (December/February). Downstream, at station MH-15, the October 2022 sulphate concentrations was 4.49 m/L, which was comparable to the historical average of 3.99 mg/L. A slight seasonal trend was also evident at MH-15. Sulphate concentrations at MH-15 tended to follow an opposite pattern from MH-22, with peak concentrations detected in late fall/early winter, with gradually decreasing concentrations throughout the year. This seasonal trend appears to be the result of dilution where waters with lower sulphate concentrations infiltrate MH-15 during freshet and summer. Minimum sulphate concentrations at MH-15 typically are observed in the late summer or early fall.

Long term trends show that the sulphate concentrations at surface water stations (i.e., MH-15 and MH-22) in the Burnick Portal catchment have been consistent since monitoring began in 2013. An increasing trend in sulphate levels was evident for the samples collected at MW13-06, between 2016 and 2020, however concentrations in 2021, following the AMP trigger, appear to stabilise around 300 mg/L (Figure 3-5). Sulphate concentrations from MW13-06 are naturally much higher than those present from the Burnick Portal (MH-22). As such, sulphate does not have a numerical specific threshold under the AMP, as it is expected that the contribution of sulphate from the mine source is minimal compared to the naturally elevated levels at this station. Both the source and receiving water sampling locations show stable levels of sulphate that were three to four times lower than those present in samples collected from MW13-06 (Figure 3-5). As such, the increasing sulphate levels observed in MW13-06 have not affected the surface receiving environment and do not seem to be related to the Burnick Portal discharge (MH-22). This topic is further discussed at the end of Section 3.5.2.3. Changes in the sulphate concentrations measured at MW13-06 will continue to be evaluated in 2023.

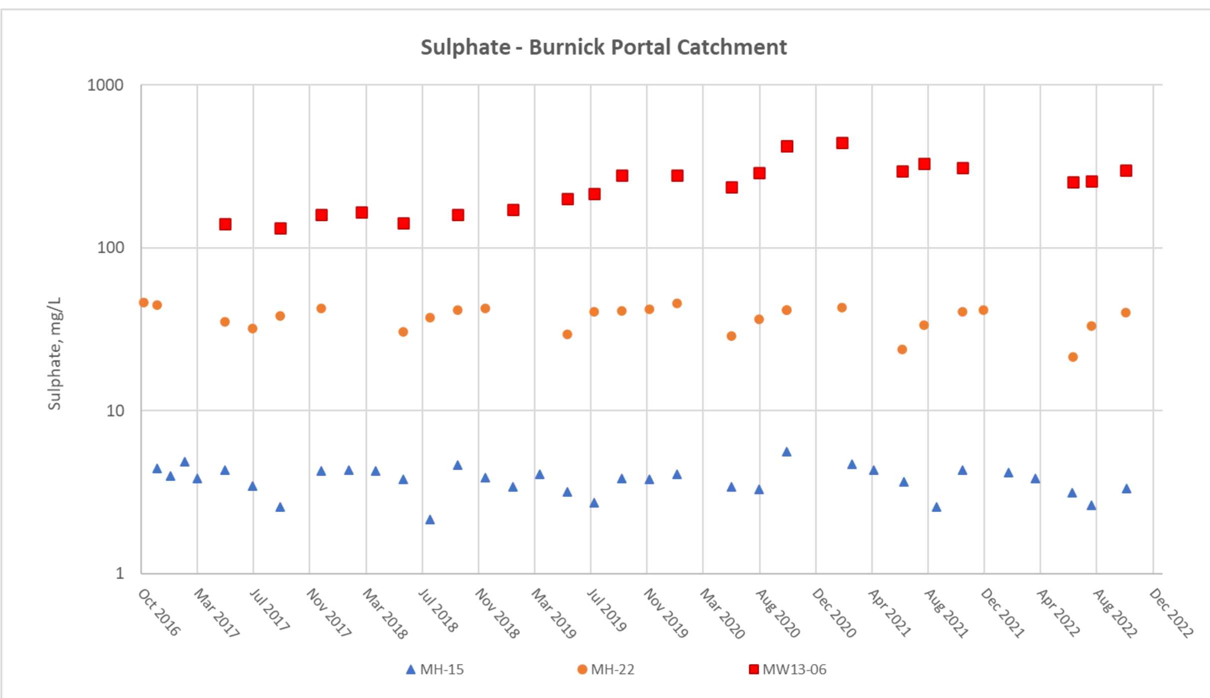


**Figure 3-5: Sulphate Concentrations at Stations MH-15, MH-22, and MW13-06**

#### 3.5.2.3 Water Quality Trends

Plots showing historical and current surface and groundwater constituents are available in Appendix E.

Long term pH trends have been stable for all stations in the Burnick Portal catchment since 1997. In 2022, the pH for the mine source station (MH-22) ranged from 7.18 to 8.19 with an average of 7.64, which is comparable to historical average of 7.72. At the receiving environment monitoring station MH-15, pH ranged between 7.69 and 8.11, with an annual average of 7.97, comparable with the historical average of 7.89. Samples collected from the groundwater station downgradient of the portal (MW13-06) in 2022 ranged between 6.75 and 8.53, with an annual average of 7.44, which is higher than the historical average of 6.94.

Alkalinity in the Burnick 1200 Portal discharge (MH-22) has consistently been around 100 mg/L. Total alkalinity concentrations were within historical ranges in 2022 with an average alkalinity of 103 mg/L. At the receiving environmental station (MH-15), total alkalinity levels have remained stable with a 2022 annual average of 193 mg/L compared to the historical average of 199 mg/L. The monitoring well in the Burnick Portal discharge flow path (MW13-06) had a yearly average total alkalinity of 178 mg/L comparable to the historical average of 192 mg/L.

In 2022, MH-22 sulphate concentrations were stable and displayed the historical seasonal trend typically observed at this station. At MH-22, sulphate concentrations are lowest in the early summer and increase throughout the year, until they peak during the winter. MH-15 does not show any apparent seasonal trend, however sulphate concentrations at this station are typically lowest in the early fall (August and September) and highest in the late fall/ winter (October to February). The annual averages for MH-22 and MH-15 (34.6 and 3.62 mg/L, respectively) were comparable to the historical averages (39.3 and 3.99 mg/L, respectively). Sulphate levels have been increasing steadily at MW13-06 (Figure 3-5) with concentrations increasing from 142 mg/L to 444 mg/L between June 2018 and October 2020, triggering the AMP on multiple occasions. Sulphate concentrations in 2021 and 2022 have since dropped and stabilised (Figure 3-5). In 2022, sulphate concentrations ranged from 253 mg/L to 299 mg/L and triggered the AMP ST1 in October 2022 as discussed in Section 3.5.2.2. The 2022 average sulphate concentration was 270 mg/L, which is slightly higher than the historical average of 219 mg/L. Changes in the sulphate concentrations measured at MW13-06 will continue to be evaluated in 2023.

Hardness levels have been stable at the surface water monitoring stations in the Burnick Portal catchment. Total hardness at MH-22 varied between 107 and 153 mg/L in 2022, with an average of 136 mg/L, comparable to the historical average of 145mg/L. Similarly, total hardness at MH-15 was stable with a yearly average of 195 mg/L, which was almost identical to the historical average of 198 mg/L. The 2022 average dissolved hardness at MW13-06 was 423 mg/L, which is higher compared to the historical average of 384 mg/L.

Total cadmium concentrations at the 1200 Burnick Portal (MH-22) ranged from 0.0020 to 0.0045 mg/L in 2022. Total cadmium concentrations at MH-22 have been stable since 2013, with a 2022 yearly average of 0.0034 mg/L compared to the historical average of 0.0038 mg/L. Total cadmium concentration at MH-15 have remained constant with yearly averages between 0.000001 to 0.00003 mg/L since 2013. The 2022 average cadmium concentration at MH-15 was 0.000011 mg/L. Cadmium concentrations at MW13-06 averaged at 0.000074 mg/L in 2022, which is lower than the historical average of 0.00015 mg/L. The lower 2022 average is likely due to the fact that no sample could be collected at this well during the February 2022 monitoring event, which is when the seasonal maximum concentrations for cadmium are usually observed.

Copper concentrations in the Burnick Portal catchment are typically below the detection limit. At both the Burnick Portal, MH-22, and receiving environment, MH-15, total copper concentrations were below the detection limit during each sample collected in 2022. At the monitoring well, MW13-06, dissolved copper concentrations were below the detection limit in two of the three samples collected. During the August 2022 monitoring event, dissolved copper at MW13-06 was 0.00108 mg/L.

At MH-22, total lead concentrations in 2021 averaged 0.000549 mg/L and were lower than the historical average of 0.00168 mg/L. The historical average is heavily influenced by the historically higher lead concentrations at this station between 2013 and 2016. In 2017, lead concentrations decreased by one order of magnitude to 0.000467 mg/L and then to 0.000348 mg/L in 2018. Lead concentrations have been stable in recent years with no evidence of any further increasing or decreasing trends. At MH-15, total lead concentrations were below the detection limit (0.000050 mg/L) in each sample collected in 2022. Lead concentrations have consistently been below the detection limit in the historical dataset at this station. At MW13-06, 2022 dissolved lead concentration had an average of 0.000179 mg/L, compared to the historical average of 0.000155 mg/L.

The 2022 total zinc annual average for MH-22 was 0.507 mg/L, which was lower than the historical average of 0.64 mg/L. Similar with lead, the historical average is heavily influenced by the historically higher zinc concentrations that were observed at this station in 2015 and 2016. Following 2016, zinc concentrations had stabilised between 0.2 mg/L and 1 mg/L. Since 2019, the average total zinc concentration at MH-22 has decreased each year (e.g., 0.618 mg/L in 2019 to 0.507 mg/L in 2022), suggesting evidence of a slightly decreasing trend in zinc concentrations. At MH-15, all 2022 results for total zinc were below the detection limit, which is consistent with historical data. MW13-06 had a 2022 annual average of 0.12 mg/L of dissolved zinc, which was lower than the historical average of 0.16 mg/L. Zinc concentrations at MW13-06 appeared stable in 2022.

The increasing trend observed for sulphate at MW13-06 is associated with an increase of calcium, magnesium, and cadmium. These parameters suggest that there are increased minerals dissolutions in the aquifer at MW13-06. Since the groundwater sulphate is greater than at the adit, as well as that the lead and zinc concentrations at this well were stable, it is unlikely that the increasing sulphate or elevated cadmium concentrations are related to the adit discharge. Data from this station will continue to be closely monitored in 2023.

### 3.5.3 1380 PORTAL DISCHARGE

The objective of the AMP for the 1380 Portal drainage is to detect any deterioration in the portal drainage water quality within the waste rock dump and monitor for the potential loss of attenuation capacity of the soils upstream of Camp Creek (Appendix B). AMP monitoring locations include the seepage monitoring at station SDH-S2 within the Main Zone waste rock dump, groundwater monitoring at MW13-01, MW13-08, and MW13-13 located downgradient of SDH-S2 and upstream of Camp Creek, and the receiving surface water monitoring at MH-11 in upper False Canyon Creek. The monitoring wells along the flow path downstream of the 1380 Portal were installed to monitor the groundwater water quality and the potential loss of attenuation capacity in the mine source flow path.

The three groundwater monitoring stations downstream of the 1380 Portal are sampled quarterly. Station MW13-01 is located downgradient of 1380 Portal in the 1380 gully. Stations MW13-08 and MW13-13 are also projected to be along the groundwater flow path of 1380 Portal drainage. The monitoring stations and conceptual flow path are shown in Figure 3-1 and Figure 3-2.

#### 3.5.3.1 WUL

None of the six surface water samples taken at the receiving water collection point in Upper False Creek Canyon (MH-11) during 2022 exceeded the receiving water standards prescribed by the water licence (Table 3-2). Table 3-14 presents a summary of select water quality parameters at MH-11 compared to the WUL. Detailed results are presented in Appendix D.

**Table 3-14: MH-11 Select Water Quality Parameters Compared to the WUL, 2022**

| Station | Date | Hardness | TSS | Dissolved Cadmium | Total Copper | Total Iron | Total Lead | Total Selenium | Total Zinc |
|---|---|---|---|---|---|---|---|---|---|
| | | WUL Standard [1] | | 0.00031 – 0.00041 | 0.0067 – 0.0098 | 1 | 0.018 – 0.026 | 0.002 | 0.38 – 0.74 |
| MH-11 | 09-Feb-22 | 242 | <1.0 | 0.0000468 | <0.00050 | 0.088 | 0.000154 | 0.000733 | 0.0061 |
| MH-11 | 06-Apr-22 | 246 | <1.0 | 0.0000404 | <0.00050 | 0.023 | <0.000050 | 0.000754 | 0.0043 |
| MH-11 | 30-Jun-22 | 167 | 2.0 | 0.0000824 | <0.00050 | 0.071 | 0.000908 | 0.000672 | 0.0060 |
| MH-11 | 10-Aug-22 | 187 | <1.0 | 0.0000576 | <0.00050 | 0.054 | 0.000265 | 0.000532 | 0.0058 |
| MH-11 | 26-Oct-22 | 210 | <1.0 | 0.0000455 | <0.00050 | 0.062 | 0.000234 | 0.000636 | 0.0046 |
| MH-11 | 04-Dec-22 | 201 | <1.0 | 0.0000392 | 0.00054 | 0.048 | 0.000144 | 0.000694 | 0.0050 |

All units are in mg/L
[1] WUL ranges are based on 2021 hardness (167 mg/L to 246 mg/L)

Water level monitoring of the mine source groundwater monitoring wells is required under water licence QZ16-051. Water levels in all three mine source monitoring wells remained relatively constant throughout 2022 and previous years (Table 3-15). In 2022, groundwater levels varied by of 2.3 m (MW13-01), 3.7 m (MW13-08) and 6.4 m (MW13-13), respectively. The highest water levels were observed in spring and the lowest in late winter. There are no water quality standards for these stations outlined in the current water licence; however, there are AMP thresholds for these stations (Appendix B).

**Table 3-15: 1380 Portal Discharge Manual Groundwater Levels (masl [2])**

| Well ID | 2022 | | | | 2022 Avg | 2021 Avg | 2020 Avg | Historical Average [1] |
|---|---|---|---|---|---|---|---|---|
| | Feb | Jun | Aug | Oct | | | | |
| **MW13-01** | 1180.5 | 1182.7 | 1180.9 | 1180.7 | 1181.2 | 1181.4 | 1181.4 | 1180.9 |
| **MW13-08** | 1130.8 | 1134.6 | 1131.7 | 1130.2 | 1131.8 | 1132.5 | 1133.1 | 1132.3 |
| **MW13-13** | – [3] | 1252.3 | 1245.9 | 1246.0 | 1248.1 | 1247.4 | 1247.5 | 1247.3 |

*[1] Average using data from 2013 to 2021*
*[2] masl denotes metres above sea level*
*[3] Unable to collect sample due to weather conditions.*

#### 3.5.3.2 AMP

During the 2022 monitoring events, the AMP was triggered for sulphate, dissolved cadmium, dissolved lead and dissolved zinc at monitoring wells MW13-01 and MW13-08 (Table 3-10:). These AMP triggers are discussed below.

**MW13-01 and MW13-08– Sulphate**

In 2022, sulphate concentrations triggered the AMP ST1, due to three consecutively increasing concentrations, at MW13-01 and MW13-08. MW13-08 triggered the ST1 in February and MW13-01 triggered the ST1 in February and June.

At MW13-08, sulphate concentrations have a seasonal variation, increasing at the end of the summer until late winter, then decreasing in spring (Figure 3-6). These seasonal trends typically cause the AMP ST1 to trigger once or twice a year at MW13-08. The February 2021 sulphate concentration (19.7 mg/L) at MW13-08 was consistent with the concentrations observed at this station between 2013 and 2021. Sulphate concentrations at MW13-08 continued to follow the seasonal trend for the remainder of 2022. All sulphate concentrations from MW13-08 were below the AMP ST2 of 55 mg/L.

MW13-01 also triggered the AMP ST1 by having at least three consecutive sampling events with increasing concentrations in February and June 2022. MW13-01 also tends to experience a slight seasonal variability for sulphate, increasing throughout the winter until the summer, then decreasing throughout the fall. The highest sulphate concentrations at MW13-01 are typically observed in June, as was the case in 2022. In 2022, sulphate concentrations at MW13-01 were consistent with the typical seasonality observed at this station. Following the peak in June, sulphate concentrations decreased for the rest of 2022. All monitoring well sulphate concentrations are presented in Figure 3-6.

At the mine source station, SDH-S2, sulphate concentrations were below the AMP specific thresholds during the June 2022 sampling event. SDH-S2 is a seep located within the waste rock dump and between 2013 to 2022, only eight sampling events have successfully collected water at this station, all of which have been in the summer. This station previously triggered the AMP ST2 in June 2021, however sulphate concentrations downstream at the monitoring wells and receiving environments were unaffected. It is suspected that the June 2021 sulphate concentration at SDH-S2 is linked to the flushing of soluble salts that had accumulated at this station over the winter months. Sulphate concentrations for the surface water stations and for SDH-S2 are presented in Figure 3-7 and Figure 3-8, respectively.

In the downstream surface water stations, MH-04, MH-11, and MH-13, the sulphate AMP ST1 was not triggered for any sites during 2022. Sulphate concentrations within the 1380 Portal drainage show neither an overall increasing or decreasing trend and the AMP ST1 events in 2022 appear to be related to natural variation in sulphate concentrations rather than the beginning of an increasing trend within the catchment.

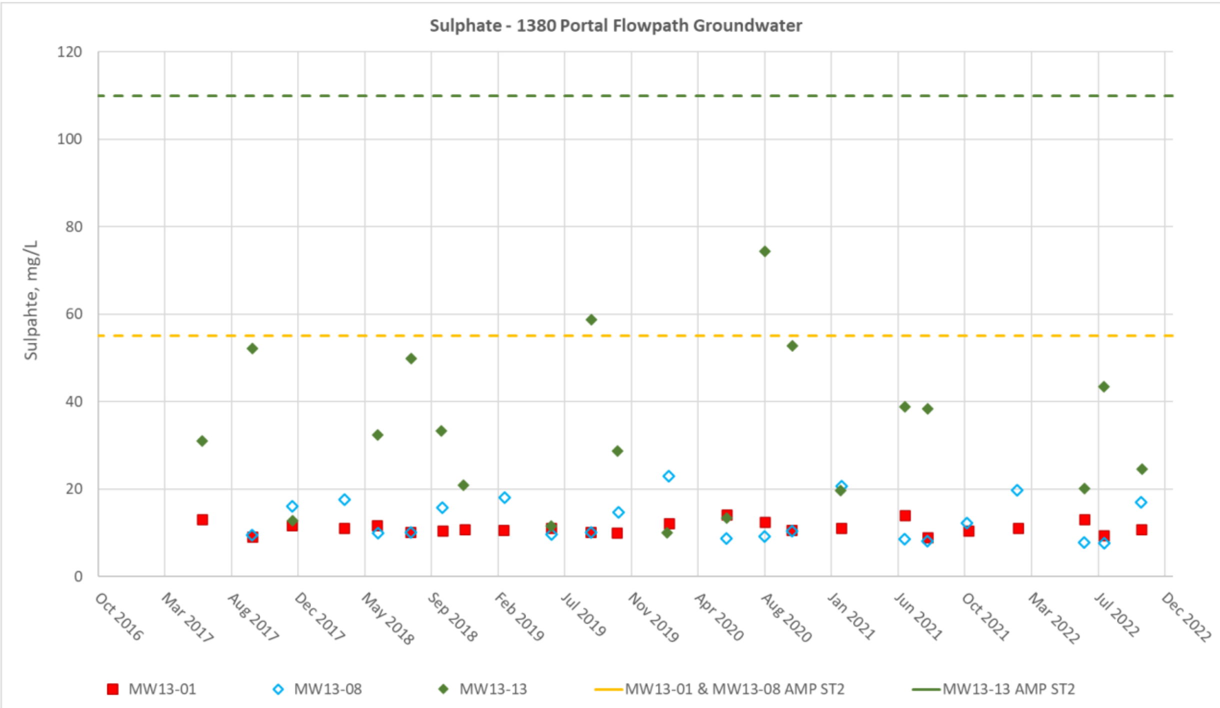


**Figure 3-6: Sulphate Concentrations at MW13-01, MW13-08 and MW13-13**

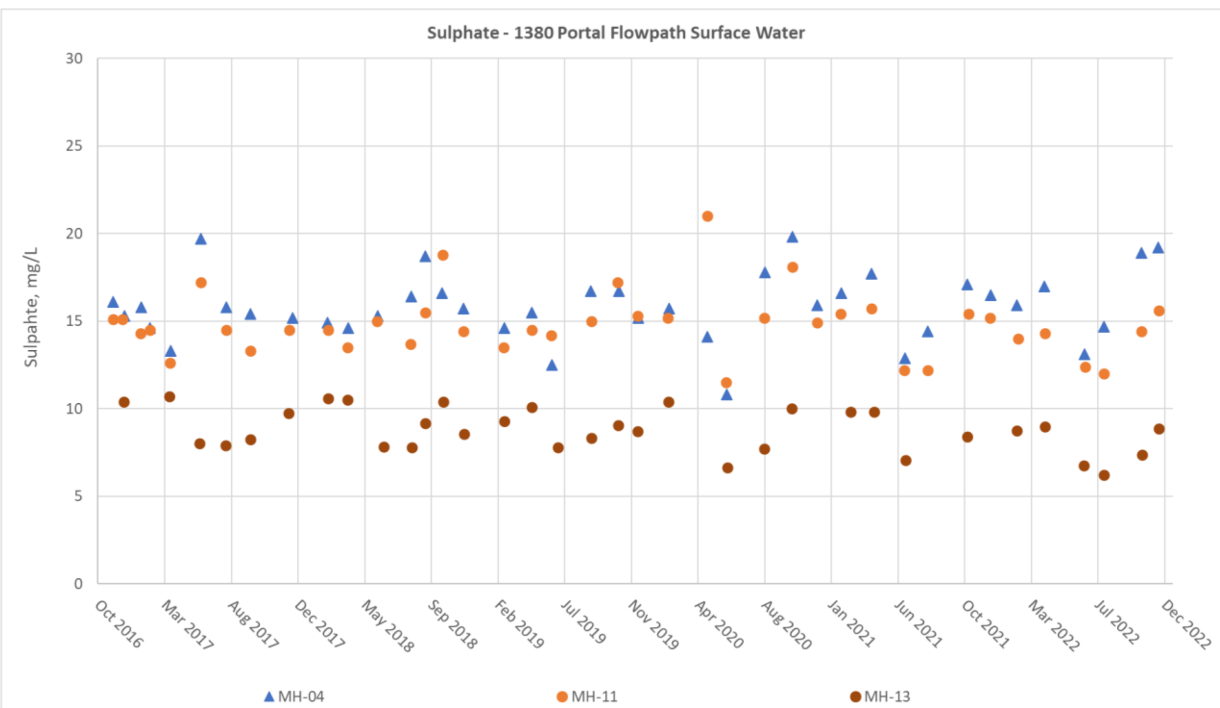


**Figure 3-7: Sulphate Concentrations at MH-04, MH-11, and MH-13**

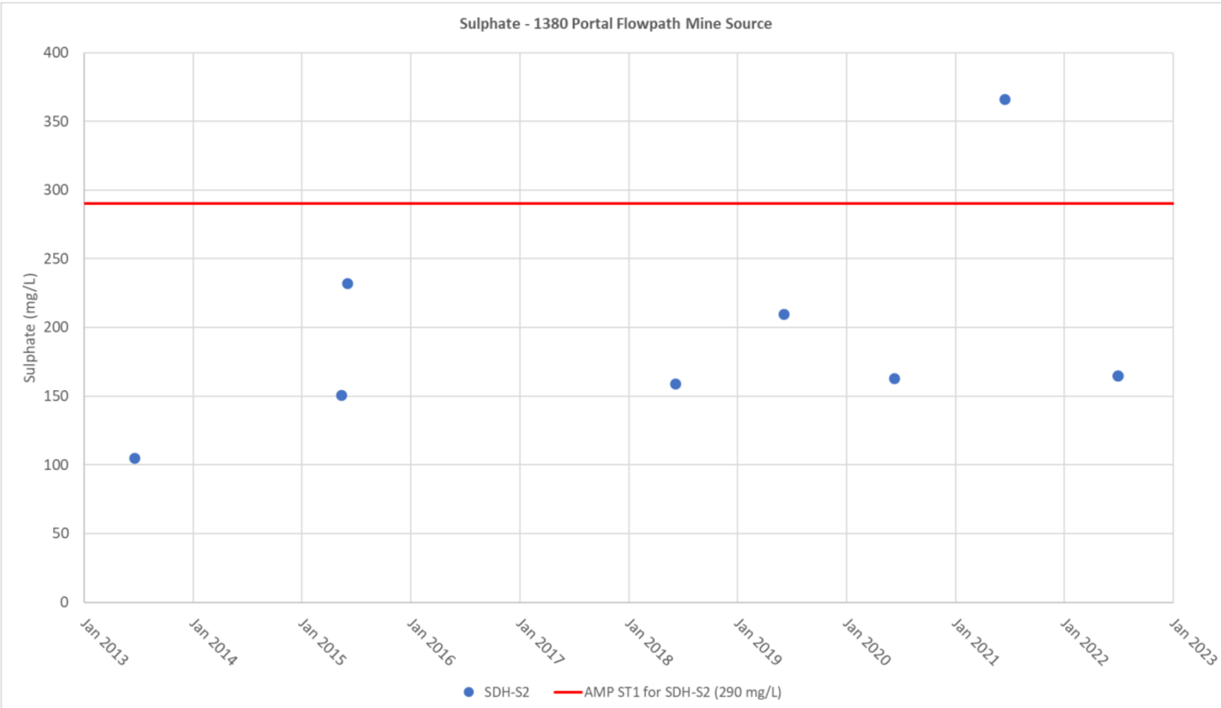


**Figure 3-8: Sulphate Concentrations at SDH-S2**

### MW13-08 Dissolved Cadmium

Dissolved cadmium exceeded the AMP ST1 trigger at MW13-02 in the first quarter of 2022 with three consecutively increasing concentrations from 0.0000583 mg/L in October 2021 to 0.0000655 mg/L in June 2022 (Figure 3-9). The next following monitoring event in August, dissolved cadmium concentrations at MW13-01 dropped to 0.0000560 mg/L. No obvious seasonal trends are apparent at MW13-08, however this well has triggered the AMP on multiple occasions in the past. Overall, the 2022 dissolved cadmium concentrations at MW13-08 were within the historical range observed in at this station and the increases were comparable to increases observed in previous years. Moreover, the dissolved cadmium levels were all well below the AMP thresholds (0.005 mg/L for MW13-08).

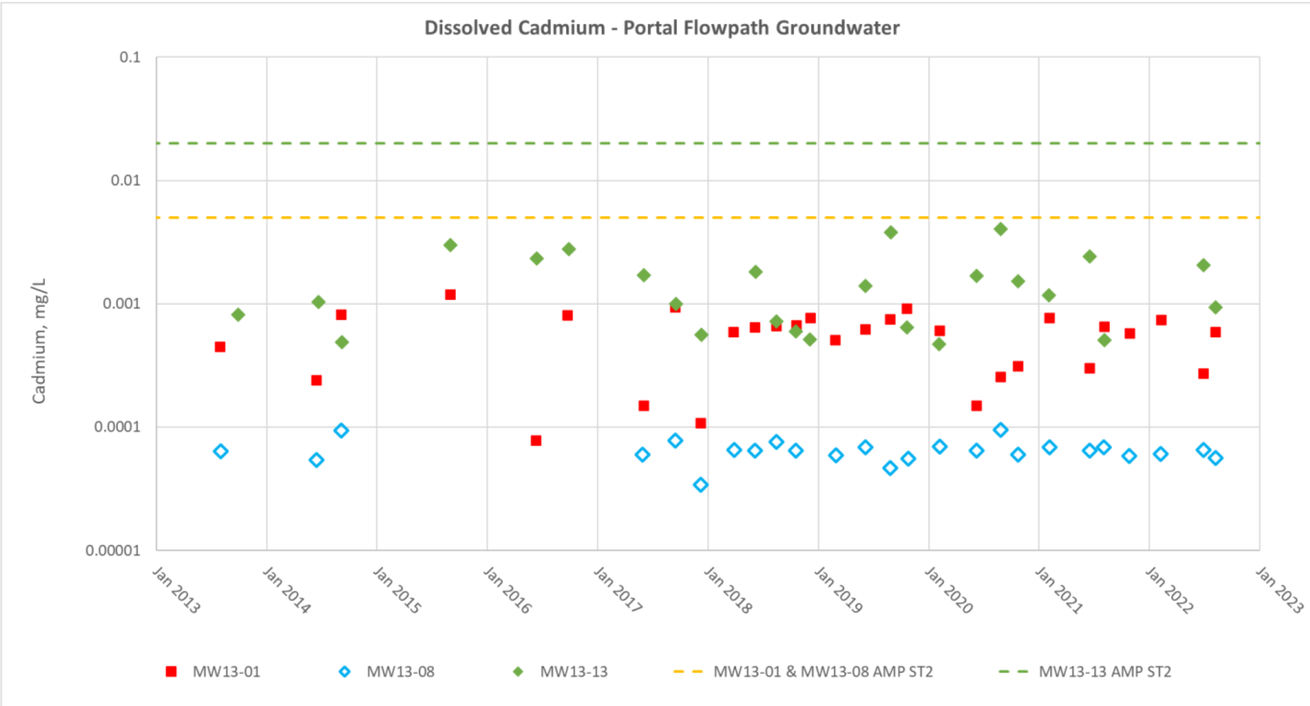


**Figure 3-9: Dissolved Cadmium at MW13-01, MW13-08 and MW13-13**

Dissolved cadmium concentrations for the 1380 Portal drainage surface water stations and at SDH-S2 are presented in Figure 3-10 and Figure 3-11. Cadmium concentrations at the surface water monitoring locations downstream remained stable. Concentrations at the receiving environment station, MH-11, were within their historical ranges and can be observed to exhibit a seasonal trend in 2020, 2021 and 2022, with annual maximum concentrations observed during the summer and minimum concentrations observed during the winter. All concentrations at MH-11 were well below the hardness-based WUL guideline. At SDH-S2, the June 2022 dissolved cadmium concentration was 0.0990 mg/L, within the historic range observed at this site.

Given the stable cadmium concentrations observed over the period of record, it appears that natural attenuation of cadmium continues to operate along the 1380 Portal flow path and the activation of the AMP is indicative of natural variation of cadmium at these wells and the sensitivity of the AMP trigger.

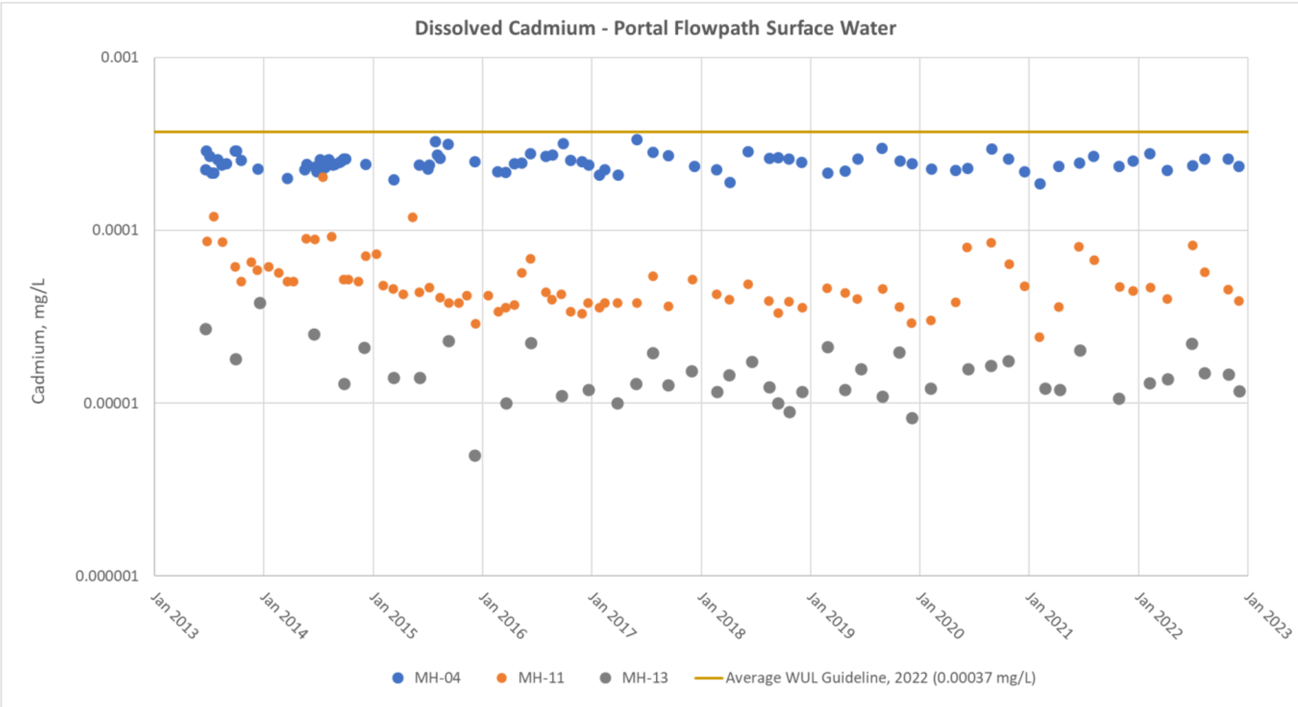


**Figure 3-10: Dissolved Cadmium at MH-04, MH-11, and MH-13**

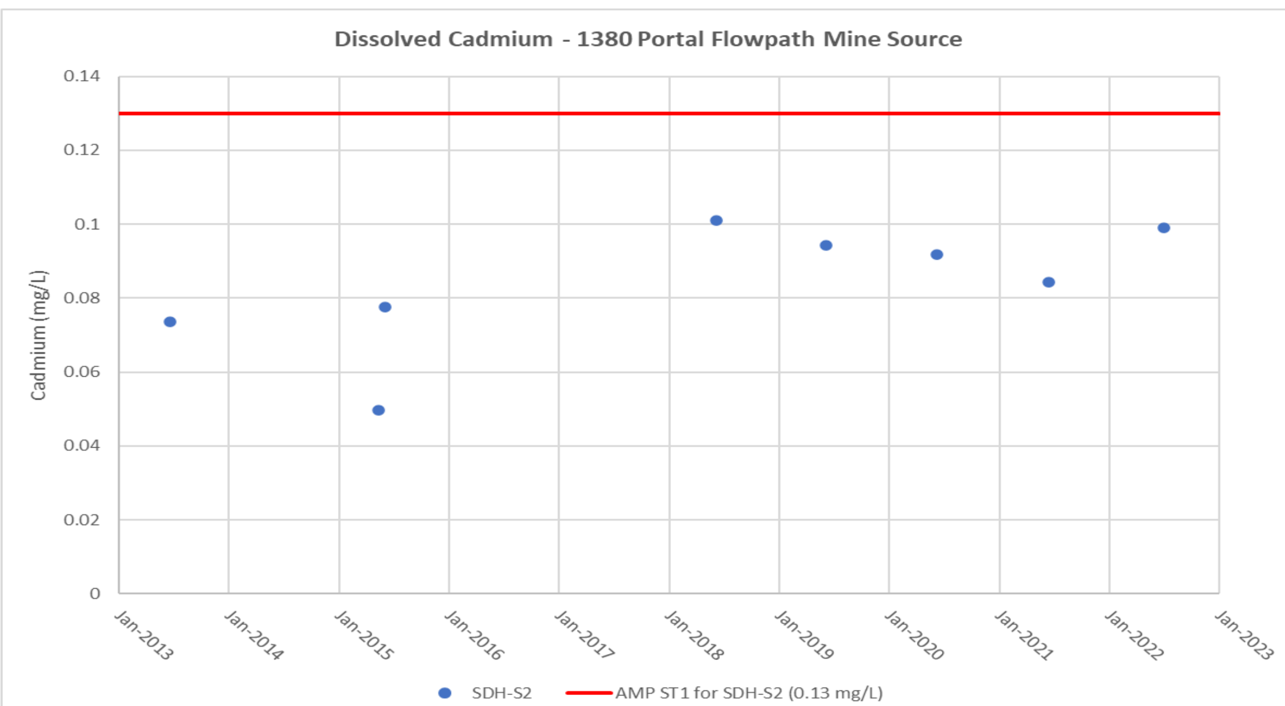


**Figure 3-11: Dissolved Cadmium at SDH-S2**

**MW13-08 Dissolved Lead**

MW13-08 triggered the AMP ST1 with three consecutively increasing lead concentrations, from February to June 2022. Dissolved lead increased from below the detection limit (0.000050 mg/L) in August 2021 to 0.000141 mg/L in February 2022, then increasing to 0.000502 mg/L in June 2022 (Figure 3-12:). The June 2022 lead concentration was the highest concentration observed at this well since 2017, however it was two orders of magnitude below the AMP ST2 (0.035 mg/L for MW13-08). During the following sampling events in August and October 2022, dissolved lead concentrations returned to below the detection limit. Dissolved lead concentrations were below the detection limit in 12 of the 22 samples collected at this station, since 2013. Because lead concentrations at this well experience a wide range, the AMP ST1 can be easily triggered. Lead concentrations at MW13-08 do not exhibit any seasonality as there is no consistency to which months values are above or below the detection limit.

Dissolved lead concentrations for the 1380 Portal drainage surface area stations and at mine source station SDH-S2 are presented in Figure 3-11. Lead concentrations at the surface water and mine source stations in 2022 remained within the range of their historical datasets. No signs of an increasing trend were apparent at any of the stations. Concentrations at the receiving environment station, MH-11, were well below the hardness-based WUL standard in all samples collected in 2022. At SDH-S2, the June 2022 lead concentration was 0.0416 mg/L, which was one order of magnitude below the AMP ST1 threshold of 0.51 mg/L. Lead concentrations for the monitoring wells, receiving environment stations and mine source station are presented in Figure 3-12:, Figure 3-13 and Figure 3-14, respectively.

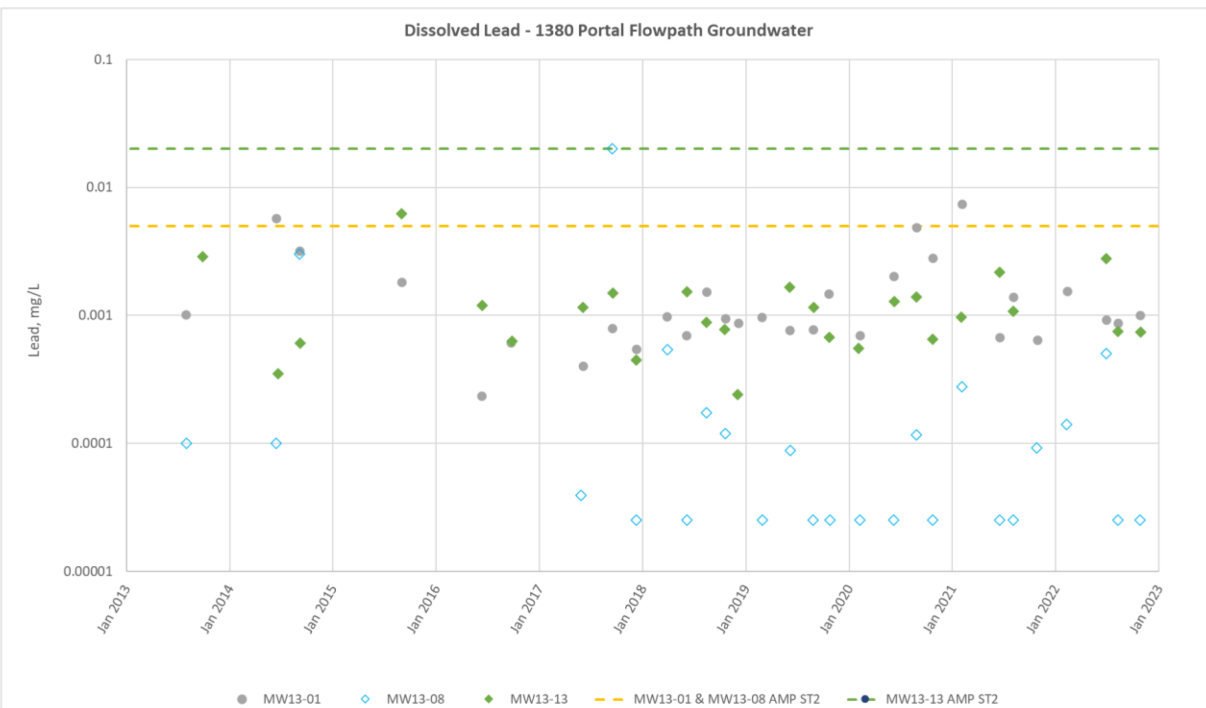


**Figure 3-12: Dissolved Lead at MW13-01, MW13-08 and MW13-13**

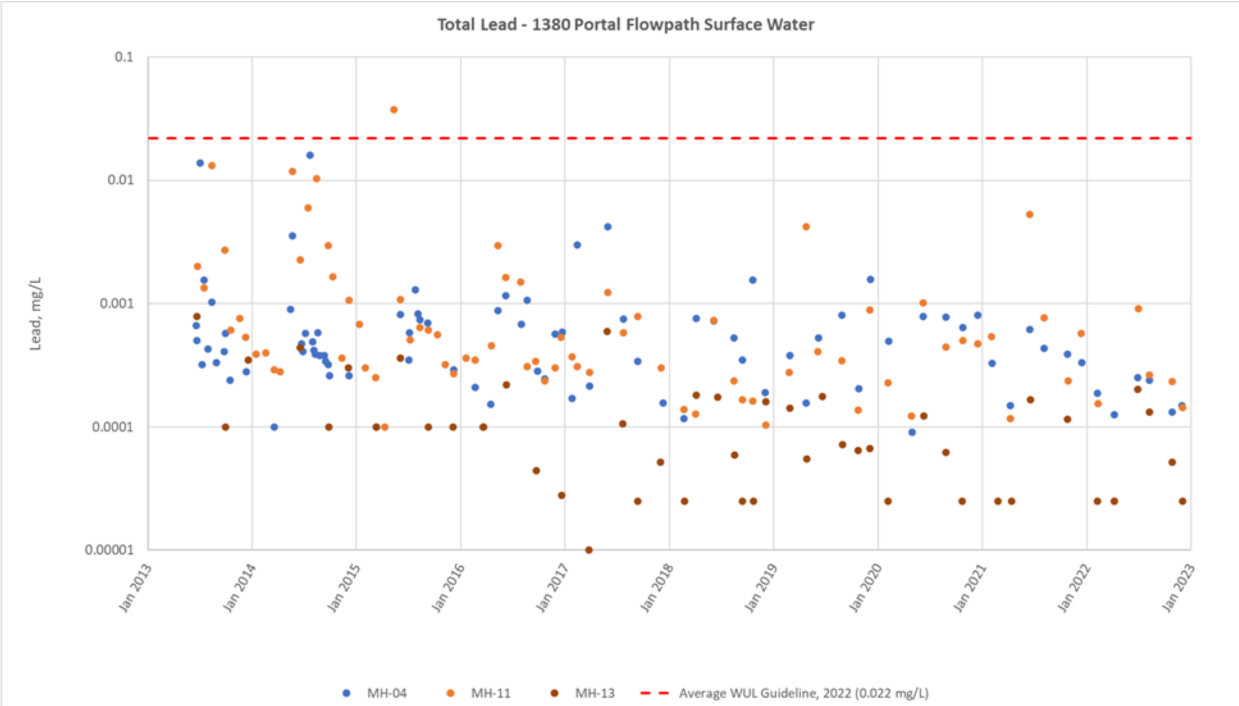


**Figure 3-13: Total Lead at MH-04, MH-11 and MH-13**

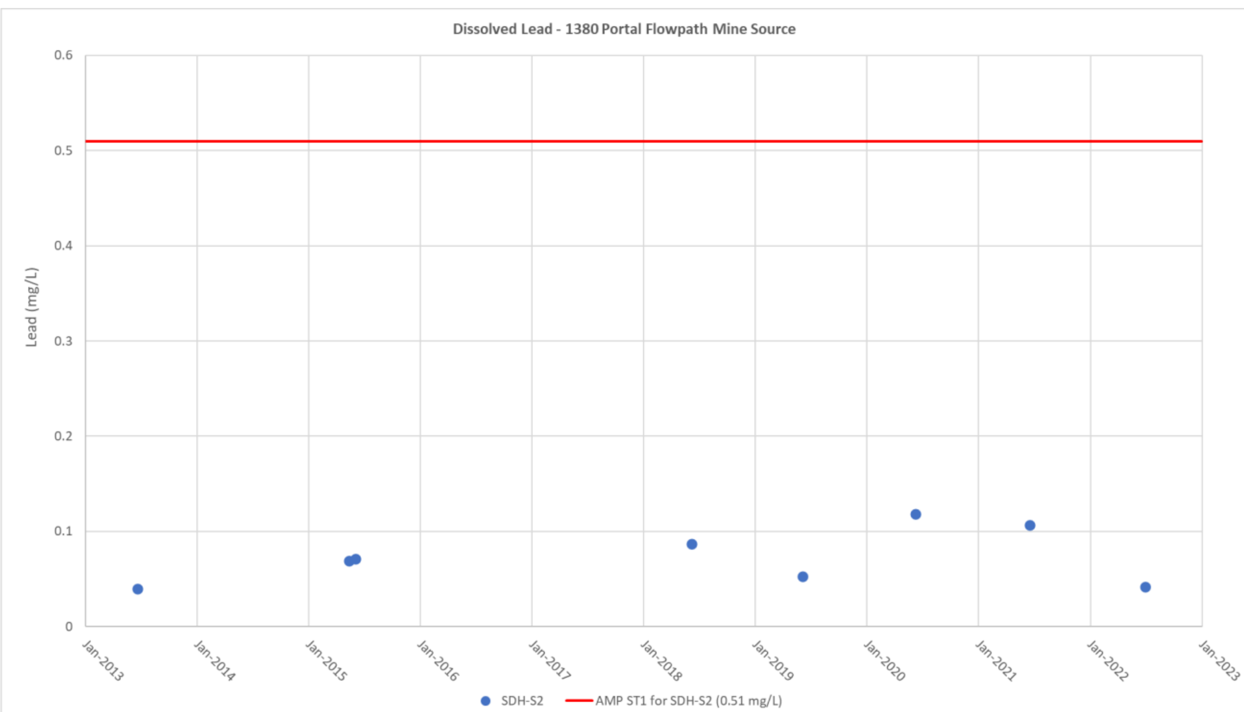


**Figure 3-14: Dissolved Lead at SDH-S2**

### MW13-08 Dissolved Zinc

MW13-08 and triggered the AMP ST1 in 2021 with three consecutively increasing dissolved zinc concentrations, in February and June 2022 (Figure 3-15). Dissolved zinc increased from below the detection limit (0.0010 mg/L) in August 2021 to 0.0034 mg/L in February 2022, then increasing to 0.0068 mg/L in June 2022. The June 2022 dissolved zinc concentration was also the highest observed at this well since 2014, however it was still two orders of magnitude below the AMP ST2 threshold of 0.5 mg/L. During the following sampling events in August and October 2022, dissolved lead concentrations returned to below the detection limit. Dissolved zinc concentrations at MW13-08 tend to fluctuate, similarly to dissolved lead, and therefore can easily trigger the AMP ST1. There are no apparent seasonal trends at this station, however peak concentrations have typically been observed in the summer or fall. Despite the June 2022 zinc concentration, the AMP ST1 triggers at MW13-08 are thought to be part of natural concentration variations.

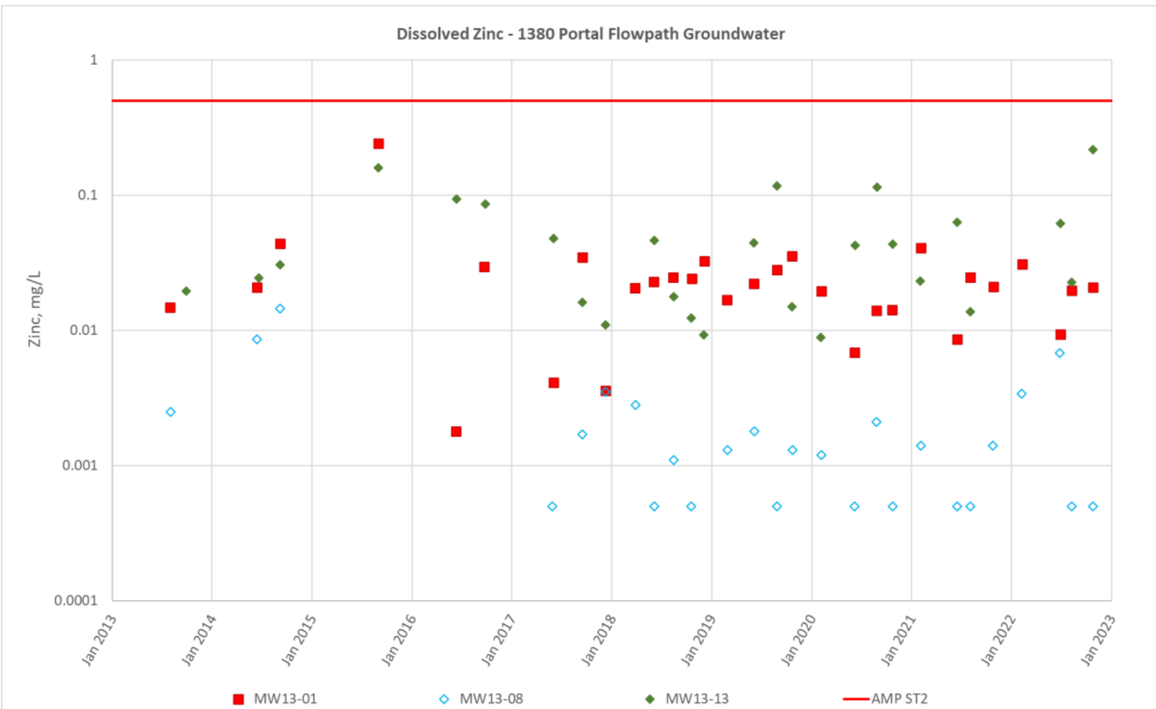


**Figure 3-15: Dissolved Zinc Concentrations at MW13-01, MW13-08 and MW13-13**

Total zinc concentrations for the receiving surface water stations at the 1380 Portal drainage are presented in Figure 3-16. The mine source (SDH-S2) seep is sampled infrequently as it is often inaccessible or dry. Figure 3-17 presents the dissolved zinc data for SDH-S2, however the scarcity of overall sampling events makes it difficult to determine any trends. The sample collected at SDH-S2, in June 2022, returned a zinc concentration within the historical range observed. At the receiving environment surface water monitoring station on Camp Creek (MH-11), downgradient of well MW13-08, total and dissolved zinc levels remained consistent with historical data with no indication of an increasing or decreasing trend. All samples from 2022 were below the calculated WUL guideline for this site. Total zinc concentrations at MH-13 have been consistently below the detection limit since April 2018. No trends were observed at station MH-04; however, all results from 2022 returned zinc concentrations within their historical bounds. Despite the AMP trigger at MW13-01 in 2021, the dissolved zinc concentrations are suspected to be related to natural variation in zinc concentrations and do not appear to be part of an overall increasing trend. Zinc concentrations in the receiving surface water seem to reflect this and show no evidence of an increasing trend.

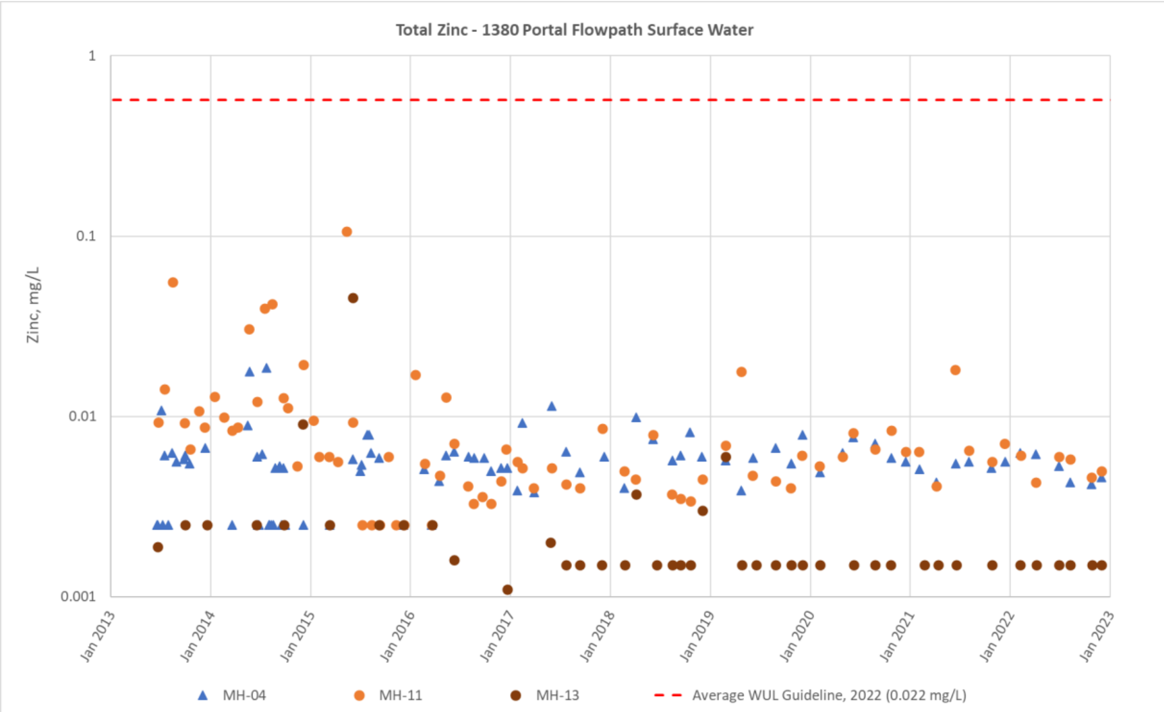


**Figure 3-16: Total Zinc Concentrations at MH-04, MH-11 and MH-13**

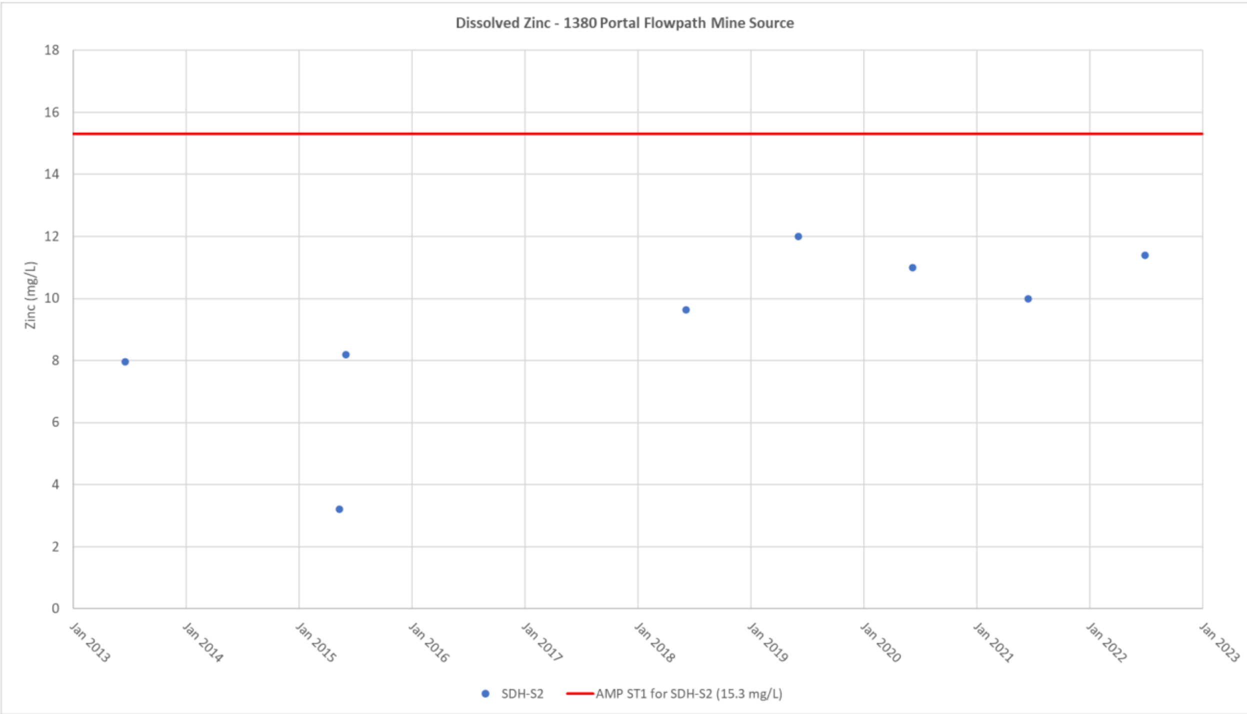


**Figure 3-17: Dissolved Zinc at SDH-S2**

#### 3.5.3.3 Water Quality Trends

Long term pH trends have been stable for all three surface water stations and three groundwater stations downstream of the 1380 Portal. The receiving surface water monitoring stations (MH-04, MH-11, and MH-13) had circumneutral pH with a range between 7.36 and 8.32. The WUL receiving environment monitoring station (MH-11) had an annual average pH of 8.11 in 2022, which was slightly higher than the historical average of 7.89. Plots showing historical and current surface and groundwater concentrations are available in Appendix E. The single sample collected at SDH-S2 in June 2021, had a pH of 7.45, which was similar to the historical average pH of 7.32.

The 1380 Portal discharge (SDH-S2) had generally a low alkalinity, averaging at 54.9 mg/L since monitoring began at this location. The single sample collected in 2022 at the SDH-S2 had an alkalinity of 52.2 mg/L. In 2022, all the groundwater stations downstream of the 1380 Portal had alkalinity concentrations comparable to historical averages. At the Lower Camp Creek surface water quality monitoring locations, the 2022 average total alkalinity concentrations were 149, 199, and 195 mg/L at stations MH-04, MH-11, and MH-15, respectively. Groundwater alkalinity also remained stable in 2022 as compared to previous years. MW13-13 had an average total alkalinity of 90.2 mg/L in 2022, compared to the historical average of 89.4. mg/L. MW13-08 had a 2022 average of 262 mg/L alkalinity as compared to the historical average of 264 mg/L. Similarly, MW13-01 had a 2022 annual average alkalinity of 147 mg/L, which is comparable with the historical average of 147 mg/L.

Sulphate concentrations triggered the AMP ST1 in 2022 at MW13-01 and MW13-08 but the gradual increases that activated the AMP trigger are considered to be due to a seasonal trend rather than a long-term increase; sulphate levels are discussed in detail in Section 0. Sulphate concentrations in the 1380 Portal discharge (SDH-S2) have been 170 mg/L on average since monitoring began in 2013 and were consistent with historical concentrations at MH-25 averaging 221 mg/L, with exception of the June 2021 event, where sulphate concentrations spiked to 366 mg/L, triggering the AMP ST2. The WUL mandated receiving water monitoring station below the 1380 Portal (MH-11) had a stable sulphate level with the 2022 annual average of 13.8 mg/L comparable to the historical average (15.1 mg/L).

Historical total hardness levels were generally between 162.5 and 202.2 mg/L at all surface water stations in this catchment. In 2022, hardness remained stable at all surface water monitoring stations with annual averages of 161 mg/L, 209 mg/L and 202 mg/L at MH-04, MH-11 and MH-13, respectively. Dissolved hardness has also been stable over the years of monitoring at the three wells, with annual averages being comparable to historical averages. MW13-13 had an average dissolved hardness of 115 mg/L in 2022 compared to the historical average of 127 mg/L. Similarly, MW13-08 had a 2022 average dissolved hardness of 279 mg/L as compared to the historical average of 284 mg/L. Lastly, the MW13-01 2022 annual average was 159 mg/L, compared to the historical average of 161 mg/L

Dissolved cadmium concentrations triggered the AMP ST1 in 2021 at MW13-08 by having increasing concentrations in three consecutive sampling events. A consecutive increase in cadmium was not detected at any other location in the 1380 Portal drainage area, as cadmium concentrations at all other surface water and groundwater stations remained within their historical ranges. At MW13-01 the 2022 annual average was 0.00054 mg/L, compared to the historical average of 0.00056 mg/L. The 2022 annual average at MW13-08 was 0.000060 mg/L, compared to the historical average of 0.000065 mg/L. Lastly at MW13-13, the 2022 average dissolved cadmium concentration was 0.0013 mg/L, similar to the historical average of 0.0015 mg/L. At the surface water stations MH-04, MH-11 and MH-13, the 2022 concentrations were also consistent with historical ranges observed in the past, as seen in Figure 3-10.

Copper concentrations in the 1380 Portal catchment were typically below the detection limit at the surface water stations, including the 1380 Portal discharge (SDH-S2). At the receiving environment and downstream surface water stations, total copper concentrations ranged from below the detection limit (0.00050 mg/L) to 0.00290 mg/L in 2022. At the groundwater monitoring wells, the 2022 copper concentrations ranged from below the detection limit

(0.00020 mg/L) to 0.00085 mg/L, which is within the range of the historical dataset. Overall, copper concentrations within the 1380 portal catchment are quite minimal.

Dissolved lead concentrations triggered the AMP ST1 at MW13-08. In 2022 lead concentrations at the three groundwater stations were consistent with their historical ranges, as discussed in Section 0. The 2022 annual average at MW13-01, MW13-08 and MW13-13 were 0.0011 mg/L, 0.00017 mg/L and 0.0014 mg/L, respectively, compared to their historical averages of 0.0017 mg/L, 0.00050 mg/L and 0.0013 mg/L. At the surface water stations MH-04, MH-11 and MH-13, total lead concentrations were consistent with their historical dataset and no increasing or decreasing trends were identified (Appendix E).

Dissolved zinc concentrations also triggered the AMP ST1 in 2022 at MW13-08. Zinc concentrations in the rest of the 1380 Portal drainage area did not show any discerning increasing or decreasing trends. The 2022 annual average dissolved zinc concentrations at the groundwater and surface water stations were within the range of concentrations observed in the historical dataset. At MW13-08, the 2022 average dissolved zinc concentration was 0.0028 mg/L, which was marginally higher than the historical average of 0.00224 mg/L. Similarly, wells MW13-01 and MW13-13 had 2022 dissolved zinc averages of 0.020 mg/L and 0.035 mg/L, respectively, compared to their historical averages of 0.030 mg/L and 0.0461 mg/L, respectively. At the downstream surface water stations and SDH-S2, both total and dissolved zinc concentrations were stable with no indications of an increasing or decreasing trend (Figure 3-15 and Figure 3-17).

### 3.5.4 Landfill Groundwater Monitoring

Waste from the demolition of the Mill was placed in the existing landfill in 2015. The landfill is located near the former North Creek pump house. The landfill contains waste produced during operations and demolition debris from the Mill Site, former camp and office buildings, and miscellaneous debris from the site. The objective of the AMP for the landfill is to detect if there is an increase in the water level such that the landfill would be submerged or detect a change in water quality that might imply that landfill materials are leaching metals or are a source of hydrocarbons. These monitoring wells were drilled and installed in 2014. Routine quarterly monitoring of these stations was initiated in mid-2016.

#### 3.5.4.1 AMP

AMP monitoring locations include MW14-02, MW14-03, and MW14-04, which would detect any changes in water quality and level close to the source (Appendix B). MW14-01 is a background monitoring station for the landfill that is part of the EMSRP. In addition to physical parameters and dissolved metals, samples collected at these groundwater monitoring stations are also analyzed for hydrocarbons to assess potential mobilization and transport from the landfill.

The water quality results are compared to Schedule 3 of the Yukon Contaminated Sites Regulation (YCSR) Water Standards for the protection of Freshwater Aquatic Life (Yukon Government, 2002) and monitored under the AMP. Table 3-17 presents the 2022 averages and historical averages for the metals parameters of interest for each landfill well. The full results are available in Appendix E.

In 2022, monitoring well MW14-03 returned one dissolved cadmium concentration above the AMP ST1 limit in August 2022 (Table 3-6); however, the AMP was not triggered, since cadmium concentrations returned below the threshold below in the following sampling event.

**MW14-03 Dissolved Cadmium**

In August 2022, MW14-03 returned a dissolved cadmium concentration of 0.000472 mg/L, marginally above the AMP ST1 limit of 0.00045 mg/L. In the following October 2022 monitoring event, cadmium concentrations decreased to 0.000256 mg/L, meaning the AMP ST1 was not officially triggered. In 2021, a similar occurrence was observed as dissolved cadmium concentrations at MW14-03 exceeded the AMP ST3 and YCSR standard with a concentration of 0.0011 mg/L, in August 2021 but then returned concentrations below the AMP ST1 in the following monitoring event in October 2021. MW14-03 is often dry and there is limited data which can be used to draw any insight to these exceedances. Since 2014, only eight samples have successfully been collected at this well, all of which, except the October 2021 and 2022 samples, have returned cadmium concentrations which exceeded the AMP ST1 (Figure 3-19). Ongoing investigations are taking place to continue to understand the source of the dissolved cadmium as it is not occurring at the other landfills wells and downstream surface water environment (MH-12).

**Landfill Wells Groundwater Level**

Quarterly water level monitoring in the landfill groundwater monitoring wells is required under the AMP. MW14-02 and MW14-03 were dry in February 2022. Monitoring well MW14-03 was also dry in June 2022. Individual and annual average water levels are shown in Table 3-16 and Figure 3-18.

Water levels at all landfill wells are presented in Table 3-16, alongside the historical averages and averages of previous years. Monitoring wells MW14-01, MW14-02 and MW14-04 have had annual water levels above the historical average in the past three years. Further monitoring is required to determine if the water levels at the landfill wells have permanently risen, following the high precipitation in 2020, or if the water level will gradually decrease in the following years. The water levels at all stations were lower than 3.5 m from the base of the landfill; none of the AMP specific water level thresholds were triggered.

### Table 3-16: Landfill Groundwater Levels (masl)

| Well ID | 2022 | | | | 2022 Average | 2021 Average | 2020 Average | Historical Average [1] |
|---|---|---|---|---|---|---|---|---|
| | Feb | Jun | Aug | Oct | | | | |
| MW14-01 | 1014.6 [2] | 1018.1 | 1017.2 | 1015.3 | 1016.3 | 1016.5 | 1016.3 | 1015.7 |
| MW14-02 | Dry | 1020.7 | 1020.6 | 1019.3 | 1022.2 | 1022.0 | 1020.4 | 1020.2 |
| MW14-03 | Dry | Dry | 1036.4 | 1035.1 | 1035.8 | 1036.0 | 1036.4 | 1036.2 |
| MW14-04 | 1020.8 | 1022.4 | 1020.8 | 1021.5 | 1021.6 | 1020.3 | 1020.8 | 1019.3 |

*1 Average using data from 2013 to 2021*
*2 Not enough water to sample*

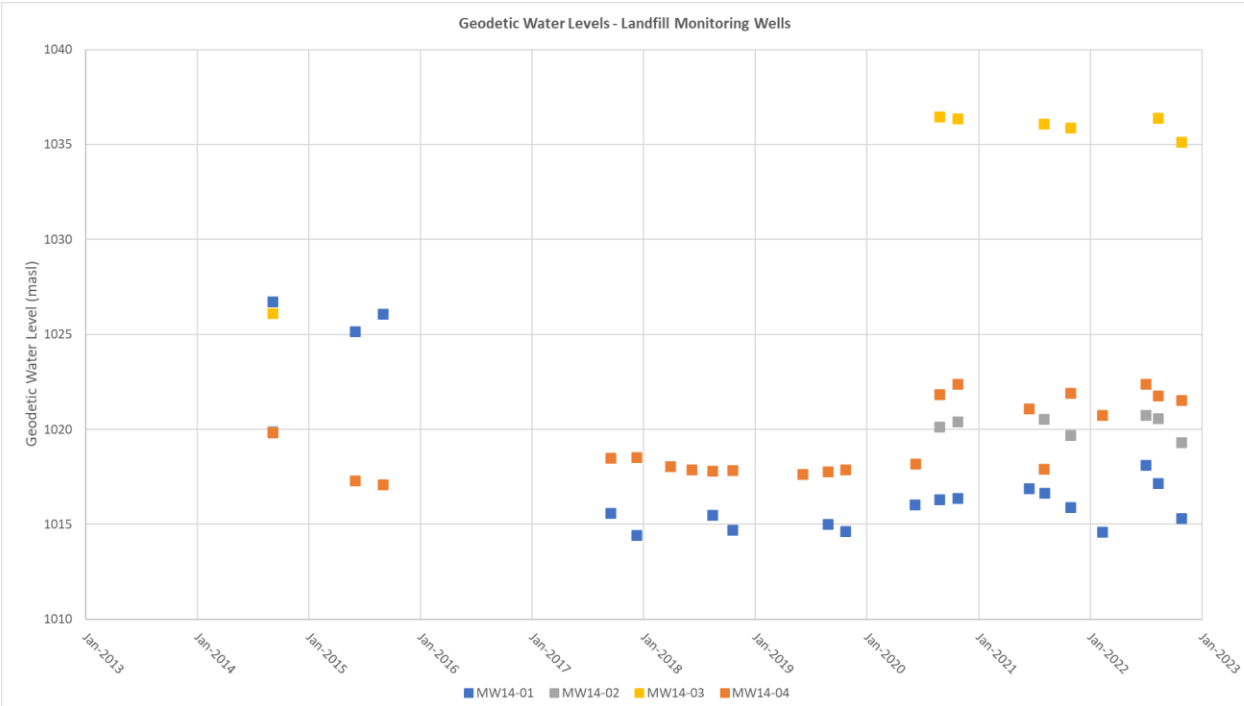


**Figure 3-18: Landfill Groundwater Wells Geodetic Water Levels**

**Table 3-17: Landfill Groundwater Wells Average Comparisons for select YCSR Parameters**

| Well ID | | Dissolved Cadmium | Dissolved Lead | Dissolved Zinc |
|---|---|---|---|---|
| | | mg/L | mg/L | mg/L |
| MW14-01 | 2022 Annual Average | 0.000467 | 0.000341 | 0.00227 |
| | 2013-2021 Historical Average | 0.0000467 | 0.000292 | 0.00246 |
| MW14-02 | 2022 Annual Average | 0.0000228 | 0.000170 | 0.00193 |
| | 2013-2021 Historical Average | 0.0000255 | 0.0000101 | 0.0077 |
| MW14-03 | 2022 Annual Average | 0.000354 | 0.000108 | 0.0046 |
| | 2013-2021 Historical Average | 0.00126 | 0.000624 | 0.0117 |
| MW14-04 | 2022 Annual Average | 0.0000242 | 0.000353 | 0.00243 |
| | 2013-2021 Historical Average | 0.0000354 | 0.000322 | 0.00532 |

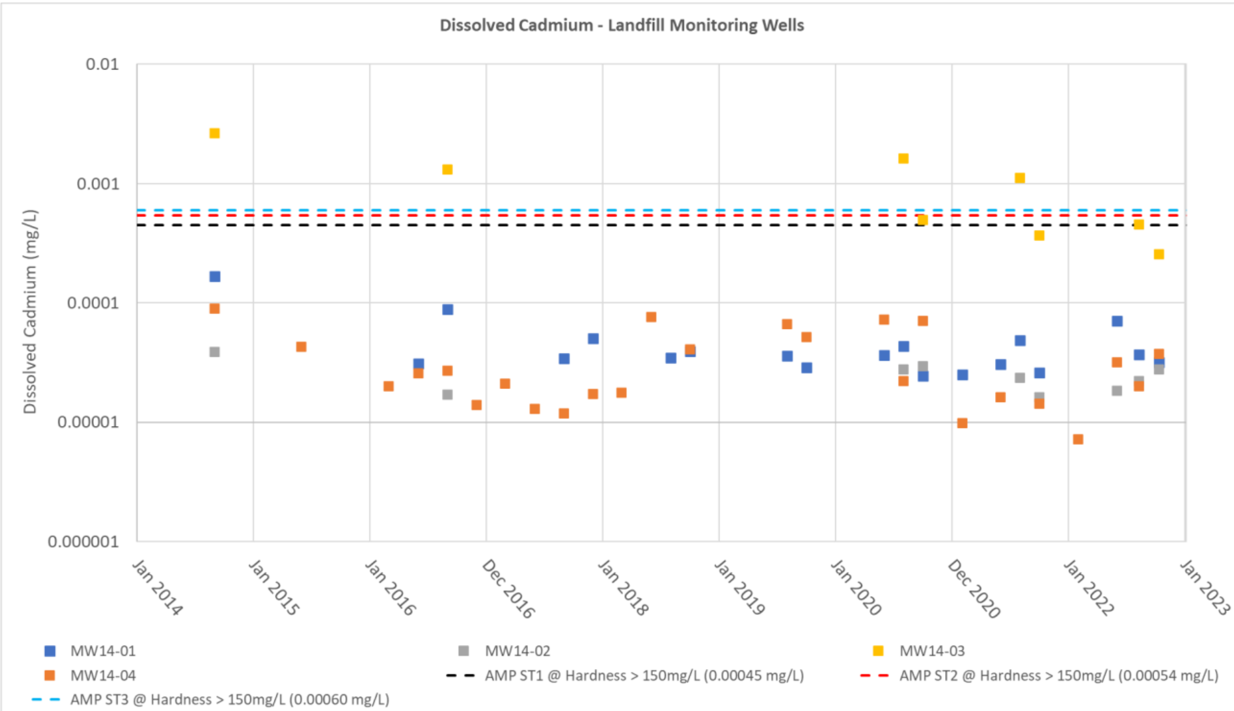


**Figure 3-19: Dissolved Cadmium at MW14-01, MW14-02, MW14-03 and MW14-04**

### 3.5.4.2 WATER QUALITY TRENDS

At MW14-01, the 2022 annual average for the field pH was 7.49, while the 2014 to 2021 average of 7.46. Sulphate concentrations in 2022 averaged 4.8 mg/L, which was lower than the historical average of 8.1 mg/L. Hardness levels in 2022 ranged from 217 to 264 mg/L, which was consistent with the ranges observed in the past.

At MW14-04, the 2022 annual field pH was 7.98, which was comparable to the historical average pH of 7.84. The 2022 average sulphate concentration at this well was 4.71 mg/L, slightly lower than the historical average of 7.02 mg/L. Hardness levels at MW14-04 ranged from 145 mg/L to 171 mg/L with a 2022 average of 163 mg/L which was consistent to the historical average of 169 mg/L.

At MW14-02 and MW14-03, there is limited historical data to discern any trends or anomalies from the 2022 sampling. The 2022 average field pH at both wells were 8.05 and 7.02, respectively, compared to their respective historical averages of 8.2 and 7.07. Sulphate concentrations at both wells averaged 5.26 mg/L and 54.9 mg/L, respectively, while their historical averages were 3.11 and 68.9 mg/L. At MW14-02, the 2022 hardness ranged from 165 mg/L to 208 mg/L. The hardness measurement of 165 mg/L, in June 2022, was the lowest hardness concentration observed at this well, however it was also the first time this well was successfully sampled in the summer. The samples in August and October returned hardness concentrations within the wells historical range. At MW14-03, the two sampling events returned hardness of 428 mg/L, in August 2022, and 319 mg/L in October 2022, which were values within the historical range of hardness observed at this well in the past. Plots showing historical and current groundwater concentrations are available in Appendix E.

### 3.5.5 Contaminated Sites Groundwater Monitoring

An environmental assessment of the site, conducted between 2011 and 2014, found petroleum hydrocarbon in soil that exceeded the YCSR standards in the vicinity of maintenance shops and fuel storage tanks. Similarly, metal concentrations exceeded YCSR standards in soils associated with the mine primary activity areas (i.e., sediment ponds, tailings facilities, waste rock piles) and processing areas (i.e., mill area). The hydrogeological assessment conducted indicated that groundwater quality was not impacted by the identified hydrocarbons or metals soil contamination, and a remediation plan was executed.

The monitoring plan includes three groundwater wells around the site designed to monitor areas downgradient of where soil contamination was identified as part of the Contaminated Site Assessment process:

- MW13-05 (Jewelbox/Main Zone);
- MW13-10 (Mill Site); and
- MW13-07 (Tailings Impoundment Area).

MW13-04 is also monitored for the same parameters as the site assessment wells, although it is not monitored under the AMP. MW13-04 is considered to reflect baseline conditions. MW13-04 and MW13-05 are located along the main access road and downstream of the Jewelbox zone. MW13-07 is located just downstream the North Dam and tailings pond area, and MW13-10 is located northeast and downstream of the mill site (Figure 3-1).

Water quality results are compared to Schedule 3 of the YCSR Water Quality Standards for the protection of Freshwater Aquatic Life (Yukon Government, 2002). Comparison to YCSR water quality standards is not a requirement of the water licence but is included in water quality reporting for reference. None of the contaminated site assessment wells triggered the AMP during 2022, although there was one exceedance of light extractable petroleum hydrocarbons (LEPH) in August 2022, which was later attributed to sample contamination. This exceedance was initially presented in the 2022 Q3 Quarterly Report, submitted to the Yukon Water Board on September 9, 2022 (Ensero, 2022) and resolved in the 2022 Q4 Quarterly Report, submitted to the Yukon Water Board on January 16, 2023 (Ensero, 2023)

#### 3.5.5.1 AMP

The objective of the AMP for the general CSR groundwater wells is to detect a change in water quality that might imply that a metals or hydrocarbons plume is spreading from historical sources near the mill site or tailings pond area. AMP monitoring sites include MW13-10 (Mill Site), MW13-07 (Tailings Pond Area), and MW13-05 (Jewelbox/Main Zone) which are located to detect any changes in water quality and level close to the source. The thresholds for groundwater quality are based on the YCSR for the protection of aquatic life. The groundwater quality threshold parameters are hydrocarbons and dissolved cadmium, lead, and zinc. 2022 concentrations from the three CSR wells remained below the AMP for all parameters with the exception of LEPH at MW13-10. During the August 2022 monitoring event, monitoring well MW13-10 detected LEPH concentrations of 0.43 mg/L, which was in exceedance of the AMP ST2 limit. The AMP was not triggered, as it requires two consecutive exceedances of the limit. Upon further investigation by the laboratory, it was discovered that the LEPH constituent that was detected in the sample was most likely suspected to be N,N-diethyl-3-methylbenzamide (DEET), which is the most active ingredient in insect repellents. This is illustrated by a single peak in the chromatogram shown in Figure 3-20. It is therefore assumed that this LEPH detection was the result of cross-contamination during the sampling process. In 2022, MW13-04 exceeded the YCSR for dissolved cadmium in August 2022. Lead concentrations at this well also met the AMP ST1 limit during the August monitoring event. Since MW13-04 is a reference station, it is not monitored under the AMP; however, these exceedances are discussed in this section.

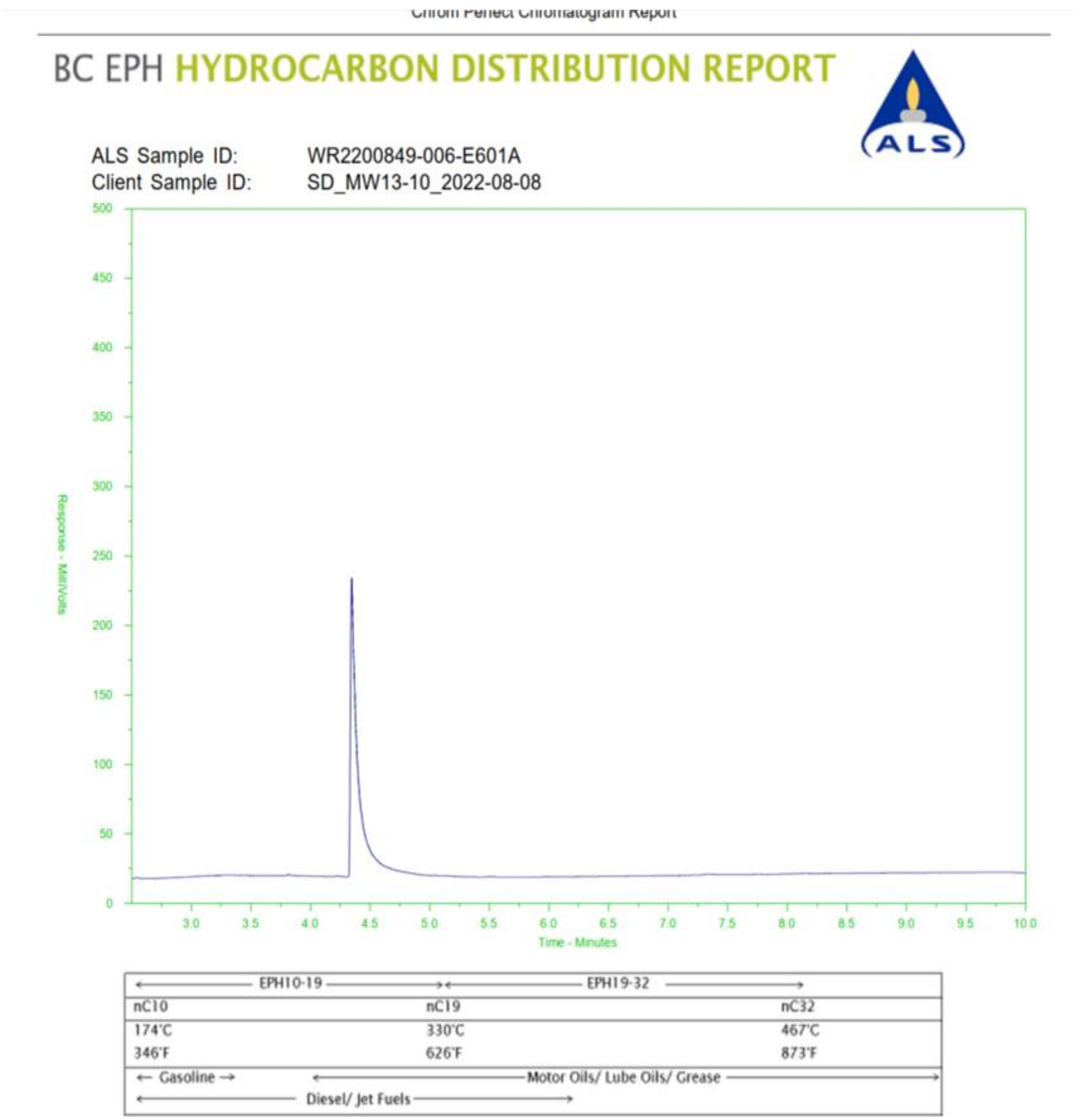


**Figure 3-20: Chromatogram of MW13-10 LEPH Re-Analysis**

**MW13-04 – Cadmium and Lead**

The hardness dependent YCSR standard for dissolved cadmium for MW13-04 during the June 2022 and August 2022 sampling events was 0.0005 mg/L and 0.0006 mg/L, respectively. In June 2022, dissolved cadmium concentrations at MW13-04 reached 0.000411 mg/L, which was above the AMP ST1 limit of 0.000375 mg/L (75% of the YCSR standard)), then increased to 0.000621 mg/L in August 2022 (Figure 3-21). Additionally, the August 2022 sample returned lead concentrations of 0.051 mg/L which met the AMP ST1 limit of 0.045 mg/L (Figure 3-22). The August

2022 lead concentration is the highest concentration observed at this well by an order of magnitude, as concentrations, historically, have ranged from 0.00025 mg/L to 0.00211 mg/L. Following the high concentrations in August, monitoring well MW13-04 was dry for the rest of 2022.

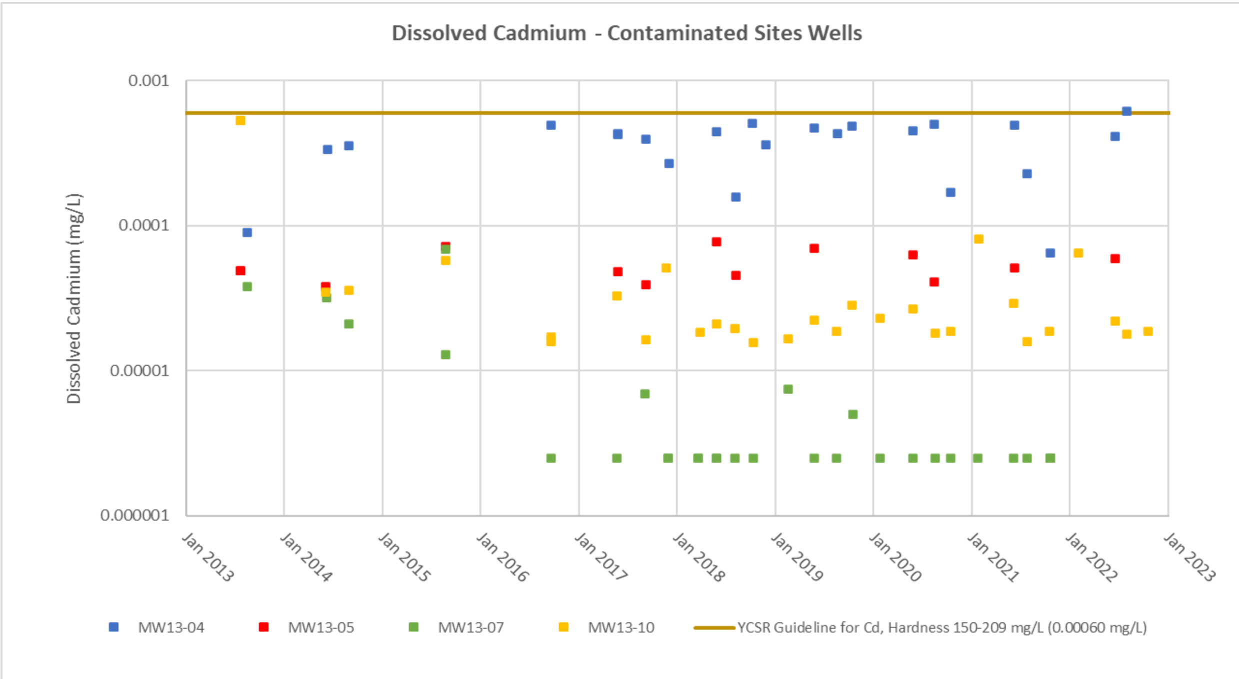


**Figure 3-21: Dissolved Cadmium at MW13-04, MW13-05, MW13-07 and MW13-10**

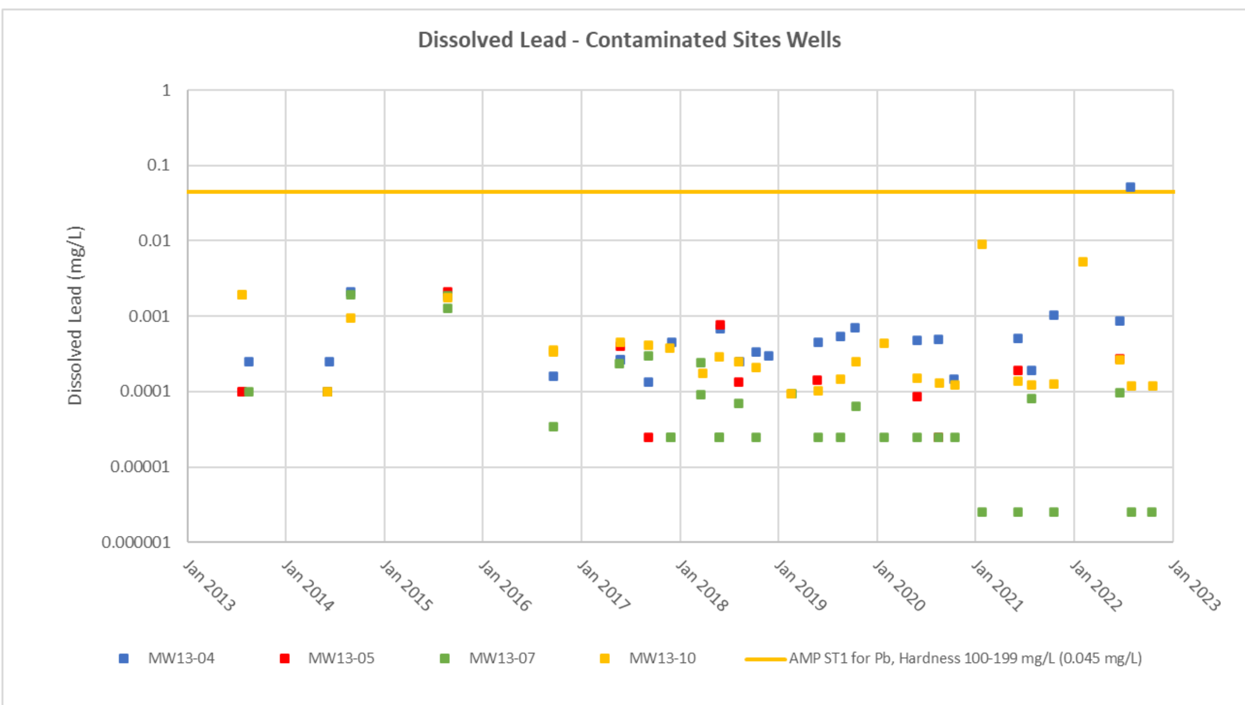


**Figure 3-22: Dissolved Lead at MW13-04, MW13-05, MW13-07 and MW13-10**

Water level monitoring of these wells is required under water licence QZ16-051 and water levels at four groundwater monitoring stations have remained constant historically and throughout 2022. Table 3-18 provides the well water levels and yearly averages for each station visited in 2022.

**Table 3-18: Contaminated Sites Groundwater levels (masl [2])**

| Well ID | 2022 | | | | 2022 Average | 2021 Average | 2020 Average | Historical Average [1] |
|---|---|---|---|---|---|---|---|---|
| | Feb | Jun | Aug | Oct | | | | |
| MW13-04 | – [2] | 1194.6 | 1182.3 | – [2] | 1188.4 | 1187.5 | 1191.5 | 1185.8 |
| MW13-05 | 1193.8 | 1191.2 | – [2] | – [3] | 1192.5 | 1192.9 | 1192.6 | 1192.5 |
| MW13-07 | 1093.5 | 1095.1 | 1094.1 | 1093.6 | 1094.1 | 1194.6 | 1094.4 | 1094.0 |
| MW13-10 | 1115.3 | 1118.7 | 1115.8 | 1115.5 | 1116.3 | 1117.0 | 1117.0 | 1116.4 |

*[1] Average using data from 2013 to 2021*
*[2] Unable to sample – Well was dry*
*[3] Unable to sample – Not enough water to sample*

### 3.5.5.2 Water Quality Trends

The historical record for these wells has typically been limited for the 2014 to 2022 dataset, with the most frequent sampling occurring from 2017 onward. The paucity of data limits the identification and interpretation of long-term trends in the dataset. Plots showing historical and current concentrations of samples collected in these monitoring wells are available in Appendix E.

The pH, in 2022, measured at all four wells was circumneutral, ranging from 7.19 to 7.95, consistent with historical data. Sulphate concentrations have also remained relatively stable, in 2022, at all four of the groundwater monitoring locations with a minimum of 4.00 mg/L at station MW13-04 and a maximum of 55.4 mg/L at MW13-05. No significant changes have been observed at any of the wells in 2022.

Alkalinity was also within the range of the historical dataset for each well. Alkalinity concentrations were approximately 220 mg/L and 210 mg/L for stations MW13-07 and MW13-10, respectively; and at approximately 130 mg/L at stations MW13-04 and MW13-05, in 2022. Hardness has remained stable for all monitoring wells with 2022 averages near historical (2013-2021) averages.

The YCSR dissolved cadmium standard is hardness dependent and has a range of 0.0005 mg/L to 0.0006 mg/L for MW13-04 and a value of 0.0006 mg/L for the other three wells. MW13-04 has exceeded the YCSR standard in multiple occasions in the past, with the most recent being in August 2022, where dissolved cadmium concentrations were 0.00062 mg/L, which was a new maximum concentration observed at this well. At the contaminated sites groundwater wells (MW13-05, MW13-07 and MW13-10, dissolved cadmium concentrations remained within the range of their respective historical datasets and no signs of an increasing trend were apparent at any of these wells. In addition, 2022 average cadmium concentrations were consistent with the historical averages (Table 3-19). All the contaminated sites groundwater monitoring stations (MW13-05, MW13-07, and MW13-10) had dissolved cadmium concentrations below the AMP ST2 of 0.00045 mg/L.

The dissolved lead YCSR standard is hardness dependent, with a limit of 0.06 mg/L for MW13-04 and MW13-05 and 0.11 mg/L for MW13-07 and MW13-10. The August 2022 lead concentration was the largest concentration observed at this well by one order of magnitude. The only other successful sample at this well was during the June 2022 monitoring event which returned a dissolved lead concentration of 0.000860 mg/L, compared to the historical average of 0.000487 mg/L (Table 3-19). At MW13-05 dissolved lead averaged 0.000271 mg/L, in 2022, compared to the historical average of 0.000347 mg/L (Table 3-19). Concentrations of dissolved lead at MW13-10 saw a seasonal maximum of 0.00536 mg/L, in February 2022, followed by 0.000266 mg/L in June 2022 and 0.000120 mg/L in August 2022 and October 2022. A similar trend was observed in 2021 where the February 2021 sample returned a concentration one order of magnitude larger than the rest of the dataset. Prior to 2021 lead concentrations at this well typically did not experience such large fluctuations. The 2022 average lead concentration at MW13-10 was 0.00147 mg/L, compared to the historic average of 0.000803 mg/L. Despite the large peaks observed at MW13-10, relative to its historical data, the February 2021 and 2022 concentrations were still one order of magnitude below the applicable AMP ST1 standard (0.0825 mg/L for hardness between 200 and 300 mg/L). At MW13-07 three of four dissolved lead concentrations were below the detection limit, consistent with the historic dataset. None of the 2022 samples taken at MW13-05, MW13-07, and MW13-10 exceeded the AMP ST1 for lead.

The dissolved zinc YCSR standard is hardness dependent, with a limit of 0.9 mg/L for MW13-04 and MW13-05 and 1.65 mg/L for MW13-07 and MW13-10. The highest zinc concentration in 2022 (0.138 mg/L) was recorded at the background monitoring well MW13-04 in February. Following the zinc concentrations from MW13-04, monitoring well MW13-10 was the station with the next highest zinc concentrations, with a 2022 peak concentration of 0.0191 mg/L (February 2022). All dissolved zinc levels measured at MW13-05, MW13-07 and MW13-10 were at least one order of magnitude below the lowest applicable AMP thresholds (ST1) (0.675 mg/L for MW13-05 and 1.24 mg/L for MW13-07 and MW13-10), with yearly averages of 0.00230, 0.00108 and 0.00640 mg/L, respectively (Table 3-19). Table 3-19 summarises the 2022 annual averages of the contaminated sites wells compared to the historical 2013 to 2021 averages.

**Table 3-19: Contaminated Sites Groundwater Wells Average Comparisons for YCSR Parameters**

| Well ID | | Dissolved Cadmium | Dissolved Lead | Dissolved Zinc |
|---|---|---|---|---|
| | | mg/L | mg/L | mg/L |
| MW13-04 | 2022 Annual Average | 0.000516 | 0.0259 | 0.0724 |
| | 2013-2021 Historical Average | 0.000358 | 0.000487 | 0.0110 |
| MW13-05 | 2022 Annual Average | 0.0000596 | 0.000271 | 0.0023 |
| | 2013-2021 Historical Average | 0.0000536 | 0.000347 | 0.00480 |
| MW13-07 | 2022 Annual Average | <0.000050 | 0.000428 | 0.00108 |
| | 2013-2021 Historical Average | 0.00000925 | 0.000225 | 0.0164 |
| MW13-10 | 2022 Annual Average | 0.0000308 | 0.00147 | 0.00640 |
| | 2013-2021 Historical Average | 0.0000681 | 0.00803 | 0.00646 |

# 4 SURFACE WATER HYDROLOGY

The surface hydrology of the SDH site was first characterized in 1990 during the permitting stage of the mine (SRK 1990). An update was prepared in 1999 to support the 2000 Decommissioning and Reclamation Plan (Teck, 2000). A further update was prepared in 2005 to incorporate site climate and flow data that had been collected over a four-year period from 2000 to 2004. In 2013, another set of updated flow measurements were made for key water sampling locations. The results of the 2013 work were discussed in the 2013 annual water licence report (SRK, 2014a).

The most recent hydrology update was generated in 2014. This updated hydrological information was used in SDH's water and load balance model for predicting post-closure surface water quality. A memorandum (SRK, 2014b) detailing this update was submitted on September 16, 2014. The following sections provide a summary of the hydrology data collected at the site in 2022.

## 4.1 PRECIPITATION

2022 was marked by heavy precipitation relative to recent years; the meteorological station located at the Watson Lake Airport (Climate ID: 2101200 and 2101204) recorded total precipitation of 405.4 mm in 2022. The station records are available from 1953 and the total precipitation between 1953 and 2022 are presented in Figure 4-1. 2022 had less total precipitation compared to the 68-year average, however it had the second highest total precipitation since 2014. The total precipitation at this station in 2022 was mostly snowfall as winter months saw higher amounts of precipitation compared to recent years.

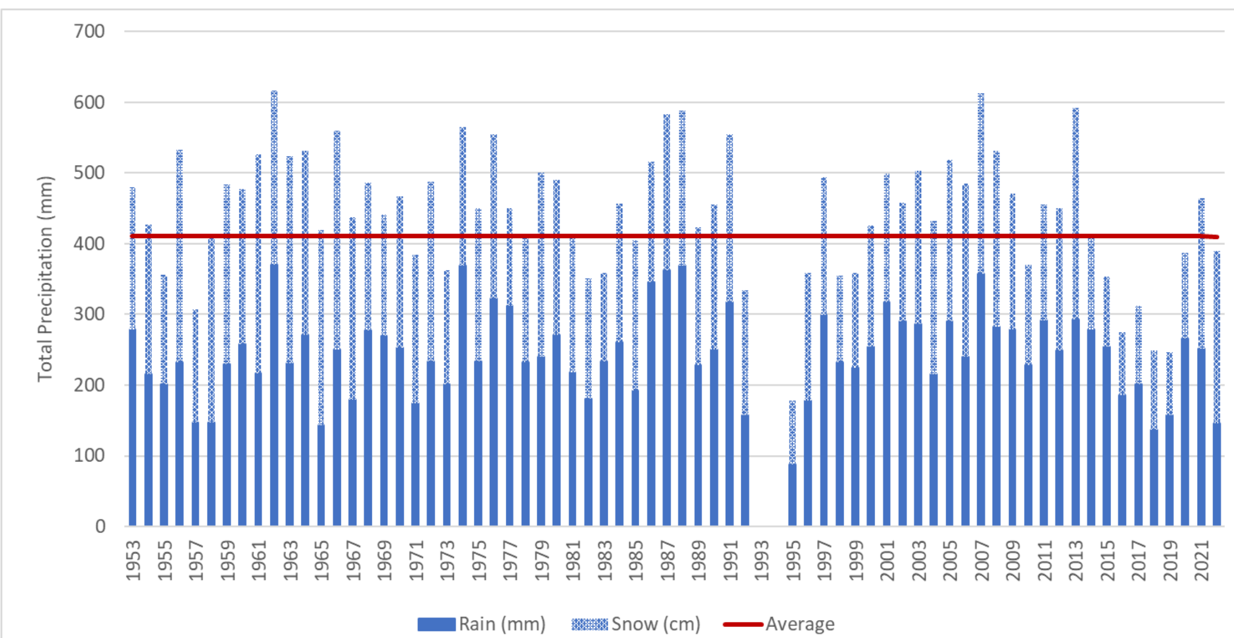


**Figure 4-1: Total Precipitation (mm) at the Watson Lake Airport Meteorological Station, 1953-2022**

## 4.2 Methodology

As part of the SDH water monitoring program, measurements or field estimates of creek discharge were conducted. Flows during open water were measured using a Hach FH950 velocity meter and the United States Geological Survey mid-section method. During the winter months, flows were measured using the salt-dilution gauging method. The dilution gauging procedure method deposits a known amount of salt into the stream and measures the concentration downstream over time. The measurement period covers the time it takes for the conductivity to respond to the tracer and return to background. Two measurements were collected at each station for both the mid-section and salt dilution methods. For MH-22 and MH-02 where a pipe is discharging, the bucket fill method was used in which the time taken to fill a bucket of known volume is recorded. The process was repeated five times and the average was taken. The method used at each site for measuring discharge is shown in Table 4-1.

**Table 4-1: Hydrology Methods for 2022 sampling events**

| Site | February | April | June | August | October | December |
|---|---|---|---|---|---|---|
| MH-02 | - | - | BF | BF | BF | BF |
| MH-04 | DG | DG | MS | MS | MS | DG |
| MH-11 | DG | DG | DG | DG | MS | DG |
| MH-12 | - | - | - | - | - | - |
| MH-13 | DG | DG | - | MS | MS | DG |
| MH-15 | DG | DG | MS | MS | MS | DG |
| MH-22 | - | - | - [1] | BF | BF | - |
| MH-29 | DG | - | MS | DG | MS | DG |
| MH-30 | - | - | - | - | - | - |
| SDH-S2 | - | - | - | - | - | - |

MS=Mid-Section Open-water Flow
DG=Dilution Gauging
BF= Bucket-fill
[1] Too fast for bucket flow. Flow was estimated without accurate measurements

## 4.3 Results

Results of the 2022 flow monitoring are presented in Table 4-2 and in Appendix D. As per to 2020, no flows were conducted at MH-30 in 2021 due to flooding at the site from beaver activity. Figure 4-2 presents all discharge measurements collected by Ensero from 2018 to 2022.

**Table 4-2: Discharge Results for 2022 ($m^3/s$)**

| Site | February | April | June | August | October | December |
|---|---|---|---|---|---|---|
| MH-02 | -[1] | -[1] | 0.0010 | 0.00033 | 0.00033 | 0.00017 |
| MH-04 | 0.0078 | 0.0058 | 0.12 | 0.020 | 0.0098 | 0.0068 |
| MH-11 | 0.0022 | 0.0165 | 0.30 | 0.061 | 0.017 | 0.020 |
| MH-12 | -[1] | -[1] | -[2] | -[2] | -[2] | -[1] |
| MH-13 | 0.13 | 0.056 | -[6] | 0.23 | 0.12 | 0.086 |

| Site | February | April | June | August | October | December |
|---|---|---|---|---|---|---|
| MH-15 | 0.065 | 0.052 | 0.25 | 0.12 | 0.090 | 0.064 |
| MH-22 | -[5] | -[4] | 0.015 | 0.00067 | 0.00013 | -[1] |
| MH-29 | 0.0047 | -[1] | 0.080 | 0.012 | 0.0052 | 0.0038 |
| MH-30 | -[3] | -[3] | -[3] | -[3] | -[3] | -[5] |

[1] Frozen to ground, very low flow, or dry
[2] Flooding
[3] Flooded due to beaver activity
[4] Unable to find station due to weather conditions
[5] Site not visited due to weather
[6] Too much flowing water to safely capture discharge

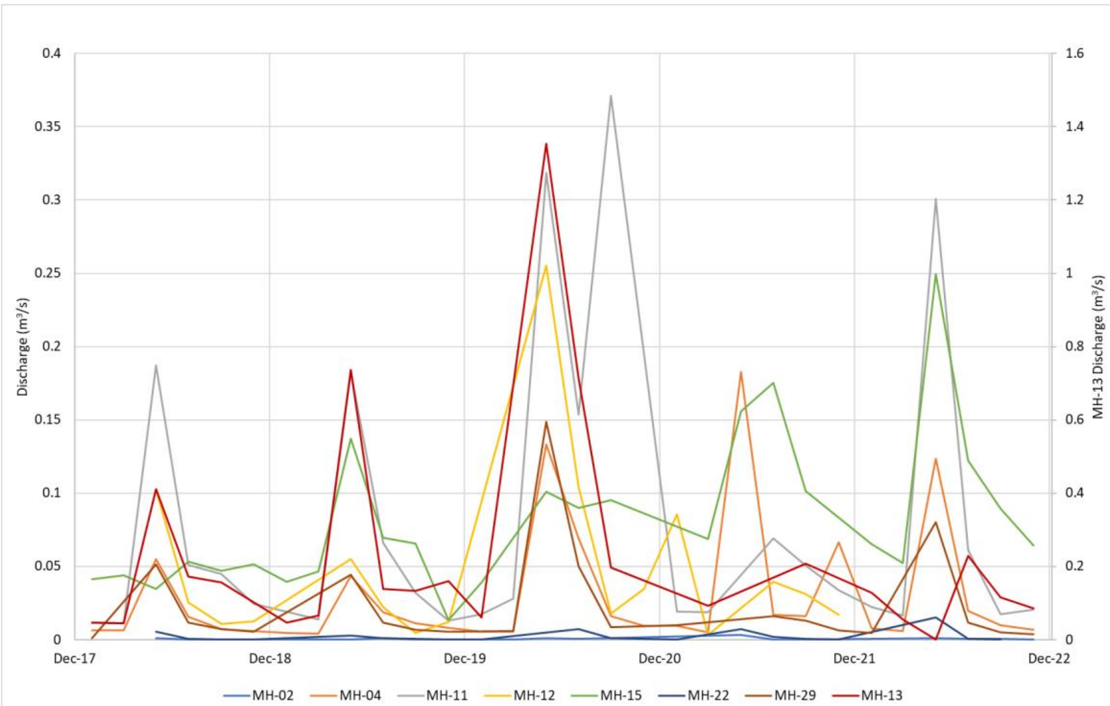


**Figure 4-2: Discharge Record, 2018-2022 (note that MH-13 is presented on a secondary axis)**

# 5 PHYSICAL AND GEOTECHNICAL MONITORING

Part G Clauses 44 to 48 of Licence QZ16-051 outlines the physical monitoring program of constructed and engineered structures remaining at the site. Monitoring of earthworks was conducted in 2022 as per the OMS Manual (SRK, 2015) and the Post-Closure Geotechnical Monitoring Plan (SRK, 2014c).

## 5.1 NORTH DAM EROSION EVENT

During a routine inspection on June 17, 2022, an area of surface erosion was identified on the north embankment of the Tailings Storage Facility (aka the North Dam). It was determined that the impacted material from this erosion event was dam embankment material only and no release of tailings from the impoundment occurred. In response, the Engineer of Record, Teck representative and contractors were immediately mobilized to site to assess the situation and complete repairs. Repair activities took place from June 25$^{th}$ to June 29$^{th}$. Additional environmental monitoring and erosion mitigation measures were implemented during the repair work. A detailed memo describing the event, repair and monitoring activities was provided with the 2022 Q2 Quarterly Report, submitted on September 9, 2022 and is attached as Appendix F. Based on the additional results there were no measured changes to the receiving water quality. Additional information regarding the cause of the event and description of the repairs is provided in SRK's Annual Facility Performance Report provided in Appendix G.

## 5.2 ROUTINE ANNUAL PERFORMANCE MONITORING

Piezometer levels in the North Dam were measured bi-monthly, using a narrow water level meter, to monitor the phreatic surface within the dam. Piezometric levels in North Dam were reviewed on a regular basis by both Teck and SRK. They are included in the annual facility performance report provided in Appendix G. The seasonal fluctuations recorded in 2022 in the piezometers are generally consistent with those in previous years and below the maximum safe levels are within acceptable tolerance limits (SRK, 2021).

A formal geotechnical inspection of the structures and features associated with the Tailings Management Area (TMA) as well as other geotechnical structures was also conducted by Teck in June 18, 2022 and October 13, 2022. The geotechnical facilities inspection report is provided in Appendix G. The report presents Teck's observations of the following structures and features:

- The North Dam;
- The North Creek Channel which includes the decommissioned North Creek Dyke and Second Crossing;
- The relocated Camp Creek Channel;
- The North Channel and South Channel;
- The Sediment Retaining Structure (SRS);
- The Burnick Portals (1200 and 1300) and waste rock dumps; and
- The Jewelbox and Main Zone Waste Rock Dump Areas.

During the routine geotechnical inspections, erosion from the North tailings dam was identified and documented in-person to confirm the satellite imagery siting, as discussed in Section 5.1. Other observations identified general erosion, associated with freshet, around the Jewelbox, Burnick and North Creek areas. Additionally, beaver activity was noted around the North Creek dyke. Overall in 2022, all the structures are stable and are functioning in accordance with the closure design parameters. There were no changes to the structures in 2022.

In addition to the geotechnical inspection, monitoring and maintenance of the roadways is required as part of the QZ16-051.

# 6 Aquatic Resources Monitoring Program

The biennial aquatic resources monitoring at the site was undertaken by Ensero Solutions from August 8 to August 10, 2022. The work included benthic invertebrate, water quality, and stream sediment sampling at the compliance locations (MH-11 and MH-12), stations MH-04 and MH-13, and reference stations (MH-29 and MH-30). Fish sampling is to be conducted at MH-13 and reference location MH-30. Unfortunately, due to increased beaver activity and associated flooding, landing with a helicopter at MH30 was unsuccessful in 2022. Below is a summary of the report; a more detailed version is presented in Appendix H.

No anomalies were apparent in the water quality during the 2022 study. The clear, alkaline waters of the drainage were hard to very hard and concentrations of metals were low where detected. The cadmium concentration at MH-04 exceeded the CCME guideline for the protection of freshwater aquatic life and is consistent with historical concentrations. MH-04 is monitored within the routine water quality of the water license and EMSRP. Due to increased turbidity at MH-12, aluminum, chromium, iron, and lead concentrations slightly exceeded the applicable guidelines in the total metals sample; however, the dissolved values were very low and met all guidelines. MH-12 is monitored bi-monthly and these parameters did not exceed the receiving water quality standards in 2020.

The monitoring program conducted in 2022 represents the third time that licensed requirements for stream sediment and benthic invertebrate monitoring were completed. Although the stream sediment metal concentrations indicate that there could be negative effects on the aquatic biota, the benthic invertebrate communities were diverse and had good representation from the major groups of organisms that are usually present in lotic waters. The abundance of EPT at all sites suggests that the metals documented in the sediments are likely not in a bioavailable form.

Slimy sculpin continues to be the only fish species captured at MH-13. Numbers have been low at this site during the last three sampling events. While the absolute number of captured fish varies over time, the single species captured here continues to be consistent and indicative of a stable fish community. The other licensed fish and benthic invertebrate monitoring site, MH-30, could not be sampled due to flooded conditions as a result of increased beaver activity throughout this reach as well as high rainfall prior to the field work.

## 7 Spill Contingency Plan Review

No spills or unauthorized discharges occurred in 2022. The Spill Contingency Plan was updated on March 26, 2018 to reflect current activities and contacts at the site. The Spill Contingency Plan was reviewed in March 2022 and no revisions are required.

# 8 2022 REPORT SUMMARY

Decommissioning activities were completed in 2015 and the site is now in permanent closure. Details of the 2015 decommissioning work are provided in AMEC's 2015 Reclamation Activities and As-Built Report, which were submitted by Teck in November 2015. The current water licence QZ16-051 addressing permanent closure came into effect on April 1, 2017. This report summarizes the annual monitoring work that was completed in 2022 as required by the current water license. The monitoring work at SDH in completed in 2022 included:

- Monitoring of surface and groundwater quality;
- The annual physical and geotechnical inspection and associated earthworks monitoring including monitoring piezometers on the North Dam. Piezometer water levels were consistent with the historical ranges observed at these stations;
- The biennial aquatic resources monitoring was completed in 2022;
- Road maintenance included removing debris from the road culverts; and
- Ongoing maintenance of the center drainage swale which drains to the center of the North Pond Tailings cap and regular clearing of shallow ditches draining in the Northwest end of the Tailings cap.

No freshwater from the on-site water wells was withdrawn for industrial or domestic purposes in 2022. No water was discharged by pumping. The Reclaim Pond Dam has been removed and reclaimed. Water from the South Tailings Pond now freely drains to the downstream environment when water levels reach the level of the South Retaining Structure spillway invert.

In 2022, samples from all the required water quality monitoring stations met the standards in licence QZ16-051 for all water quality parameters, except for total copper which exceeded at MH-12 during the December monitoring event and is discussed in Section 3.5.1.1. Exceedances of the AMP thresholds also occurred in 2022 and are discussed in Section 3.4.

In June 2022 there was an erosion event that removed embankment material from the North Dam. It was determined that there was no release of tailings from the impoundment. The Engineer of Record, Teck representative, and contractors were immediately mobilized to assess the situation and complete the repairs. Additional environmental monitoring and erosion mitigation measures were implemented during the repair work. Subsequently, there were no measured changes to the water quality.

The aquatic resources monitoring was completed in August 2022. Overall benthic metrics across the SDH monitoring stations are indicative of good water quality and productive stream ecology. The 2022 results were consistent with historical findings from past aquatic assessments.

## 9 REFERENCES

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# Appendix A:
# Water Use Licence QZ16-051

**YUKON WATER BOARD**

Pursuant to the *Waters Act* and *Waters Regulation*, the Yukon Water Board hereby grants a Type B water licence for a quartz mining undertaking to:

Sä Dena Hes Operating Corp.
c/o Teck Resources Limited
3300-550 Burrard Street
Vancouver, BC V6C 0B3

| | | | |
|---|---|---|---|
| **LICENCE NUMBER:** | QZ16-051 | | |
| **LICENCE TYPE:** | B | **UNDERTAKING:** | QUARTZ |
| **WATER MANAGEMENT AREA:** | 01 Liard | | |
| **LOCATION:** | Upper False Canyon Creek and tributaries of False Canyon Creek, Sä Dena Hes Mine Site | | |
| **MAP CO-ORDINATES:** | Max Latitude: 60° 42' 21" N Max Longitude: 129° 11' 38" W<br>Min Latitude: 60° 18' 31" N Max Longitude: 128° 34' 08" W | | |
| **PURPOSE:** | To store/alter flow of water associated with maintenance and decommissioning activities and to deposit a waste to water. | | |
| **EFFECTIVE DATE:** | April 1, 2017 | | |
| **EXPIRY DATE:** | December 31, 2040 | | |

This licence shall be subject to the restrictions and conditions contained herein and to the restrictions and conditions contained in the *Waters Act* and the *Waters Regulation* made thereunder.

Dated this 30 day of March, 2017

Witness

Approved by:

Chairperson
YUKON WATER BOARD

## PART A - DEFINITIONS

"Act" means *Waters Act* and any amendments thereto.

"Adaptive Management Plan" means the *Sä Dena Hes Mine Post-Relcamation Adaptive Management Plan* submitted as part of the Application and included in the Register QZ16-051 as part of exhibit 1.16, and any subsequent revisions.

"Application" means Application QZ16-051, including any additional submissions and/or revisions submitted to the Yukon Water Board by the Licensee, up to the date of the Board's decision.

"Board" means the Yukon Water Board.

"Dam Safety Guidelines" means the most current version of the Dam Safety Guidelines issued by the Canadian Dam Association.

"Detailed Decommissioning and Reclamation Plan" or "DDRP" means the *Detailed Decommissioning and Reclamation Plan* that was submitted as part of the Application and included in Register QZ16-051 as exhibit 1.3 and any subsequent revisions.

"Environmental Monitoring, Surveillance and Reporting Plan" or "EMSRP" means the *Environmental Monitoring, Surveillance and Reporting Plan* submitted as part of the Application and included in Register QZ16-051 as Exhibit 1.24, and any subsequent revisions.

"Freshwater Intake end-of Pipe Fish Screen Guideline" means the most current version of the *Freshwater Intake end-of Pipe Fish Screen Guideline* issued by the Department of Fisheries and Oceans.

"Inspector" means any person designated as an Inspector under the Act.

"Natural Boundary" means the visible high water mark of any lake, river, stream or other body of water where the presence and action of water is so common and usual and so long continued as to mark upon the soil of the bed of the lake, river, stream or other body of water a character distinct from that of the banks thereof, both in respect to vegetation and in respect to the nature of the soil itself. In addition, the best estimates of the edge of dormant or old side channels and marsh areas are considered to be Natural Boundaries.

"Non-Acid Generating and Non-Metal Leaching" means rock with a paste pH $\geq 5.0$, a Neutralizing Potential: Acid Generation Potential Ratio (NPR) $\geq 3{:}1$ and a sulphur content of $< 0.3\%$.

"Post-Closure Geotechnical Monitoring Plan" means *Proposed Post Reclamation Geotechnical Monitoring Program* that was submitted as part of the Application and included in Register QZ16-051 as Appendix D in exhibit 1.24, and any subsequent revisions.

"Regulation" means the *Waters Regulation* made under the Act.

"Spill Contingency Plan" means the *Spill Contingency Plan* that was submitted as part of the Application and included in Register QZ16-051 as exhibit 1.28, and any subsequent revisions.

"Waste" means any substance as defined in the Act.

"Watercourse" means a natural watercourse, body of water or water supply, whether usually containing water or not, and includes groundwater, springs, swamps, and gulches.

"Wetted Perimeter" means the horizontal extent of the present water level while the work is taking place.

## PART B – WATER USE AND DEPOSIT OF WASTE

1. The Licensee is hereby authorized to
   a) deposit Waste in the form of;
      i. water from Burnick 1200, via sub-surface flow, to tributaries of False Canyon Creek; and
      ii. water from 1380 Portal, via sub-surface flow, to Upper False Canyon Creek.
      iii. seepage from North dam to Tributary E False Canyon Creek;
      iv. seepage and runoff from the south sediment retaining structure to Upper False Canyon Creek;
      v. collected runoff from the Jewelbox Hill dumps to Upper False Canyon Creek;
      vi. collected runoff from the North Hill dumps to tributaries of False Canyon Creek;
   b) Store and/or alter flow of water associated with the south sediment retention structure;
   c) carry out ongoing site monitoring and maintenance, including culvert maintenance and replacement; and
   d) decommission and reclaim the site road and access road, including culvert removal and bank stabilization,

   as described in the Application, and subject to the conditions of this licence. Where there is a discrepancy between the Application and this licence, the conditions of this licence shall prevail.

## PART C – DESIGN AND CONSTRUCTION

2. The Licensee shall submit to the Board final detailed design construction drawings, specifications and quality assurance/quality control procedures for the construction of any works associated with the implementation of the DDRP.

3. The design of all structures and facilities associated with the project shall be carried out using sound engineering practices and shall be completed and sealed by a Professional Engineer licenced to practice in Yukon.

4. The final detailed design construction drawings, specifications and quality assurance/quality control procedures submitted to the Board shall be consistent with the designs in the DDRP.

5. At least ten days prior to the proposed date of commencement of construction of any structure or facility, the Licensee shall submit to the Board a written notification, together with a detailed construction schedule and the name and contact number(s) of the construction superintendent.

6. Where site conditions require minor modification to the designs submitted to the Board, the Licensee shall notify the Board, at least 10 days in advance, of the details of the modifications or variations from final detailed designs, specifications and quality assurance/quality control procedures previously submitted to the Board, provide a detailed construction schedule and the name and contact number(s) of the construction superintendent. The notice shall be in writing and include an explanation of the reasons for the change and an assessment of the potential impact on the performance of the works. The notice shall be sealed by a Professional Engineer licensed to practice in Yukon.

7. As-constructed (record) drawings and construction reports for all structures and facilities shall be submitted to the Board within ninety days of the completion of construction. Each submission shall be sealed by a Professional Engineer licenced to practice in Yukon.

## PART D –OPERATING CONDITIONS

8. During the term of this licence, the Licensee shall maintain all works in good order in accordance with sound engineering and environmental practices.

9. The Licensee shall maintain the main access road from June through September in a manner such that heavy equipment can be taken to the site until the site has stabilized.

10. The Licensee shall maintain facilities and structures and undertake all monitoring in accordance with the requirements of this Licence.

11. When conducting any instream works, creek flow must be diverted around the work areas.

12. Where fish are present, the Licensee shall salvage all fish prior to de-watering any work area.

13. All works associated with the undertaking shall be maintained in good repair.

14. Construction and/or maintenance equipment shall be mechanically sound and free of leaks.

15. The tracks and/or wheels of heavy equipment are prohibited from entering the Wetted Perimeter of any Watercourse.

16. Granular bedding and backfill material shall consist of non-frozen material.

17. Except as authorized by this licence, no Waste shall enter any Watercourse as a result of any activities carried out by the Licensee.

18. All disturbed ground surfaces shall be stabilized in such a manner so as to prevent erosion and surface runoff.

Water Pumps

19. All water pumps shall be contained within an impermeable liner/structure that has the capacity to contain 110% of the maximum combined volumetric capacity of the fuel, lubricants and coolants within the engine of the water pump.

20. The Licensee shall provide barriers consisting of fish guards, screens, coverings or nets on all water intakes that are consistent with *Freshwater Intake end-of Pipe Fish Screen Guideline.*

21. The Licensee shall cease pumping or decanting and take remedial action if there is alteration to the bed or bank of the water channel as a result of pumping.

Rip-rap

22. Rip-rap shall be hard, dense, angular, Non-Acid Generating and Non-Metal Leaching quarry stone or boulders, free of seams, cracks, structural defects and contaminants, freeze-thaw resistant, non-slaking and free of fine-grained materials including silt and sand. Rip-rap gradation will conform to the specifications provided in the Application in Register QZ16-051 exhibit 1.15.

Geotextile

23. Specifications of the geotextile material shall comply with those described in the Application in Register QZ16-051 exhibit 1.2.

Culvert Removal

24. When removing culverts, the following procedures shall be followed:

    a) schedule removal of culverts so as to avoid concentrations of fish if such concentrations exist;

b) install or construct non-erodible cofferdams, silt barriers or other suitable methods to control siltation downstream of the work area;

c) reshape site to conform to grade of adjacent stream bank following removal of the culvert;

d) use rip-rap or other suitable methods, if required, to stabilize the bank at the work site; and

e) remove all silt controls following completion of work and ensure the grade of the drainage course is restored.

25. Culvert placement, removal and channel excavation shall be done in the dry, with the exception of connecting the existing channel to the diversion channel.

<u>Spills and Unauthorized Discharges</u>

26. Where a spill or an unauthorized discharge occurs, that is of a reportable quantity under the Yukon Spills Regulations, the Licensee shall immediately contact the 24-hour Yukon Spill Report number, (867) 667-7244 and implement the Spill Contingency Plan. A detailed written report on any such event including, but not limited to, dates, quantities, parameters, causes and other relevant details and explanations, shall be submitted to the Board not later than 10 days after the occurrence.

27. The Licensee shall apply the relevant procedures in the Spill Contingency Plan. The Licensee shall review the Spill Contingency Plan annually and shall provide a summary of that review, including any revisions to the plan, as a component of the annual report.

28. The Licensee shall maintain a log book of all spill or unauthorized discharge occurrences, including spills that are less than the reportable quantities under the Yukon Spills Regulations. The log book shall be made available at the request of an Inspector. The log book shall include, but not necessarily be limited to:

a) the date and time of the spill or unauthorized discharge occurrence;

b) the substance spilt or discharged;

c) the approximate amount spilt or discharged;

d) the location of the spill;

e) the distance between the spill or discharge and the nearest Watercourse; and

f) remedial measures taken to contain and clean-up the spill area or to cease the unauthorized discharge.

29. The Licensee shall include a summary of all spills or unauthorized discharges that occurred during the year reported, as part of the annual report.

30. All personnel shall be trained in procedures to be followed and the equipment to be used in

the containment of a spill.

31. Prior to the commencement of construction, the Licensee shall update the Spill Contingency Plan and provide the updated plan to the Board.

32. The Spill Contingency Plan shall be posted on site for the duration of the works.

Fuel Transfer and Refueling

33. Fuel, lubricants, hydraulic fluids, coolants and similar substances, with the exception with liquid associated with the water pump engine, shall be transferred a minimum of 30 metres from the Natural Boundary of any Watercourse, in such a way that said substances are not deposited in or allowed to be deposited in waters.

34. Water pumps may be refuelled within the Natural Boundary of any Watercourse. Refueling activities shall adhere to the following:

   a) no refueling shall be conducted within the Wetted Perimeter of any Watercourse;
   b) the fuel transfer shall be visually and continually monitored;
   c) fuel transfer nozzles shall be operated manually and will not be locked in the open position;
   d) spill kits, including absorbent pads shall be maintained in close proximity to the stationary equipment during refuelling operations;
   e) fuel transfers shall be conducted with an operator at each end of the transfer hose;
   f) shall only be conducted during daylight hours; and
   g) fuel transfer equipment components such as pumps, hoses and nozzles shall be visually checked for leaks or damage prior to each refuelling operation.

## PART E – PLANS AND STUDIES

EMSRP Update

35. The Licensee shall submit an updated EMSRP to the Board within 90 days of the effective date of this licence. The updated plan shall include, but not be limited to:

   a) The terms and conditions of this licence;
   b) An updated groundwater monitoring program that includes the following:

      i. Quarterly monitoring of the groundwater wells in Schedule A;
      ii. Quarterly reporting of site water monitoring data; and
      iii. Addition of dissolved oxygen and oxidation-reduction potential as field parameters for the groundwater program.

Adaptive Management Plan

36. The Licensee shall submit an updated Adaptive Management Plan to the Board within 90 days of the effective date of this licence. The updated plan shall include, but not be limited to:

    a) the terms and conditions of this licence;

    b) the addition of sulphate to the AMP for mine source flow path water quality and receiving environment surface water quality components of the AMP;

    c) the addition of specific numerical thresholds for the mine source groundwater quality AMP based on scientifically derived thresholds that are proactive and protective of the receiving environment; and

    d) as part of the annual reporting on the AMP, a detailed assessment of the full suite of paramaters being measured at AMP indicators stations and identification of any additional indicator parameters that should be incorporated into the AMP.

Groundwater-Surface Water Interaction Study

37. Within 90 days of the effective date of this licence, the Licensee shall submit to the Board a plan for the assessment of groundwater-surface water interactions at the site including, but not limited to:

    a) a review of all monitoring results from all wells on site;

    b) predictions of groundwater-surface water interactions; and

    c) verification of existing site information including rationale supporting location of receiving water monitoring stations.

38. The Licensee shall carryout the assessment according the plan and submit report documenting the results of the program and any recommendations stemming from the study on or before March 31, 2019.

39. Subject to any required assessments, authorizations or approvals, the Licensee shall implement all plans required by this section of this licence.

## PART F –RECEIVING WATER QUALITY STANDARDS

40. All results of grab sample analysis for MH-11, MH-12 and MH-15 shall meet the following receiving water quality standards.

| Parameter | Maximum Concentration in a Grab Sample |
|---|---|
| Aluminum, dissolved | if pH $\geq$ 6.5 = 0.05 mg/L<br>if pH < 6.5 = e[1.6−3.327(median pH)+0.402(median pH)^2] |
| Antimony, total | 9 µg/L |

| Parameter | Maximum Concentration in a Grab Sample |
|---|---|
| Arsenic, total | 5 μg/L |
| Beryllium, total | 0.13 μg/L |
| Cadmium, dissolved | $= e^{[0.736 \times \ln(hardnesss)-4.943]}$ in μg/L |
| Chromium VI, total | 1 μg/L |
| Cobalt, total | 4 μg/L |
| Copper, total[1] | if hardness ≤ 50 mg/L = 2 μg/L<br>if hardness >50 mg/L = 0.04 x (hardness) |
| Iron, total[2] | 1 mg/L |
| Lead, total[3] | **MH-12/ MH-15** (μg/L) $= \{3.31 + e^{[1.273\ln(hardness)-4.704]}\}$<br>**MH-11** (μg/L) $= 1.928 \times \{3.31 + e^{[1.273\ln(hardness)-4.704]}\}$ |
| Molybdenum, total | 0.073 mg/L |
| Nickel, total | if hardness ≤ 60 mg/L or unknown = 25 μg/L<br>if hardness > 60 mg/L and ≤ 180 mg/L = $[e^{\{0.76[\ln(hardness)]+1.06\}}]$ μg/L<br>if hardness > 180 mg/L= 150 μg/L |
| Selenium, total | 2 μg/L |
| Silver, total | 0.25 μg/L |
| Sulphate, total | if hardness ≤ 30 mg/L =128 mg/L<br>if hardness > 30 mg/L and ≤ 75 mg/L =218 mg/L<br>if hardness > 75 mg/L and ≤ 180 mg/L =309 mg/L<br>if hardness > 180 mg/L =429 mg/L |
| Thallium, total | 0.8 μg/L |
| Zinc, total[3] | **MH-12 / MH-15**<br>if hardness ≤ 90 mg/L = 7.5 μg/L<br>if hardness > 90 mg/L $= [7.5 + 0.75(hardness - 90)]$ μg/L<br>**MH-11**<br>if hardness ≤ 90 mg/L = 18.75 μg/L<br>if hardness > 90 mg/L = 2.5 x $[7.5 + 0.75(hardness - 90)]$μg/L |

Hardness is measured in mg/L $CaCO_3$ at monitoring station

[1] Standard for Copper during month of May is 4 μg/L if hardness ≤ 50 mg/L or 0.08 x [hardness] if hardness > 50 mg/L

[2] Standard for Iron during month of May is 3.9 mg/L

[3] Apply to dissolved fraction when TSS is 4 mg/L or higher

## PART G - MONITORING AND SURVEILLANCE

41. The Licensee shall comply with the water quality monitoring program and surveillance network program as outlined in the EMSRP and in accordance with Schedule A of this licence and shall submit the data that is compiled as a result of these programs and studies as a component of the required annual reports.

42. Laboratory analyses shall be performed by a laboratory accredited under the International Organization for Standardization ISO/IEC 17025:2005 standard and the accreditation must include the actual tests being performed by the laboratory.

43. Monitoring and sampling shall be carried out in accordance with the procedures and standards described in:

    a) Guidance Document for the Sampling and Analysis of Metal Mining Effluents, April 2001, (Report: EPS 2/MM/5), Minerals and Metals Division, Environment Canada;

    b) Guidance Document for Flow Measurement of Metal Mining Effluents, April 2001, (Report: EPS 2/MM/4), Minerals and Metals Division, Environment Canada;

    c) Standard Guide for Sampling Ground-Water Monitoring Wells, ASTM D4448-01, ASTM International, PA, USA.

Physical Monitoring Program

44. The Licensee shall comply with the physical monitoring program as outlined in the EMSRP and Schedule B of this licence and shall submit the data that is compiled as a result of these programs and studies as a component of the required annual reports.

45. All earthworks and water retaining structures including, but not limited to, open pits, waste dumps, ditches, dams, dykes, weirs and appurtenances shall be inspected by a Professional Engineer licenced to practice in Yukon as per the Post-Closure Geotechnical Monitoring Plan. The results of the inspection, including all problems identified, remedial measures proposed, and remedial measures implemented, shall be compiled in a report that shall be submitted to the Board as part of the annual report.

46. The Licensee shall complete a dam safety review for all water retaining structures, including but not limited to dams, dykes, weirs and appurtenances at least once every ten years, with the first review to be completed no later than 2026. The review shall be conducted in accordance with the most recent Dam Safety Guidelines published by the Canadian Dam Association.

47. Details of any maintenance, inspection and/or surveillance activities undertaken in the previous year in relation to dam safety shall be included in the annual report.

48. The North tailings dam shall be monitored by the use of instrumentation as required by the Engineer of Record in the Post-Closure Geotechnical Monitoring Plan to ensure long term stability.

Fisheries Monitoring Program

49. A fisheries monitoring program shall be conducted in accordance to Schedule A-Part 3 of this licence and the EMSRP. The sample locations shall be marked in the field in a manner that ensures that replicate surveys can be made.

50. The Licensee shall survey sites MH-13, and MH-30 beginning in 2018, to confirm:

    a) a generalized stream bed and substrate characterization and to identify changes since the previous sampling, and

b) through generally accepted methodology, a catch per unit effort and the general implications of any changes observed as compared to prior sampling periods.

51. The results of the fisheries monitoring program shall be included in the Annual Report.

Benthic Invertebrate Monitoring

52. Benthic invertebrate monitoring shall be conducted in accordance with Schedule A-Part 3 of this licence and the EMSRP beginning in 2018.

53. The Licensee shall collect representative samples in accordance to the Canadian Aquatic Biomonitoring Network (CABIN) Field Manual for wadeable streams, and accepted preservation, enumerative and identification procedures.

54. Sample collection, identification, enumeration and data interpretation shall be performed by an individual having qualifications, expertise and experience in the subject.

55. Water sampling shall be conducted at each of the collection sites during the sample period per Schedule A.

56. Results of the benthic invertebrate monitoring and the water sampling and analysis shall be included in the Annual Report.

Sediment Monitoring

57. Sediment monitoring shall be conducted in accordance with Schedule A-Part 3 of this licence and the EMSRP.

58. The timing of the sediment monitoring shall coincide with the benthic invertebrate monitoring program. Triplicate samples shall be collected at each of the five sites indicated in the benthic invertebrate monitoring program.

59. All data collection shall be conducted in accordance to a nationally recognized sampling protocol (e.g. CCME Protocols Manual for Water Quality Sampling in Canada, 2011). The results shall be included in the Annual Report.

## PART H – GENERAL CONDITIONS

60. The Licensee shall ensure a copy of this Licence is maintained at the site during operations at all times.

Other Laws

61. No condition of the water use licence limits the applicability of any statutory authority.

62. All construction or installation of works authorized by this licence shall occur on property that the Licensee has the right to enter upon and use for that purpose.

Non-Compliance

63. In the event that the Licensee fails to comply with any provision or condition of this licence, the Board may, subject to the Act, cancel the licence.

Correspondence

64. Where any direction, notice, order or report under this licence is required to be in writing, it shall be given:

a) To the Licensee, if delivered, or mailed by registered mail, to the address identified on page 1 of this licence, and shall be deemed to have been given to the Licensee on the day it was delivered, or 7 days after the day it was mailed, as the case may be; or

b) To the Board, if delivered, faxed or mailed by registered mail, to the following address:

Yukon Water Board
Suite 106, 419 Range Road
Whitehorse YT Y1A 3V1

Fax#: (867) 456-3890

and shall be deemed to have been given to the Board on the day it was delivered or faxed, or 7 days after the day it was mailed, as the case may be.

c) The Board or the Licensee may, by notice in writing, change its address for delivery.

Annual Reports

65. The Licensee shall submit annual reports to the Board on or before March 31 of the year following the year reported. The report shall include the information required by the Regulation including, but not necessarily limited to:

a) summaries of all data generated as a result of the monitoring requirements of this licence, including analysis and interpretation by a qualified individual or firm and a discussion of any variances from baseline conditions or from previous years' data;

b) a detailed record of any major post-reclamation maintenance work carried out on the waste dumps, diversion works, roads or any other aspect on the property that may have an impact on water;

c) documentation of any activities carried out at the site including those carried out under the requirements of the DDRP or Adaptive Management Plan;

d) reporting on the Adaptive Management Plan; and

e) an identification of any recommendations from the physical monitoring program, or from the most recent dam inspections or safety reviews, that were either not implemented, or that did not comply with the schedule proposed in the report, or in the review, including an explanation of why the recommendations was not implemented.

Quarterly Reports

66. Unless otherwise specified in this licence, the Licensee shall forward to the Board a copy of all data collected as part of the monitoring programs of this licence no more than 30 days after the conclusion of each quarterly sampling event in which that data was collected.

Reports

67. The Licensee shall provide to the Board one unbound, single-sided, paper copy of all reports required by this licence. All reports must be reproducible by standard photocopier.

68. The Licensee shall upload electronic copies of all reports required by this licence to the Yukon Water Board's online licensing registry, Waterline. Electronic copies shall be submitted in one of the following formats: MS Word, MS Excel, or Adobe .pdf format.

69. All water quality, water quantity and water level data shall also be submitted in Excel format. Water quality results must be uploaded to Waterline in the format outlined in the most recent version of Yukon's "Laboratory Data Submission Standards for Water Quality". This guide is available on the Yukon Water Board website.

## SCHEDULE A – PART 1
## SURVEILLANCE MONITORING SITES

| Station ID | Station Description | Coordinates | |
|---|---|---|---|
| | | Northing | Easting |
| MH-11 | Camp Creek located 2 km downstream of the Reclaim Pond (Upper False Canyon Creek) | 6707788 | 509460 |
| MH-12 | East Fork of Tributary E – of False Canyon Creek, approximately 2 km downstream of the north tailings dam | 6712755 | 509688 |
| MH-02 | North Dam seepage | 6711477 | 508060 |
| MH-22 | Burnick 1200 Portal discharge | 6712946 | 506767 |
| SDH-S2 | Drainage from the 1380 Portal, present as a seep in the downslope waste rock dump | 6709558 | 506325 |
| MH-13 | False Canyon Creek main channel located 10 km downstream of the mine site | 6709113 | 512541 |
| MH-04 | Located near the Camp Creek headwaters above the former Reclaim Pond | 6710292 | 507267 |
| MH-15 | West Fork of Tributary E | 6718408 | 510041 |
| MH-29 | Access Creek Upstream of Camp Creek | 6708895 | 509146 |
| MH-30 | Unnamed Tributary Upstream of False Canyon Creek | 6707568 | 510985 |
| MW13-01 | Jewelbox/Main Zone – in 1380 Gully, downgradient of 1380 Portal. | 6710202 | 506635 |
| MW13-04 | Main Access Road | 6708729 | 507240 |
| MW13-05 | Main Access Road – south of the Mill Site on the Main Access Road. | 6709392 | 507318 |
| MW13-06 | Burnick 1200 Portal | 6713001 | 506761 |
| MW13-07 | North Dam – north of the North Dam and tailings pond area. | 6711502 | 507904 |
| MW13-10 | Mill site - northeast of the Mill Site | 6709866 | 507774 |
| MW13-08 | Downgradient of 1380 Portal | 6710234 | 507325 |
| MW13-13 | Downgradient of 1380 Portal | 6709814 | 506452 |
| MW14-01 | In proximity to the landfill. | 6712303 | 507861 |
| MW14-02 | In proximity to the landfill. | 6712330 | 507967 |
| MW14-03 | In proximity to the landfill. | 6712442 | 507922 |
| MW14-04 | In proximity to the landfill. | 6712365 | 508005 |

## SCHEDULE A – PART 2
## WATER MONITORING SURVEILLANCE PROGRAM

| Station Category | Station ID | Flow | Water Level | Field Measurements | | External Analytical Suite | |
|---|---|---|---|---|---|---|---|
| | | | | Frequency | Parameters | Frequency | Analytical Suite |
| Compliance Point | MH-11 | BM | | BM | C | BM | A |
| | MH-12 | BM | | BM | C | BM | A |
| | MH-15 | BM | | BM | C | BM | A |
| Discharge Source | MH-02 | BM | | BM | C | BM | A |
| | MH-22 | BM | | BM | C | BM | A |
| | SDH-S2 | BM | | BM | C | BM | A |
| Additional Surface Water Stations | MH-13 | BM | | BM | C | BM | A |
| | MH-04 | BM | | BM | C | BM | A |
| | MH-29 | BM | | BM | C | BM | A |
| | MH-30 | BM | | BM | C | BM | A |
| Groundwater | MW13-01 | | Q | Q | D | Q | B |
| | MW13-04 | | Q | Q | D | Q | B,H |
| | MW13-05 | | Q | Q | D | Q | B,H |
| | MW13-06 | | Q | Q | D | Q | B |
| | MW13-07 | | Q | Q | D | Q | B,H |
| | MW13-10 | | Q | Q | D | Q | B,H |
| | MW13-08 | | Q | Q | D | Q | B |
| | MW13-13 | | Q | Q | D | Q | B |
| | MW14-01 | | Q | Q | D | Q | B,H |
| | MW14-02 | | Q | Q | D | Q | B,H |
| | MW14-03 | | Q | Q | D | Q | B,H |
| | MW14-04 | | Q | Q | D | Q | B,H |

BM: Bi-monthly; S/F: Spring and Fall (freshet and low flow periods); Q:Quarterly (to include freshet and low flow periods

C: pH, specific conductance, water temperature

D: pH, specific conductance, water temperature, dissolved oxygen, ORP

A: pH, specific conductance, total alkalinity, TSS, TDS, total and dissolved metals, total ammonia-N, nitrate-N, nitrite-N, dissolved sulphate, hardness

B: pH, specific conductance, total alkalinity, dissolved metals, total ammonia-N, nitrate-N, nitrite-N, dissolved sulphate, hardness

H: hydrocarbons including BTEX, LEPH, HEPH, VPH, PAH

## SCHEDULE A – PART 3
## AQUATIC RESOURCES MONITORING PROGRAM

| Station ID | Benthics/ Sediments | Fisheries |
|---|---|---|
| MH-11 | BA-LFF | |
| MH-12 | BA-LFF | |
| MH-13 | BA-LFF | BA-LFF |
| MH-04 | BA-LFF | |
| MH-29 | BA-LFF | |
| MH-30 | BA-LFF | BA-LFF |

BA-LFF: Every two years during the low flow period (August or September)

Benthics: field collection and laboratory taxonomy using CABIN wadeable stream protocol.
Sediment: metals, total organic carbon and particle size
Fisheries: population and fish size

## SCHEDULE B – PHYSICAL MONITORING

Inspection of Relevant Mine Components

| Year | Frequency |
|---|---|
| 2017- 2026 | Annually |
| 2027-2040 | Years 2031, 2036, 2040 |

# APPENDIX B:

# ADAPTIVE MANAGEMENT PLAN

# Sä Dena Hes Mine

# Post-Reclamation Adaptive Management Plan

12/02/2018

## Prepared for:

SÄ DENA HES OPERATING CORPORATION C/O TECK RESOURCES LIMITED

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# 1. INTRODUCTION

## 1.1 OVERVIEW

The Sä Dena Hes (SDH) mine is a lead/zinc mine located 45 km north of Watson Lake in southeastern Yukon within the Traditional Territory of the Kaska First Nation, specifically Liard First Nation (LFN). The SDH mine was constructed in 1991 and operated between August 1991 and December 1992 by Curragh Resources Inc. under Water Licence IN90-002 pursuant to the *Northern Inland Waters Act*. Approximately 700,000 tonnes of ore were mined and processed onsite during the 16-month operation of the mine. The mine has not been in operation since that time.

After 14 years in Temporary Closure, on January 26, 2012, Teck Resources Limited (Teck), on behalf of the Sä Dena Hes Operating Corporation (SDHOC), informed YG of its intention to enter the SDH mine into permanent closure and begin to implement the approved Detailed Decommissioning and Reclamation Plan (DDRP) on January 29, 2013. The decommissioning, closure and reclamation activities to permanently close the SDH mine was conducted from 2013 to 2015 in accordance with the licensed and approved DDRP.

During the 25-year post-reclamation phase, Teck proposes:

- To continue to deposit a waste from the discharges of the Main Zone 1380 Portal, the Burnick 1200 Portal and seepage from the Tailings Management Facility;

- To maintain and replace (if necessary) culverts and crossings on the Main Access Road and Site Access Road; and

- To store/alter water flow (to maintain dry construction conditions) for removal of culverts and back stabilization during decommissioning of the Main Access Road and Site Access Road.

This Adaptive Management Plan (AMP) is a tool used to address uncertainty or conditions in water quality beyond those anticipated in post-reclamation. AMPs outline a range of possible but unexpected outcomes and the responses that will be undertaken to curb possible negative impacts associated with these unexpected situations.

There are several very prescriptive and detailed management plans required for both operational control and regulatory approval for the post-reclamation period. Teck has developed a number of operational management plans which describe the management and response actions for expected conditions at the site. These plans currently include:

- Detailed Decommissioning and Reclamation Plan (Teck, 2015); and,
- Environmental Monitoring, Surveillance, Reporting Plan - EMSRP (Teck, 2017).

This AMP provides a framework for responses to conditions beyond those expected and identified in these decision-based management plans. Consequently, this AMP addresses a limited range of components related to water quality. It is expected that the AMP will be reviewed and revised as the closure measures are evaluated over time. The AMP has also been updated to reflect the conditions described in Water Use License, QZ16-051, which came into effect April 1, 2017.

## 1.2 ADAPTIVE MANAGEMENT PLANNING

Adaptive management is an approach to environmental management that is appropriate when a mitigation measure may not function as intended or when broad-scale environmental change is possible. Adaptive management plans are precautionary in nature, and provide a level of security in long term environmental planning. Adaptive management plans also allow for the inclusion of improved science into mitigation measures as they are continually revised.

Adaptive management has been evolving since its emergence in the 1970s. Adaptive approaches include an ability to incorporate knowledge into the management plan as the knowledge is gleaned and circumstances change (Eberhard, et al., 2009). Eberhard, et al., described the categories of knowledge that may trigger changes to water quality management plans; system understanding, measuring progress, and anticipating changes. These categories allow for the inclusion of knowledge and adaptation of management to changed conditions. Embedding adaptation into environmental plans involves thinking about how the results of monitoring will change management actions. Adaptive management plans are a way to accept uncertainties and build a structured framework to respond to changing conditions.

Adaptive management constructs a flexible path with actions to take when specific triggers occur. AMPs are a formalization of a plan for performance monitoring and project re-evaluation in the future. The general structure of adaptive management can be described by the following steps:

1. Identify risk triggers associated with vulnerabilities or uncertainties;
2. Quantify impacts and uncertainties;
3. Develop a monitoring network to understand variability and detect changes in water quality;
3. Evaluate strategies and define implementation path that allows for multiple options at specific triggers;
4. Monitor the performance and critical variables in the system; and
5. Implement or re-evaluate strategies when triggers are reached.

While the nomenclature used in AMPs varies, the steps listed above are representative of typical AMP processes. Within AMPs, triggers provide decision points in a stepwise decision-making framework that identifies how and when management action should be taken. A key characteristic of adaptive management is monitoring, which is used to document and track the status of the system of interest and to adjust management policies in an iterative process. Adaptive management is a rigorous method for addressing uncertainties in natural systems to meet performance objectives.

## 1.3 ADAPTIVE MANAGEMENT PLAN OBJECTIVES

This document identifies areas of uncertainty within the operational phase of Permanent Closure at Sä Dena Hes Mine and provides an AMP framework for each. The AMP describes monitoring commitments, thresholds, triggers and responses to underperforming elements or emerging risks for water quality. The steps laid out in the AMP framework are proactive, and describe progressively intensifying actions taken before adverse environmental impacts are observed.

Response planning, and results for anticipated, known and/or planned events are contained within site management plans. This AMP provides a framework for responding to a range of future events that are uncertain such as the loss of attenuation capacity, increased rates of metal release or other events that can result in the exceedance of the site water quality objectives.

AMPs do not prescribe specific responses to range of events, which is a function of Management plans. AMPs are designed to expand from monitoring data and must be flexible to do this. It is difficult to predict the specific environmental conditions that may arise which require a response from management and, therefore, the AMP does not provide specific detailed descriptions of responses to a situation. The AMP provides a range of possible responses to use as a guide to respond to specific environmental conditions encountered. Management should use the information provided in the AMP and undertake the appropriate response.

## 1.4 ADAPTIVE MANAGEMENT PLAN APPROACH

In addition to the conclusions drawn from monitoring, the approach presented in this AMP follows the Environment Canada Environmental Code of Practice for Metal Mines, Section 4.1.17 on Adaptive Management, which states that:

Mine owners/operators should use adaptive management methods to revise and refine the environmental management strategy. Adaptive management should consider a wide range of factors, including:

- results of environmental audits or other evaluation activities;
- results of environmental monitoring;
- results of monitoring of the performance or condition of environmental infrastructure, such as containment structures, water management systems or treatment facilities;
- technological developments; and
- changing environmental conditions. (Environment Canada, 2009)

In addition to the guidance provided by the Environmental Code of Practice for Metal Mines, the AMP meets the Yukon Government's Protocol for the Contaminated Sites Regulation under the Environment Act Protocol 13: Adaptive Management.

### 1.4.1 AMP FRAMEWORK

This AMP is laid out using a common element approach to consistently implement the AMP protocol as illustrated in Figure 1-1. The common elements are:

1. Description of the site water quality components and associated risk narratives:

- *Description* and understanding of the component leads to risk narrative and specific performance thresholds.
- *Risk Narrative* describes the possible environmental impacts and environmental conditions to water quality that implementation of the AMP will prevent.

2. Monitoring site water quality:

- *Specific Indicators* are the environmental or physical parameters to be monitored and assessed. Specific indicators are measurable or observable, and are indicative of changes from the designed or expected condition, such as select water chemistry parameters and groundwater levels.
- *Monitoring Requirements* describes the monitoring regime for the component including frequency, type of data required, and interpretation of results. The monitoring sites and schedule for the entire SDH mine site during reclamation and closure are already set out in the Environmental Monitoring, Surveillance, Reporting Plan (Teck, 2017). The AMP identifies specific monitoring sites described in the EMSRP that would identify potential changes and uses those sites and monitoring schedule to prompt an appropriate response. One of the possible actions that can come out of the AMP if triggered is to examine the water quality results from appropriate additional monitoring sites described in EMSRP, or to request additional sampling beyond those in the EMSRP.
- *Specific Performance Thresholds* define the conditions, in terms of specific indicators, when action is triggered. Performance thresholds are specific to each AMP component and are staged to accommodate levels of concern and a diversity of actions. To the extent possible, specific performance thresholds will include early warning thresholds.

3. Responding to unexpected conditions of the component:

- *Specific Responses* are staged according to specific performance thresholds and describe the actions to be implemented if those thresholds are crossed.

  *The actions to be implemented are the following:*

  a) Notification – notify the appropriate parities based on which component and level of specific performance threshold is exceeded.

  b) Review – verification of data appropriate to the level of specific threshold exceeded.

  c) Evaluation – an investigation into the cause of the exceedance appropriate to the level of the specific threshold exceeded. Can include trend analysis, resampling, or a more thorough investigation into root causes.

d) Action – an appropriate response based on the level of the specific threshold exceeded.

4. Annual Reporting and Review:

Annual Reporting would include the rationale for modifying the AMP if site conditions were to change. The AMP should be modified whenever monitoring data demonstrate a sustained deviation from previous trends in the data, the monitoring plan is revised and/or the best available conventional technology or practice to characterize or mitigate the water quality becomes available. The annual review will include a review of the relevant monitored data and AMP elements. Updates, amendments, performance thresholds crossed, and trigger(s) activated will be provided to the appropriate governmental organizations as required and will be part of the annual report.

In year 10 of the EMSRP monitoring schedule, data will be reviewed to evaluate if data variability and trends have been adequately characterized to reduce the monitoring frequency. The AMP will be reviewed and potentially revised such that the AMP is consistent with the proposed monitoring schedule from year 11 and onwards.

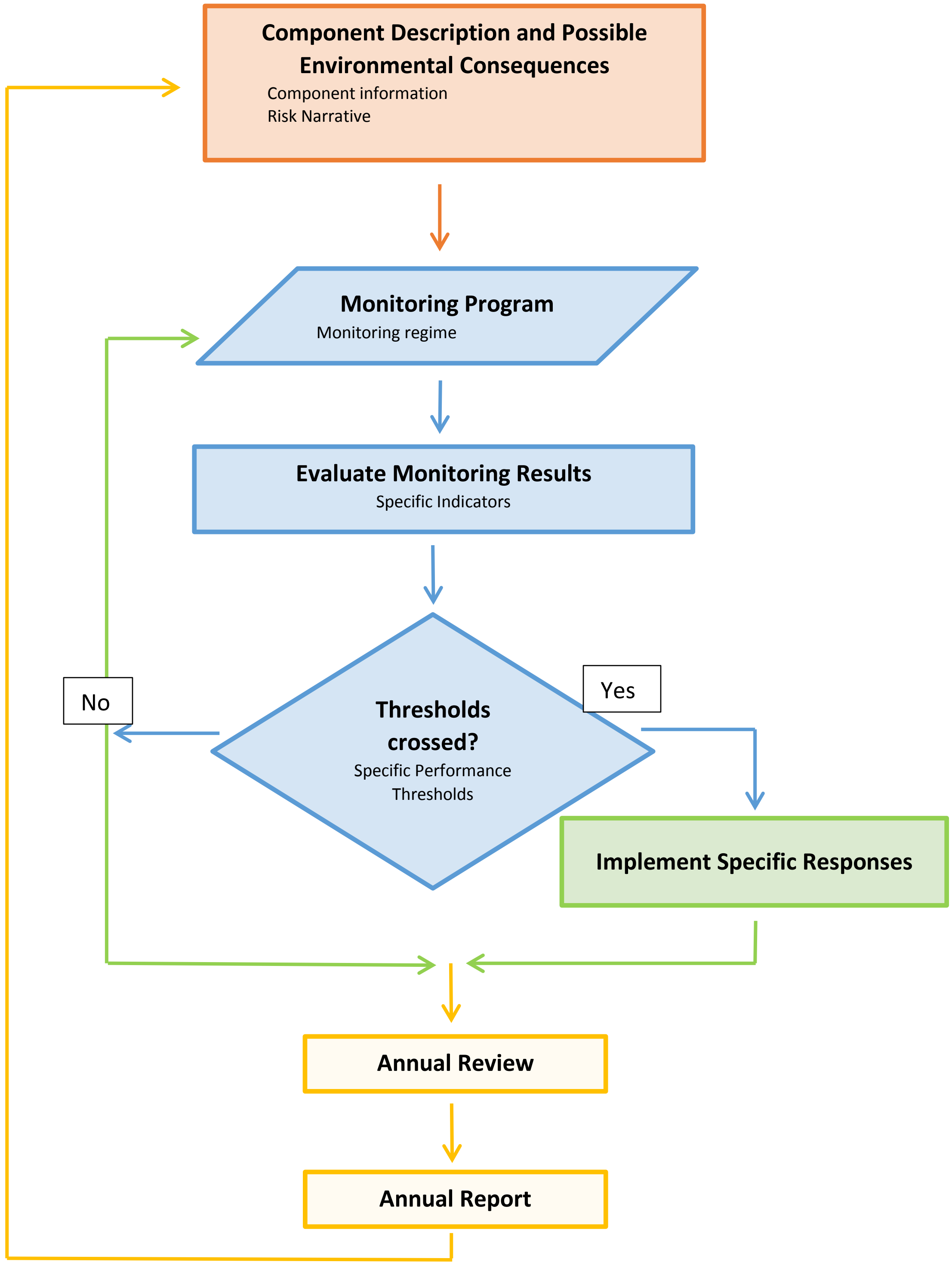



**Figure 1-1: Sequential Components of the AMP (Adapted from AECOM 2010).**

### 1.4.2 SITE SPECIFIC LOADING

This AMP was developed to protect water quality in the receiving water (Camp Creek, Tributary E, and False Canyon Creek) downgradient of the site.

This AMP does not consider physical stability or waste covers as mine components requiring AMP triggers and thresholds as the purpose of an AMP is to provide a management framework for facilities and performance that have a relatively high degree of uncertainty. The physical stability of the covers and the engineered geotechnical facilities will be monitored and maintained during post-reclamation according to the *Geotechnical Monitoring Program* (SRK, 2014b), and the *Environmental Monitoring, Surveillance, and Reporting Plan* (Teck, 2017). If during regular monitoring and maintenance further issues are identified they will be dealt with under these two plans. These plans also account for additional inspections that can be triggered by extraordinary circumstances such as after a significant storm or seismic event.

## 1.5 DESCRIPTION OF AMP LOADING SOURCES AND FLOW PATHS

There are three loading sources (North Dam Seepage, Burnick Portal and 1380 Portal) at SDH. Loadings from these sources infiltrate into the ground near their sources. Loading from the sources would then travel along groundwater flowpaths to surface water features. Constituent loading from the sources has not been observed in the receiving water and the mass loadings have been inferred to be attenuated. This section, adapted from the *Draft Adaptive Management Plan, Sä Dena Hes Mine* (SRK, 2014a) describes each loading source, the geochemical conceptual model and the drainage flow path.

### 1.5.1 NORTH DAM SEEPAGE

During operations, tailings were discharged to the North Tailings Dam. Currently, there is no ponded water behind the North Tailings Dam. The tailings are saturated within a meter of the surface. Seepage from the toe of the North Dam is routinely monitored at MH-02 as required by the existing WUL QZ15-082 (previously QZ99-045). The seepage at MH-02 is tailings porewater that mixes with groundwater from the valley sides and runoff from the North Dam face (SRK 2000). The seepage quality at MH-02 is routinely in compliance for all WUL parameters.

Seepage from the North Tailings Dam flows throughout the entire year. Flow at MH-02 is highest during freshet and lowest during the winter. The seepage flows above ground for a short distance from the North Dam before infiltrating into the ground. It then flows as groundwater before eventually discharging to North Creek and the headwaters of the East Fork of Tributary E. From the East Fork of Tributary E, the water flows to Tributary E and then to False Canyon Creek. The flow path is shown in Figure 1-2, Figure 1-3, and Figure 1-4.

Metal attenuation along this pathway has not been evaluated. The flowpath between the point of infiltration and discharge to surface water is shorter than the flowpaths at the Burnick Portal and 1380 Portal. For the purposes of the post-reclamation water quality predictions, it was conservatively assumed that the entire constituent load from the seepage discharges to North Creek above MH-12 and that there was no attenuation of metals by the soil (SRK 2014a).

#### ***1.5.1.1*** *Specific Issues*

The objective of the AMP for the North Dam seepage is to detect any deterioration in water quality in the tailings dam seepage and manage and mitigate these changes before any effects are observed in the downstream receiving surface waters. AMP monitoring locations include tailings seepage monitoring at MH-02 located at the toe of the dam and surface water monitoring station MH-12 in North Creek.

Monitoring MH-02 would detect any changes in water quality close to the loading source. Downstream of this station, tailings seepage flows as groundwater. Any potential change in surface water quality in the receiving waters would therefore be a function of groundwater reactive transport. Any water quality changes are expected to be slow and would be detected by monitoring over multiple years.

### 1.5.2 BURNICK PORTAL DISCHARGE

The Burnick Portal is located 3 km from the former SDH mill site and was constructed to access the Burnick Zone ore body. There are two portals (1200 and 1300) at the Burnick Zone. The lower portal previously discharged continuously and has been routinely monitored during temporary closure at MH-22 as part of WUL QZ15-082 (previously QZ99-045). Now discharge from MH-22 is ephemeral (June to November). The discharge water quality exceeds the WUL limits for zinc during low flow months.

MH-22 discharge flows through a buried culvert, cascades over the crest of the Burnick waste rock dump, and then infiltrates under the waste rock dump. It then flows downgradient to the east-northeast as groundwater to the headwaters of the West Fork of Tributary E, which is more than 1.5 km downgradient of the portal, as shown on Figure 1-2, Figure 1-3, and Figure 1-4. The headwaters of the West Fork of Tributary E are marshy and channeled surface flow is intermittent. Surface water flows to the east-northeast from the West Fork of Tributary E into Tributary E at MH-15 and then to False Canyon Creek. There is currently no evidence of the zinc load from the Burnick Portal in Tributary E or False Canyon Creek (SRK 2005). SRK (2000) concluded zinc is attenuated through extensive contact with the soils between the Burnick Portal and the West Fork of Tributary E.

Column experiments using discharge from the Burnick Portal and downstream soils were used to evaluate the attenuation mechanism (SRK 2007). The test work concluded that downgradient soils have the potential to significantly attenuate zinc concentrations at the levels observed in the discharge for much longer than 200 years. Column tests showed the attenuation capacity was not exhausted and no secondary minerals were formed. The studies confirmed that zinc is passively removed by contact with downgradient soils.

Because the zinc attenuation mechanism has more than 200 years of capacity, the attenuation capacity of the soils is considered to last for the duration of the licenced post-reclamation period.

#### ***1.5.2.1*** *Specific Issues*

The objective of the AMP for the Burnick Portal discharge is to detect any deterioration in water quality in the drainage flowing from the Burnick Portal and downgradient surface water. AMP monitoring locations include the Burnick portal drainage (MH-22), groundwater monitoring well MW13-06 adjacent to and downgradient of the

Burnick portal and surface water monitoring station MH-15 in the West Fork of Tributary E. The sampling locations and flow path are shown on Figure 1-2 , Figure 1-3, Figure 1-4.

Monitoring at MH-22 and MW13-06 would detect any changes in water quality in the portal drainage. Downstream of these stations, the drainage flows as groundwater. Any potential change in surface water quality in the receiving waters would be a function of reactive transport along the groundwater flowpath. Any changes are expected occur slowly and would be detected by monitoring over time.

### 1.5.3 1380 PORTAL DISCHARGE

The Main Zone Pit is a box cut located in the headwaters of Camp Creek. The 1380 Portal is located at the south end of the cut. In June 1999, drainage from the portal was observed. The drainage is monitored at MH-25 as part of WUL QZ99-045. MH-25 was sampled for the first time in 1999 to support the closure plan and was found to contain 41 mg/L dissolved zinc. The 1380 Portal was decommissioned in 2014 resulting in the portal drainage (and station MH-25) becoming inaccessible. Currently seepage within the downstream waste rock sump is the closest water quality sample to the 1380 portal drainage and is opportunistically sampled at station SDH-S2[1].

Drainage from the 1380 Portal is ephemeral (June to October) and consistently exceeded the previous WUL QZ99-045 (now QZ15-082) limits for zinc and cadmium and less frequently for lead. The zinc is leached from oxidizing exposed rock and talus around the portal area, which contain sphalerite. The source water is likely shallow groundwater with minor contributions from Jewelbox Pit (SRK 2000).

In 2000, MH-25 was monitored continuously for two months to assess variations in flow and chemistry. SRK (2000) reported that the drainage from the Main Zone pit portal contained elevated zinc, cadmium, and lead concentrations. Flow was estimated at 1 L/s. Flow decreased following freshet, but constituent concentrations were relatively constant. The constituent load associated with this flow was not detected in Camp Creek or False Canyon Creek at any time during the summer, suggesting attenuation along the flow path.

The 1380 Portal drainage flows through the marble Main Zone waste rock dump immediately downstream of the portal. Flow within the waste rock dump is audible but difficult to locate and/or access, resulting in infrequent monitoring. The dissolution of the marble attenuates zinc, cadmium, and lead by precipitation of metal carbonates. This attenuation mechanism of drainage from MH-25 is considered to last in perpetuity. Station SDH-S2 located within the waste rock below the 1380 Portal characterizes concentrations after attenuation by the waste rock. MH-25 and SDH-S2 have similar sulphate levels, but the zinc concentration is approximately four times lower at SDH-S2 than at MH-25, the level of cadmium is approximately five times lower, and the level of lead is approximately 1.5 times lower. Geochemical modelling indicates that that precipitation of zinc, cadmium, and lead carbonates is the probable attenuation mechanism resulting from the interaction of MH-25 drainage with marble waste rock (Day and Bowles 2005).

[1] The dump in its entirety is surveyed monthly for seepage. Samples are collected opportunistically at locations other than SDH-S2 when observed and accessible. Data are screened and reported as SDH-S2 if results are comparable.

After passing through the waste rock dump, the 1380 Portal drainage is further attenuated downstream as groundwater flows through the soils along the flow path to Camp Creek. There may eventually be a loss of attenuation capacity in the soils. The groundwater flow discharges to surface as a spring near the headwaters of Camp Creek. The length of the flow path from the 1380 Portal to the spring near the headwaters of Camp Creek is approximately 900 m. The spring is relatively large and is located where the southern fork of Camp Creek originates which mixes about 100 m downstream with water from a second groundwater spring on the southwestern flank of Mt. Hundere. Camp Creek flows to the south and is a tributary to False Canyon Creek, as shown on Figure 1-2 and Figure 1-3.

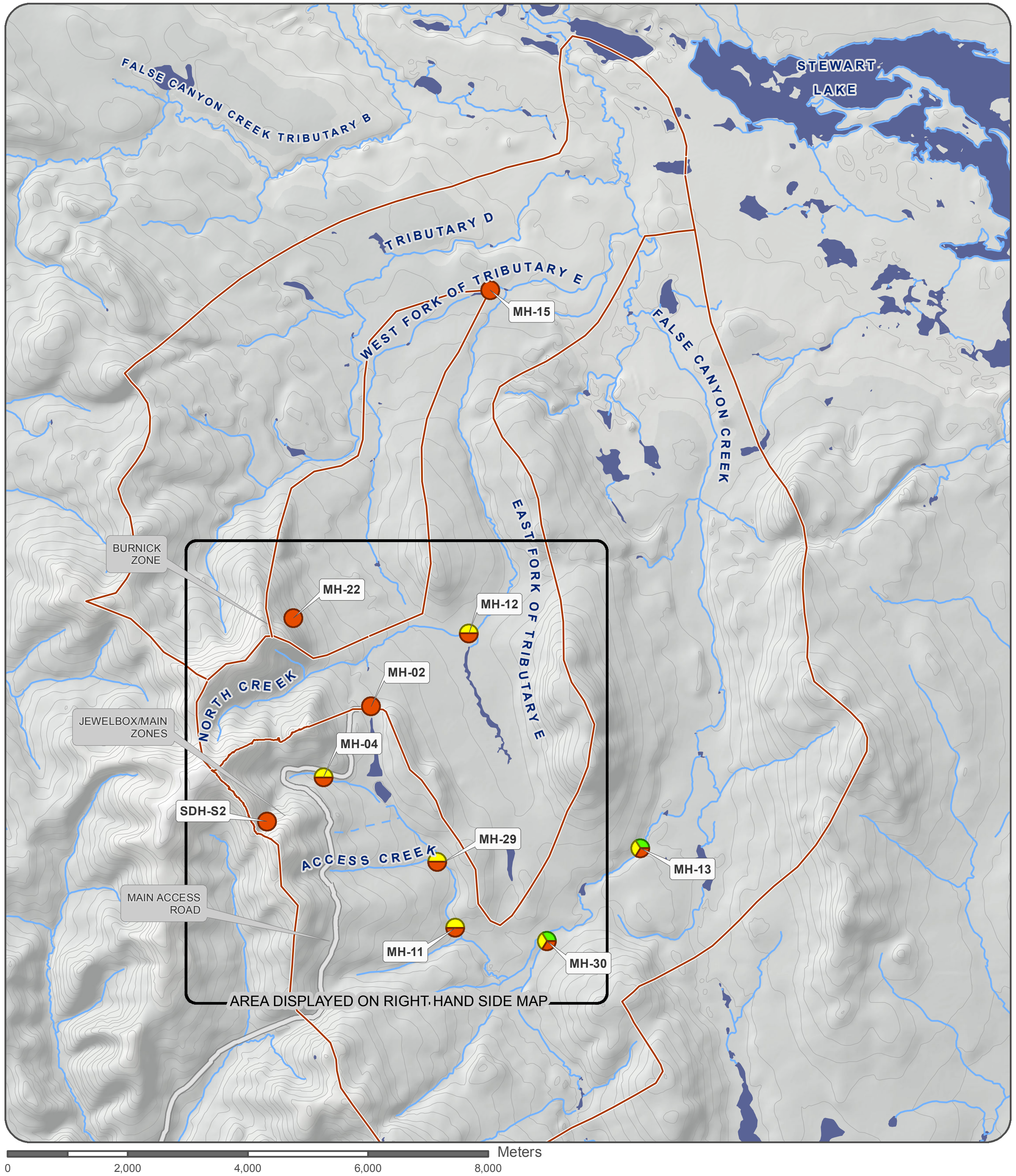
#### ***1.5.3.1*** *Specific Issues*

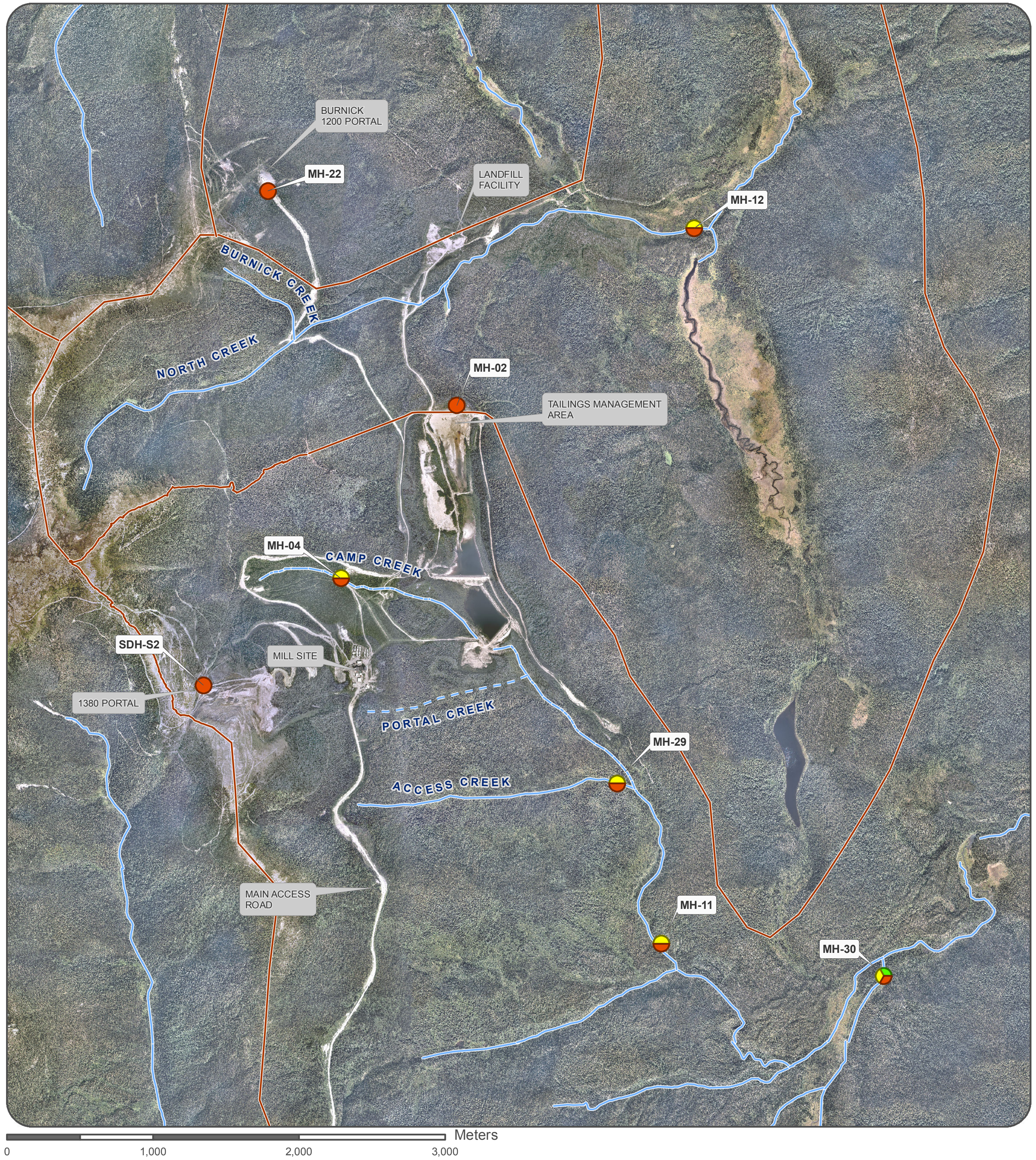
The objective of the AMP for the 1380 Portal drainage is to detect any deterioration in the portal drainage water quality within the waste rock dump and monitor for the potential loss of attenuation capacity of the soils upstream of Camp Creek. AMP monitoring locations include:

- Seepage monitoring at station SDH-S2[1] within the Main Zone waste rock dump,
- Groundwater monitoring at MW13-01, MW13-08, and MW13-13 located downgradient of SDH-S2 and upstream of Camp Creek, and
- Surface water monitoring at MH-11 upper False Canyon Creek.

All the locations are shown on Figure 1-2, Figure 1-3, and Figure 1-4.

Any potential change in surface water quality in the receiving waters would be a function of reactive transport along the groundwater flowpath. Any changes are expected to be slow and would be detected by monitoring over time.

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Datum: NAD 83; Map Projection: UTM Zone 9N



**Post-Reclamation Monitoring Stations**

- Fisheries Monitoring
- Benthos/Sediment Monitoring
- Surface Water Quality Monitoring

Catchments Boundaries

Teck

ACCESS

SÃ DENA HES MINE
POST- RECLAMATION PHASE WATER LICENSE APPLICATION

**FIGURE 1-2**
**POST-RECLAMATION SURFACE WATER MONITORING STATIONS**

JULY 2015

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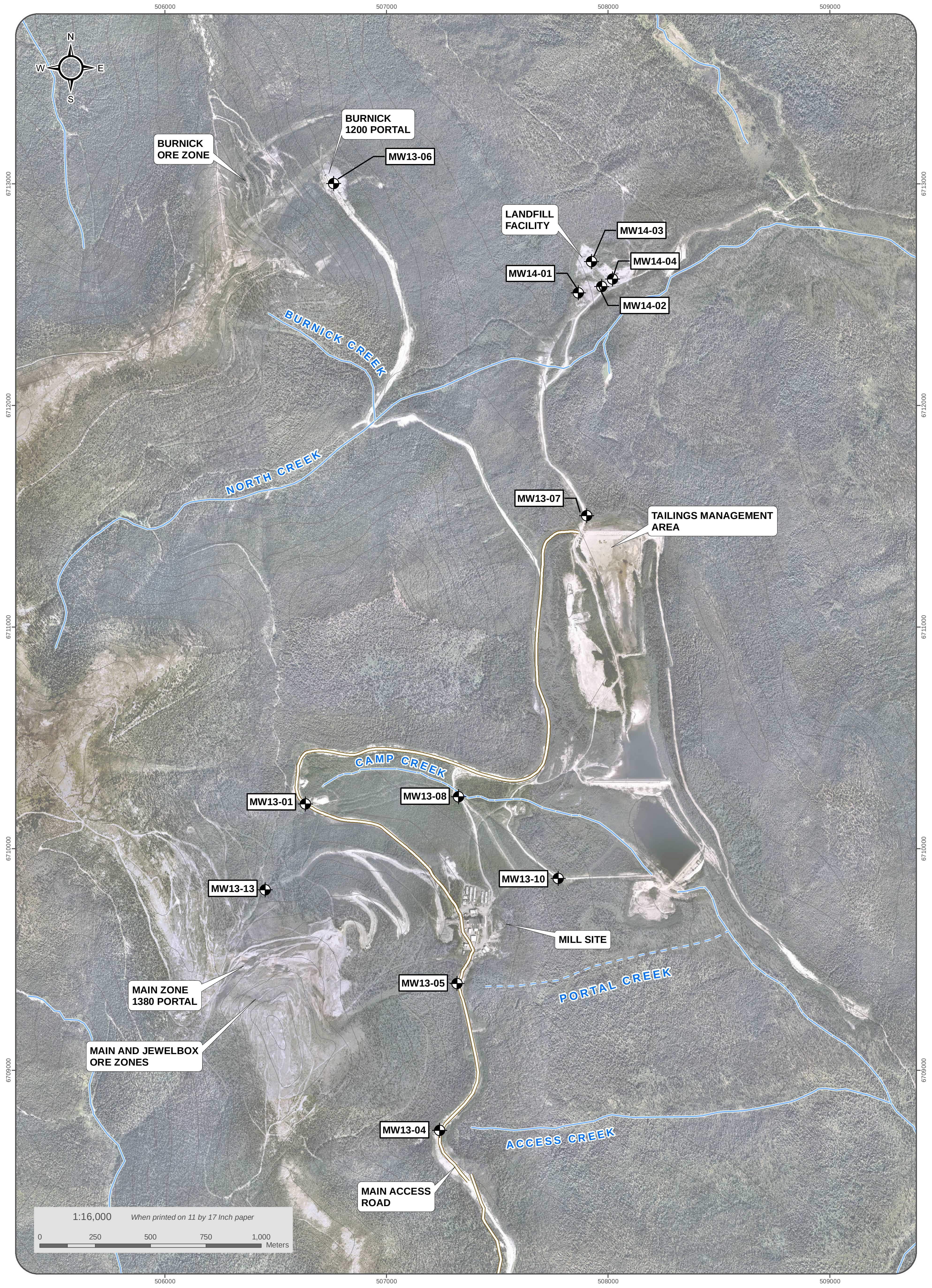


Monitoring Well

Perrenial Stream

Ephemeral Stream

Access Road

Contour

National topographic Data Base (NTDB) compiled by Natural Resources Canada at a scale of 1:50,000. Reproduced under license from Her Majesty the Queen, as represented by the Minister of Natural Resources Canada. All rights reserved.

Aerial Imagery Captures in 2012 (Pre-decomissioning and reclamation)

AEG

Datum: NAD 83; Projection: UTM Zone 9N



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SÄ DENA HES MINE
ADAPTIVE MANAGEMENT PLAN

**FIGURE 1-3**
**POST-RECLAMATION GROUNDWATER MONITORING WELL LOCATIONS**

APRIL 2017

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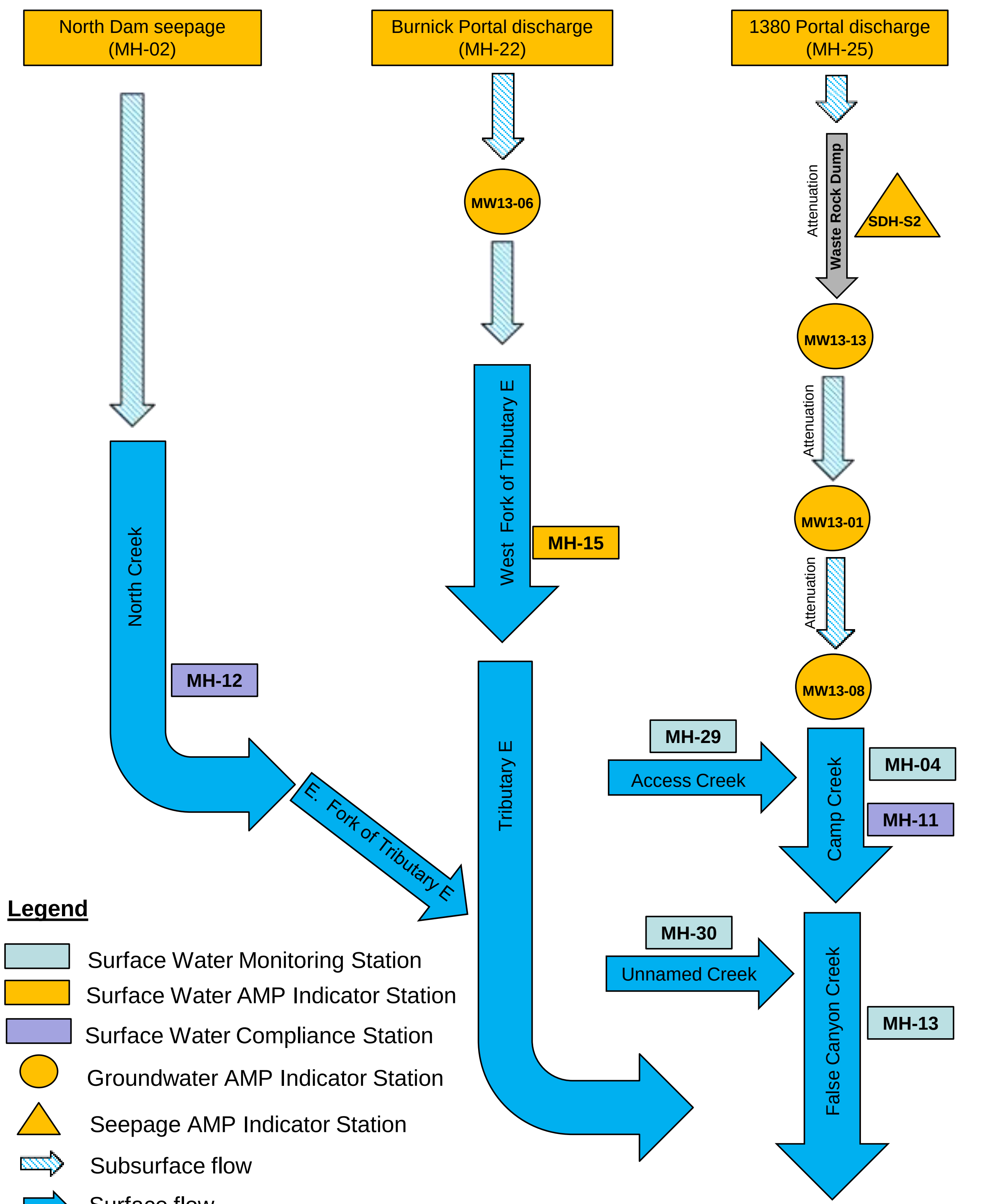
(*Last edited by: amatlashevska;27/04/2017/11:00 AM*)

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Filename: AdaptiveManagementPlanFigures_1CT008.043_Rev01_LMC_LNB.pptx

Sä Dena Hes

**Adaptive Management Plan**

**Conceptual Loading Diagram**

Date: Sept 26, 2014 | Approved: LNB | Figure: 1-4

## 1.6 DESCRIPTION OF AMP LANDFILL COMPONENT AND FLOW PATHS

Waste from the demolition of the Mill was placed in the existing landfill in 2015. The landfill is located near the former North Creek pump house. The landfill contains waste produced during operations and demolition debris from the Mill Site, former camp and office buildings, and miscellaneous debris from the site. The direction of groundwater flow inferred from the potentiometric gradient is east across the site and ultimately discharges along North Creek (Golder, 2015b). Investigation in the vicinity of the landfill found that the groundwater is within a shallow, unconfined aquifer that is composed primarily of unconsolidated sand with silt, gravel, and cobbles (Golder, 2015b). Data collected in September, 2015 estimate the groundwater velocity across the landfill to be approximately 60 m/year, such that groundwater would discharge to North Creek after a two to three-year period (Golder, 2015b).

The groundwater table around the landfill has been generally greater than three meters below the base of the landfill. SDHOC Waste Management Permit (#81-020) for the landfill requires that the base of the landfill cells remain a minimum of three (3) meters higher than observed water table elevations. Water quality is also being monitored around the landfill to detect if any buried materials are leaching metals or are a source of hydrocarbons.

### 1.6.1 SPECIFIC ISSUES

The objective of the AMP for the Landfill is to detect if there is an increase in the water level such that the landfill would be submerged or detect a change in water quality that might imply that landfill materials are leaching metals or are a source of hydrocarbons. AMP monitoring locations include MW14-02, MW14-03, MW14-04, which would detect any changes in water quality and level close to the source. MW14-01 is a background monitoring station for the landfill that is part of the EMSRP. Any changes in water quality downgradient are expected to be slow and would be detected by monitoring over time.

## 1.7 DESCRIPTION OF AMP CONTAMINATED SITE GROUNDWATER COMPONENTS AND FLOW PATHS

An environmental assessment was completed by Golder between 2011 and 2014, and identified areas of the site as having concentrations of petroleum hydrocarbons and metals in soil in excess of the Yukon Contaminated Site Regulation (CSR) standards. A conceptual groundwater model for the site, from data collected in September 2015, estimated groundwater flow velocity through the overburden to be 80 m/year from the Mill Site to Camp Creek. The distance between these sites is ~ 800 m so that any contamination that originated at the Mill Site would arrive at Camp Creek within 10 years. The Mill site has been in place for greater than 20 years so it is likely that if any contamination had reached groundwater it would have already been detected.

### 1.7.1 SPECIFIC ISSUES

The objective of the AMP for the general CSR groundwater wells is to detect a change in water quality that might imply that metals or hydrocarbons plume is spreading from historical sources near the mill site or tailings pond area. AMP monitoring locations include MW13-10 (Mill Site), MW13-07 (Tailings Pond Area), and Jewelbox (13-05) it would which would detect any changes in water quality and level close to the source. Any changes in water quality downgradient are expected to be slow and would be detected by monitoring over time.

Ultimately, overburden groundwater from these sites would discharge into Camp Creek (MH-11) and North Creek (MH-12).

# 2. AMP FOR MINE SOURCE FLOWPATH WATER QUALITY

## 2.1 MINE SOURCE WATER QUALITY

The AMP for the mine source water quality component has been adapted from the Draft Adaptive Management Plan, Sä Dena Hes Mine (SRK, 2014). The geochemical conceptual model and flow paths for each mine loading source are described in Section 1.5.

### 2.1.1 DESCRIPTION

Water quality monitoring has been conducted as a condition of the current WUL since 1991. As part of the WUL mine related source load water quality is monitored at:

- North Tailings Dam Seepage (MH-02);
- Burnick Portal (MH-22); and
- 1380 Portal (SDH-S2[2] as MH-25 has been decommissioned).

Water from these sources infiltrates to groundwater near the source and then migrates downgradient to areas of groundwater discharge. Monthly and quarterly water quality monitoring results currently meet the permit limits in the WUL at the receiving environment stations.

Water quality will be monitored after reclamation to observe any potential changes indicative of loading from the North Dam, Burnick Portal and 1380 Portal. The monitoring schedule for the source monitoring sites is presented in Table 2-1.

**Table 2-1: Mine Source Water Monitoring Schedule**

| Stations | Monitoring Frequency [3] |
|---|---|
| MH-02, MH-22, and SDH-S2 | Every 2 Months |

[2] As discussed in Section 1.5.3, constituent concentrations in the 1380 Portal drainage at SDH-S2 are lower because of attenuation within the waste rock pile

[3] The frequency presented reflects the current water license conditions, which are not intended to remain at this frequency for the duration of the licence. A reduced frequency may be proposed in the future and the water licence subsequently amended.

### 2.1.2 RISK NARRATIVE

The objective of the AMP is to detect changes from existing conditions and ensure that mine source water quality does not negatively affect receiving aquatic environments. As described in Section 1.5 and shown on Figure 1-2 and Figure 1-3, mine source water does not report to the surface water compliance points (MH-11 and MH-12) directly, but goes to ground and is naturally attenuated upstream of these points. However, an increase in constituent loading from one of the three mine site sources (MH-02, MH-22, and SDH-S2) may result in potential deterioration in water quality at the downgradient surface water monitoring stations (MH-11, MH-12, and MH-15). As such, monitoring the water quality at these loadings sources could provide an early indication for the framework discussed in Section 2.2.

### 2.1.3 SPECIFIC INDICATORS, PERFORMANCE THRESHOLDS AND RESPONSES

Indicators, specific performance thresholds and responses specific to source water quality and the monitoring program are provided in Table 2-2. The source concentrations (MH-02, MH-22, and SDH-S2) have been relatively stable over the observed period (temporary closure through to current), such that increases of 25% or 50% above the above the maximum observed concentrations would indicate a change worth investigating. However, the contaminant load model suggests that increases in the order of 25% to 50% over the maximum observed concentration at these sources would not likely result in exceedances of site water quality limits downstream. As such, these increase thresholds are considered appropriate indicators for the mine source water quality. Additionally, one of the evaluation responses to Specific Threshold 2 in the Mine Source AMP is to evaluate if the data show an upward trend.

In addition, the AMP for Mine Source Flow Path Water Quality is designed to monitor the potential loss of attenuation capacity downgradient of the mine sources and not the changes in source loads. If source concentrations double or even increase by an order of magnitude, there may still be sufficient attenuation capacity to prevent an exceedance of downstream water quality limits. It is better to monitor for changes along the flowpath not at the source. The rate at which concentrations change downstream is a function of the travel time, dispersion, mixing with other groundwater sources, and the loss of attenuation capacity. The potential increase in downstream concentrations that may occur in response to the increase in source concentrations would occur over years, well within the temporal resolution of the monitoring program. Evaluating changes in concentrations over time (e.g., trend analysis) is an evaluation aspect of the groundwater flowpath AMP and is designed to monitor the potential impact of these changes on downstream water quality.

**Table 2-2: Specific Indicators, Performance Thresholds and Responses for Mine Source Water Quality**

<table>
<tr><th>Specific Indicators</th><th>Specific Performance Thresholds</th><th>Specific Responses</th></tr>
<tr>
<td>Concentrations, in mg/L at stations MH-02, MH-22 and SDH-S2 of:<ul><li>Cadmium</li><li>Lead</li><li>Zinc</li><li>Sulphate</li></ul></td>
<td>Specific Threshold 1 (ST1)<br><br>The specific threshold for these constituents is an increase of more than 25% above the maximum observed concentrations. The numerical thresholds are:<br><br>
<table>
<tr><th>Parameter</th><th>MH-02</th><th>MH-22</th><th>Parameter</th><th>SDH-S2</th></tr>
<tr><td>Total Zn</td><td>0.40</td><td>2.3</td><td>Dissolved Zn</td><td>15.3</td></tr>
<tr><td>Total Cd</td><td>0.014</td><td>0.011</td><td>Dissolved Cd</td><td>0.13</td></tr>
<tr><td>Total Pb</td><td>0.006</td><td>0.05</td><td>Dissolved Pb</td><td>0.51</td></tr>
<tr><td>$SO_4$</td><td>600</td><td>134</td><td>$SO_4$</td><td>290</td></tr>
</table>
Units are mg/L.</td>
<td>Notification<ul><li>Teck Representative/Environmental Monitor.</li><li>Include in scheduled annual reporting.</li></ul>Review<ul><li>Follow QA/QC investigative protocol:<ul><li>Review laboratory QA/QC report</li><li>Validate original result, and re-run lab sample if a laboratory error is suspected</li></ul></li></ul>Evaluation<ul><li>Compare with appropriate mine source flow path groundwater wells (MW13-13 and MW13-01, or MW13-06) and with the appropriate receiving environment water quality results (MH-11, MH-12, or MH-15).</li></ul>Action<ul><li>During next scheduled sampling event collect a duplicate sample at monitoring site that exceeded ST1.</li></ul></td>
</tr>
<tr>
<td>Concentrations, in mg/L at stations MH-02, MH-22 and SDH-S2 of:<ul><li>Cadmium</li><li>Lead</li><li>Zinc</li><li>Sulphate</li></ul></td>
<td>Specific Threshold 2 (ST2)<br><br>The specific threshold for these constituents is an increase of more than 50% above the maximum observed concentrations. The numerical thresholds are:<br><br>
<table>
<tr><th>Parameter</th><th>MH-02</th><th>MH-22</th><th>Parameter</th><th>SDH-S2</th></tr>
<tr><td>Total Zn</td><td>0.48</td><td>2.7</td><td>Dissolved Zn</td><td>18.3</td></tr>
<tr><td>Total Cd</td><td>0.016</td><td>0.013</td><td>Dissolved Cd</td><td>0.15</td></tr>
<tr><td>Total Pb</td><td>0.007</td><td>0.06</td><td>Dissolved Pb</td><td>0.61</td></tr>
<tr><td>$SO_4$</td><td>720</td><td>161</td><td>$SO_4$</td><td>348</td></tr>
</table>
Units are mg/L.</td>
<td>Notification<ul><li>Teck Representative/Environmental Monitor.</li><li>Include in scheduled annual reporting.</li></ul>Review<ul><li>Follow QA/QC investigative protocol:<ul><li>Validate original result, or re-run lab sample if a laboratory error is indicated</li></ul></li></ul>Evaluation<ul><li>Compare with appropriate mine source flow path groundwater wells (MW13-13 and MW13-01, or MW13-06) and with the appropriate receiving environment water quality results ( MH-11, MH-12, or MH-15).</li><li>Qualified professional reviews all monitoring data, conducts trend analysis, determines if action is required based on risk narrative, and develops recommendations.</li></ul>Action<ul><li>Conduct recommendations as warranted by qualified professional, if it is determined that there could be an impact downgradient at the compliance points, which could include:<ul><li>Increased monitoring frequency, and</li><li>Expanding monitoring network.</li></ul></li><li>Depending on the findings of the investigation, the water quality model may be revised to re-evaluate potential changes to downstream water quality.</li></ul></td>
</tr>
</table>

## 2.2 GROUNDWATER QUALITY

### 2.2.1 DESCRIPTION

Several groundwater wells were installed along some of the mine source flows paths to be able to monitor the flow paths of the mine sources when they go to ground. In the case of the 1380 discharge the wells also monitor attenuation capacity (MW13-13, MW13-08, and MW13-01).

The long term groundwater monitoring plan for the mine loading source discharge wells is provided in Table 2-3, and is discussed in the Sa Dena Hes Environmental Monitoring, Surveillance and Report Plan (Teck, 2017).

**Table 2-3: Groundwater Monitoring Schedule**

| Stations | Monitoring Frequency [4] |
|---|---|
| Mine Loading Source Discharge Wells (MW13-01, MW13-06, MW13-08 & MW13-13) | Quarterly |

### 2.2.2 RISK NARRATIVE

If mine source water quality has deteriorated significantly or has breached or exhausted the attenuation occurring onsite then adverse effects may occur at the receiving environment (MH-11, MH-12, and MH-15). The mine loading source discharge wells (MW13-01, MW13-06, MW13-08, and MW13-13) are along the flow paths from the mine loading sources to the receiving environment and may provide an indication of this potential.

### 2.2.3 SPECIFIC INDICATORS, PERFORMANCE THRESHOLDS AND RESPONSES

Groundwater chemistry data, collected since the monitoring wells were installed in 2013, show constituent concentrations have varied by more than an order of magnitude in individual wells without effecting downgradient surface water quality. Concentrations in several wells increased an order of magnitude and then decreased an order of magnitude by the next sampling event. As such the most effective thresholds for these groundwater wells is assessing if the concentration increases are consistent and sustained. This first threshold for groundwater chemistry at these wells, which would act as a warning for any potential effect on receiving surface waters, is if three consecutive monitoring events or four of the last six monitoring events show progressively increasing concentrations (ST1). The next threshold (ST2) would be a single exceedance of the concentrations provided in Table 2-4, which are calculated to provide a conservative warning. These concentration limits are based on estimates of the groundwater concentration that could result in an exceedance site water quality limits downstream and anticipated attenuation capacity.

The final threshold (ST3) is a sustained increase in concentration over 3 sampling events that has resulted in a concentration increase greater than the ST2 concentrations. Where ST2 is a single, potentially anomalous

[4] The frequency presented reflects the current water license conditions, which are not intended to remain at this frequency for the duration of the licence. A reduced frequency may be proposed in the future and the water licence subsequently amended.

exceedance of the Table 2-4 concentrations with no forewarning of an increasing trend, as has occurred previously, ST3 is an exceedance of the Table 2-4 concentrations combined with an upward trend in concentrations. The upward trend combined with the exceedance of numeric criteria is cause for greater response than just an exceedance of the two lower thresholds.

Progressively increasing concentrations means each concentration is greater than the subsequent measurement. Changes in groundwater concentrations along the flow path between sources and the receiving water occur slowly because the travel time between the source and receiving water is on the order of years. Furthermore, over twenty years of monitoring data show the sources have not affected surface water quality. As such, assessing changes in concentrations (e.g., increasing trends) over the time scale of groundwater transport (i.e., years) is an appropriate indicator of a risk to downstream water quality. The method to analyze data trends will be selected based on the statistical characteristics of the data and will follow regulatory guidance for conducting trend analysis.

The indicators, performance thresholds and responses specific to groundwater quality, and the monitoring program are provided in Table 2-5.

**Table 2-4. Specific Threshold 2 Groundwater Concentrations**

| | **Catchment** | | | |
|---|---|---|---|---|
| | Camp Creek | | | West Fork of Tributary E |
| Parameter | MW13-01 | MW13-08 | MW13-13 | MW13-06 |
| Zn-D | 0.5 | 0.5 | 0.5 | 0.5 |
| Cd-D | 0.005 | 0.005 | 0.02 | 0.001 |
| Pb-D | 0.035 | 0.035 | 0.035 | 0.015 |
| Sulphate | 55 | 55 | 110 | No concentration threshold. The source (MH-22) concentration is less than well (MW13-06) concentration. |

*Units are mg/L.

**Table 2-5: Specific Indicators, Performance Thresholds and Responses for Mine Source Groundwater Quality**

<table>
<tr><th>Specific Indicators</th><th>Specific Performance Thresholds</th><th>Specific Responses</th></tr>
<tr><td rowspan="3">List 1 monitoring wells<br>Aqueous concentrations of parameters for monitoring wells: MW13-01, MW13-06, MW13-08, and MW13-13.</td><td>Specific Threshold 1 (ST1)<br>(for D-Cd, D-Pb, D-Zn, and $SO_4$)<br><br>3 consecutive monitoring results with progressively increasing concentrations<br>or<br>4 of the last 6 monitoring events show progressively increasing concentrations.</td><td>Notification<br>• Teck Representative/Environmental Monitor<br>• Include in scheduled annual reporting<br>Review<br>• Review laboratory QA/QC report: validate original result or re-run sample in lab if error is indicated.<br>Evaluation<br>• Compare with upstream and receiving environment water quality results.<br>Action<br>• During next scheduled sampling event conduct a duplicate at monitoring site that exceeded ST1.</td></tr>
<tr><td>Specific Threshold 2 (ST2)<br>(for D-Cd, D-Pb, D-Zn, and $SO_4$)<br><br>Single exceedance of the calculated ST2 concentrations provided in Table 2-4.</td><td>Notification<br>• Same as Specific Threshold 1<br>Review<br>• Same as Specific Threshold 1<br>Evaluation<br>• A review of the groundwater data by a qualified professional and appropriate recommendations to be developed<br>o Any review must consider the risk narrative (i.e. impact on surface water compliance point MH-11, MH-12, or MH-15)<br>Action<br>• Resample within 6 months (if not already part of the monitoring schedule) and appropriate upgradient and downgradient sample sites along the flowpath to evaluate if concentrations remain elevated</td></tr>
<tr><td>Specific Threshold 3 (ST3)<br>(for D-Cd, D-Pb, D-Zn, and $SO_4$)<br><br>A sustained increase in concentration over 3 sampling events that has resulted in a concentration increase greater than the ST2 levels.</td><td>Notification<br>• Same as Specific Threshold 1<br>Review<br>• Same as Specific Threshold 1<br>Evaluation<br>• A qualified person compares new results with mine source loading results. If comparison indicates that mine loadings are responsible for exceedance, and validation confirms results, then:<br>o Develop investigation plan<br>o Trend analysis and water balance model used to predict if an exceedance of the guideline at the site compliance points downgradient with one year<br>• Resample within 6 months (if not already part of the monitoring schedule) and appropriate upgradient and downgradient sample sites along the flowpath to evaluate if concentrations remain elevated<br><br>Action<br>• Follow recommendations arising from review undertaken by qualified professional, which could include:<br>o Increased monitoring frequency<br>o Begin the development of mitigation alternatives to maintain effluent water quality objectives below effluent quality standards if the water and load balance model results indicate sustained exceedances of water quality objectives.<br><br>Examples of Potential Mitigation Actions<br><br>If model indicates potential for sustained exceedances of effluent standards at MH-11 or MH-12, then potential mitigation measures could include:<br>• Groundwater extraction and treatment<br>• Source Control, including mine pool treatment</td></tr>
</table>

## 2.3 RECEIVING ENVIRONMENT SURFACE WATER QUALITY

### 2.3.1 DESCRIPTION

The monitoring points where the AMP for receiving environment water quality is applicable are MH-11, MH-12, and MH-15. The AMP for these monitoring points is the final management component of the protection of the receiving environment (Camp Creek, North Creek, and ultimately False Canyon Creek) from the impact of mine sources. The monitoring for MH-11, MH-12, and MH-15 is outlined in the Environmental Monitoring, Surveillance and Reporting Plan (Teck, 2017), as well provided in Table 2-6.

There are three mine site drainage source loads: 1380 Portal, the Burnick Portal, and seepage from the North Dam of the tailings impoundment. Discharge from both the 1380 Portal and Burnick Portal flow through the downgradient waste rock dumps, after which the flow infiltrates into the ground and is naturally attenuated. Groundwater from these sources ultimately discharges to False Canyon Creek. There will be no on site water collection or treatment during the post-reclamation time period. Only neutral mine water will be naturally discharged during this time.

**Table 2-6: Receiving Surface Water Monitoring Schedule**

| Stations | Monitoring Frequency[5] |
|---|---|
| MH-11,MH-12, and MH-15 | Every 2 Months |

[5] The frequency presented reflects the current water license conditions, which are not intended to remain at this frequency for the duration of the licence. A reduced frequency may be proposed in the future and the water licence subsequently amended.

### 2.3.2 RISK NARRATIVE

There are two different surface water receiving environment risks associated with the reclamation and closure of the mine site:

- An increase in metal contaminant loading from mine sources and reporting to the compliance points would mean a potential negative impact on the receiving environment; and

- An increase in suspended solids due to erosion and sedimentation from the reclaimed mine site could negatively effect the aquatic receiving environment in the years immediately following the completion of closure activities.

### 2.3.3 SPECIFIC INDICATORS, PERFORMANCE THRESHOLDS, AND RESPONSES

The applicable water quality guidelines were adopted from the most recently updated guidelines between CCME and BC MOE as the permit limits for most constituents. In the case of lead and zinc, alternative methods were used to develop permit limits for MH-11, MH-12, and MH-15 (Azimuth, 2016). The indicator parameters selected for the receiving environment AMP are dissolved cadmium, total and dissolved lead, and total and dissolved zinc with the corresponding proposed effluent quality standards provided for these parameters in Table 2-7. Table 2-8 provides the adaptive management framework to monitoring and response to concentrations of key metal contaminants reporting to the site receiving environment.

Zinc, cadmium, and lead have been shown to be attenuated along the groundwater flowpath from the source areas to the receiving environment. As previously mentioned, the purpose of the adaptive management plan is to monitor the change in the attenuation capacity along the groundwater flowpath. Although sulphate is another constituent associated with the mine source areas, sulphate is not attenuated along the groundwater flowpath and is not included as an indicator parameter within the receiving environment.

**Table 2-7: Surface Water AMP Specific Thresholds**

| Parameters, water | UNITS | WUL Effluent Quality Standards | Specific Threshold 1 (ST1) | Specific Threshold 2 (ST2) |
|---|---|---|---|---|
| **Cadmium, Dissolved** | | | | |
| $Cd = e^{[0.736*\ln(hardness) - 4.943]}$ | µg/L | Calculated | 75% of Calculated EQS | 90% of Calculated EQS |
| **Lead**[1] | | | | |
| Site MH-12 and MH-15, use $Pb_{MH-12} = 3.31 + e^{[1.273*\ln(hardness) - 4.704]}$ | µg/L | Calculated | 75% of Calculated EQS | 90% of Calculated EQS |
| Site MH-11, use $Pb_{MH-11} = 1.928* (3.31 + e^{[1.273*\ln(hardness) - 4.704]})$ | µg/L | Calculated | 75% of Calculated EQS | 90% of Calculated EQS |
| **Zinc**[1] | | | | |
| Site MH-12 and MH-15, Hardness ≥ 90 use, Zn = 7.5 + 0.75*(hardness – 90) | µg/L | Calculated | 75% of Calculated | 90% of Calculated EQS |
| Site MH-11, Hardness ≥ 90 use, Zn = 7.5 + 1.875*(hardness – 90) | µg/L | Calculated | 75% of Calculated EQS | 90% of Calculated EQS |
| **Sulphate** | | | | |
| Hardness: >75 and ≤ 180 mg/L | mg/L | 309 | 278 | 232 |
| Hardness: >180 mg/L | mg/L | 429 | 386 | 322 |

* Where standards are hardness based. The unit is µg $CaCO_3$/L, unless otherwise specified

[1]When TSS is >4, apply standard to dissolved fraction, otherwise apply to total fraction.

Table 2-9 provides the AMP for erosion and sedimentation potential related to reclamation activities at the site. The highest likelihood of this effect is in the years immediately following the completion of the reclamation activities. As such, the TSS AMP applies only during Year 1 to Year 4 of the post-closure schedule, which coincides with the period of more frequent monitoring so that Teck can respond to any excursions from expected conditions.

The TSS AMP thresholds are based on CCME TSS guidelines. The background used to calculate the site specific guideline is determined by the reference monitoring site, MH-30. A synoptic sampling result from MH-30 sets the guideline for the indicator sites MH-11, MH-12, and MH-15 for that monitoring event. The thresholds are steps up to the guideline level.

**Table 2-8: Specific Indicators, Performance Thresholds and Responses for Receiving Environment Surface Water Quality, related to Risk from Metal Contaminant Loading**

| Specific Indicators | Specific Performance Thresholds | Specific Responses |
|---|---|---|
| (for D-Cd, T-Pb & D-Pb, T-Zn & D-Zn, and $SO_4$)<br>• Aqueous concentrations at surface water monitoring stations MH-11, MH-12, and MH-15.<br>See Table 2-6 for specific threshold values. | **Specific Threshold 1**<br>Exceedance of 75% of the concentration of the standards in Table 2.11 at MH-11, MH-12, or MH-15. | **Notification**<br>• Teck Representative/Environmental Monitor<br>• Include in scheduled annual reporting<br>**Review**<br>• Review laboratory QA/QC report, validate original result, or re-run lab sample if a laboratory error is indicated<br>**Evaluation**<br>• Compare with upstream monitoring stations.<br>**Action**<br>• During next scheduled sampling event conduct a duplicate at monitoring site that exceeded ST1. |
| | **Specific Threshold 2**<br>Table 2.6<br>Greater than 75% of the concentration of the standards for two (2) consecutive sampling events (scheduled or resample) OR greater than 90% of the standards for a single event at MH11, MH-12, or MH-15. | **Notification**<br>• Same as Specific Threshold 1<br>**Review**<br>• Same as Specific Threshold 1<br>**Evaluation**<br>• A qualified professional compares results with appropriate upgradient samples along the mine source loading flow path.<br>o Evaluate causes for load contributions and develop investigation plan<br>o Trend analysis is conducted by a qualified person to evaluate if there is a trend and if it is likely to result in an exceedance of effluent standards within a one-year period.<br>**Action**<br>• Implement investigation plan, including at a minimum:<br>o Re-sample the site that triggered ST2 within 6 months (if not already scheduled), and also sample the appropriate mine source flow path monitoring sites (i.e., a synoptic event of MH-11, M13-01, MW13-13, and SDH-S2, OR MH-12 and MH-02).<br>o Site investigation of candidate load contributions.<br>• Review results of investigation and prepare recommendations if appropriate, based on risk narrative |
| | **Specific Threshold 3**<br>Table 2.6<br>Greater than 90% of the concentration of the standards for two (2) consecutive sampling events (scheduled or resample) OR a single exceedance of the standards at MH11, MH-12, or MH-15. | **Notification**<br>• Same as Specific Threshold 1,<br>• plus, notification of YG Inspector if a single exceedance of a standard<br>**Review**<br>• Same as Specific Threshold 1<br>**Evaluation**<br>• A qualified professional compares results with appropriate up gradient samples along the mine south loading flow path. If comparison indicates that mine loadings are responsible for exceedance, and lab validation confirms results, then:<br>o Evaluate causes for load contributions and develop investigation plan<br>o Trend analysis is conducted by a qualified person to determine if upward trend is likely to increase passed the effluent standards more than once in a one-year period.<br>**Action**<br>• Conduct recommendations as put forward by the qualified professional<br>• Re-sample the site that triggered ST2 with 6 months (if not already scheduled), and also sample the appropriate mine source flow path monitoring sites (i.e. a synoptic event of MH-11, M13-01, MW13-13, and SDH-S2, OR MH-12 and MH-02). |
| | **Specific Threshold 4**<br>Table 2.6<br>Two (2) consecutive exceedances (scheduled or resample) of the effluent standards in Table 2.6 at MH11, MH-12, or MH-15, where evaluation confirmed mine loading was responsible for the first exceedance. | **Notification**<br>• Same as Specific Threshold 3<br>• Plus, Liard First Nation<br>**Review**<br>• Same as Specific Threshold 1<br>**Evaluation**<br>• A qualified professional compares results with appropriate upgradient samples along the mine south loading flow path. If comparison indicates that mine loadings are responsible for exceedance, and lab validation confirms results, then:<br>o Evaluate causes for load contributions and develop investigation plan<br>o Trend analysis is conducted by a qualified person.<br>**Action**<br>• Conduct recommendations as put forward by the qualified professional, may include impact study or an aquatic survey<br>• Actions will continue until specific threshold values are no longer exceeded, such as those listed in Potential Mitigation Actions.<br>**Examples of Potential Mitigation Actions**<br>• Mitigation measures could include groundwater extraction and treatment and permeable reactive barriers, source control such as mine pool treatment, and/or passive treatment alternatives such as bioreactors or constructed wetland treatment systems. |

**Table 2-9: Specific Indicators, Performance Thresholds and Responses for Receiving Environment Surface Water Quality, related to Risk from Erosion**

| Specific Indicators | Specific Performance Thresholds | Specific Responses |
|---|---|---|
| Total Suspended Solids at stations MH-11, MH-12, and MH-15<br><br>Applies to the first 4 years of post-closure monitoring (Years 1 to 4). | **Specific Threshold 1**<br><br>MH-30 TSS mg/L + 10 mg/L | **Notification**<br>• Teck Representative/Environmental Monitor<br>• Include in scheduled annual reporting<br>**Review**<br>• Review laboratory QA/QC report: validate original result or re-run sample in lab if error is indicated.<br>**Evaluation**<br>• Review monitoring data upstream of compliance point that exceeded the ST1.<br>**Action**<br>• Collect duplicate at site that exceeded the ST1 during the next scheduled monitoring event. |
| | **Specific Threshold 2**<br><br>MH-30 TSS result + 20 mg/L | **Notification**<br>• Same as Specific Threshold 1<br>**Review**<br>• Same as Specific Threshold 1<br>**Evaluation**<br>• Evaluation from ST1, and resample the station that exceeded ST2 within 10 days of getting original lab result (if not already scheduled), collect duplicate TSS sample at the site that exceeded the ST2 (if the original lab result was validated)<br>**Action**<br>• Inspect mine site catchment upgradient of compliance site that exceeded – look for signs of erosion and sedimentation from reclamation activities and conduct necessary maintenance as required. |
| | **Specific Threshold 3**<br><br>MH-30 TSS result + 25 mg/L | **Notification**<br>• Same as Specific Threshold 1<br>• Plus, notification of YG Inspector and Liard First Nation<br>**Review**<br>• Same as Specific Threshold 1<br>**Evaluation**<br>• Evaluation from ST1 and ST2<br>**Action**<br>• Inspect mine site catchment upgradient of compliance site that exceeded – look for signs of erosion and sedimentation from reclamation activities and conduct necessary maintenance as required.<br>• Have qualified professional assess stability of reclaimed mine site for long term trend of erosion or sedimentation from mine site and provide recommendations to mitigate issues.<br>• Implement recommendations from qualified professional until TSS has dropped below the ST1 Threshold. These may include runoff control, additional revegetation, soil stabilization with natural or synthetic materials, and/or aggressive sediment control if runoff and erosion control measures are not effective enough |

# 3. AMP FOR LANDFILL AND GENERAL SITE WATER QUALITY

## 3.1 LANDFILL GROUNDWATER MONITORING

### 3.1.1 DESCRIPTION

The landfill contains waste produced during operations and demolition debris from the Mill Site, former camp and office buildings, and miscellaneous debris from the site. The purpose of post-closure monitoring is to monitor the water levels and quality around the landfill to detect if any changes occur over time. The AMP is used to provide responses if water levels in the landfill monitoring wells (MW14-02, MW14-03, and MW-14-04) get too high around the landfill or the water quality in those same wells indicates metal leaching or a hydrocarbon plume is coming from the facility. The EMSRP provides the monitoring schedule for these wells, but is also summarized in Table 3-1.

**Table 3-1: Landfill Monitoring Schedule**

| Stations | Monitoring Frequency [6] |
|---|---|
| Landfill Wells<br>(MW14-01, MW14-02, MW14-03, & MW-14-04) | Quarterly |

### 3.1.2 RISK NARRATIVE

The risk if metals or hydrocarbons are detected leaching from the landfill is that they would flow through the shallow groundwater system and would ultimately enter North Creek and could potentially be an adverse impact on the receiving environment water quality (MH-12). Additionally, if water levels should rise within 3.0 meters of the base of the landfill, the landfill would be out of compliance of the landfill permit.

### 3.1.3 SPECIFIC INDICATORS, PERFORMANCE THRESHOLDS AND RESPONSES

The thresholds for groundwater quality are based on the Yukon Contaminated Sites Regulations for the protection of aquatic life. The groundwater quality threshold parameters are hydrocarbons and dissolved Cadmium, Lead and Zinc. Indicators, performance thresholds and responses specific to groundwater quality and quantity, which are detailed in Table 3-2 and Table 3-3.

The groundwater table around the landfill has been generally greater than three meters below the base of the landfill. SDHOC Waste Management Permit (#81-020) for the landfill requires that the base of the landfill cells remain a minimum of three (3) meters higher than observed water table elevations. Water quality is also being monitored around the landfill to detect if any buried materials are leaching metals or are a source of hydrocarbons.

[6] The frequency presented reflects the current water license conditions, which are not intended to remain at this frequency for the duration of the licence. A reduced frequency may be proposed in the future and the water licence subsequently amended.

The AMP Table describing the specific indicators, thresholds, and responses for landfill water quality is Table 3-4, and the AMP for the landfill water levels is Table 3-5.

**Table 3-2: Groundwater Metals Concentrations**

| Parameters, water | UNITS | SCHEDULE 3 - GENERIC NUMERICAL WATER STANDARDS - AQUATIC LIFE (AW) | 90% (ST2) | 75% (ST1) |
|---|---|---|---|---|
| **Cadmium Dissolved *** | | | | |
| Cadmium Hardness < 30 | µg/L | 0.1 | 0.09 | 0.075 |
| Cadmium Hardness = 30 - < 90 | µg/L | 0.3 | 0.27 | 0.225 |
| Cadmium Hardness = 90 - < 150 | µg/L | 0.5 | 0.45 | 0.375 |
| Cadmium Hardness = 150 - < 210 | µg/L | 0.6 | 0.54 | 0.45 |
| **Lead Dissolved*** | | | | |
| Lead Hardness < 50 | µg/L | 40 | 36 | 30 |
| Lead Hardness = 50 - < 100 | µg/L | 50 | 45 | 37.5 |
| Lead Hardness = 100 - < 200 | µg/L | 60 | 54 | 45 |
| Lead Hardness = 200 - < 300 | µg/L | 110 | 99 | 82.5 |
| Lead Hardness ≥ 300 | µg/L | 160 | 144 | 120 |
| **Zinc Dissolved *** | | | | |
| Zinc Hardness < 90 | µg/L | 75 | 67.5 | 56.25 |
| Zinc Hardness = 90 - < 100 | µg/L | 150 | 135 | 112.5 |
| Zinc Hardness = 100 - < 200 | µg/L | 900 | 810 | 675 |
| Zinc Hardness = 2000 - < 300 | µg/L | 1,650 | 1485 | 1237.5 |
| Zinc Hardness = 300 - < 400 | µg/L | 2,400 | 2160 | 1800 |
| Yukon Contaminated Sites Regulation Standards are for the protection of FRESHWATER aquatic life, based on 2002 version. These guidelines should be updated as new versions are issued by Yukon Environment. | | | | |

### Table 3-3: Groundwater Hydrocarbon Concentrations

| | UNITS | SCHEDULE 3 - GENERIC NUMERICAL WATER STANDARDS - AQUATIC LIFE (AW) | 90% (ST2) | 75% (ST1) |
|---|---|---|---|---|
| **Volatiles – Water** | | | | |
| VPHs (VHs6-10 minus BTEX) | µg/L | 1,500 | 1,350 | 1,125 |
| Benzene | µg/L | 4,000 | 3,600 | 3,000 |
| Toluene | µg/L | 390 | 351 | 293 |
| Ethylbenzene | µg/L | 2,000 | 1,800 | 1,500 |
| **Polycyclic Aromatic Hydrocarbons – Water** | | | | |
| Acenaphthene | µg/L | 60 | 54 | 45 |
| Acridine | µg/L | 0.5 | 0.45 | 0.38 |
| Anthracene | µg/L | 1 | 0.9 | 0.75 |
| Benzo(a)anthracene | µg/L | 1 | 0.9 | 0.75 |
| Benzo(a)pyrene | µg/L | 0.1 | 0.09 | 0.08 |
| Fluoranthene | µg/L | 2 | 1.8 | 1.5 |
| Fluorene | µg/L | 120 | 108 | 90 |
| Naphthalene | µg/L | 10 | 9 | 7.5 |
| Phenanthrene | µg/L | 3 | 2.7 | 2.25 |
| Pyrene | µg/L | 0.2 | 0.18 | 0.15 |
| Quinoline | µg/L | 34 | 30.6 | 25.5 |
| **Extractable Petroleum Hydrocarbons - Water** | | | | |
| LEPHs (C10-C19 less PAH) | µg/L | 500 | 450 | 375 |
| EPH (C10-C19) | µg/L | 5,000 | 4,500 | 3,750 |
| Yukon Contaminated Sites Regulation Standards are for the protection of FRESHWATER aquatic life, based on 2002 version. These guidelines should be updated as new versions are issued by Yukon Environment. | | | | |

**Table 3-4: Specific Indicators, Performance Thresholds and Responses for Landfill Groundwater Quality**

| Specific Indicators | Specific Performance Thresholds | Specific Responses |
|---|---|---|
| Aqueous concentrations of parameters described in Table 3-2 and Table 3-3 for monitoring wells:<br>MW14-02, -03, and -04 | **Specific Threshold 1**<br>• Exceedance of 75% of the guideline concentrations provided in Table 3-2 and Table 3-3 in 2 consecutive samples collected from any of the indicator wells. | **Notification**<br>• Teck Representative/Environmental Monitor<br>• Include in scheduled annual reporting<br>**Review**<br>• Review laboratory QA/QC report: validate original result or re-run sample in lab if error is indicated.<br>**Evaluation**<br>• Compare results with past results with all landfill wells monitored.<br>**Action**<br>• During next scheduled sampling event conduct a duplicate at monitoring site that exceeded ST1. |
| | **Specific Threshold 2**<br>• Exceedance of 90% of the guideline concentrations provided in Table 3-2 and Table 3-3 in 2 consecutive samples collected (scheduled or re-sampled) from any of the indicator wells. | **Notification**<br>• Same as Specific Threshold 1<br>**Review**<br>• Same as Specific Threshold 1<br>**Evaluation**<br>• A review of the landfill groundwater data by a qualified professional and appropriate recommendations to be developed, which must consider the risk narrative.<br>o Evaluate causes for load contributions and develop investigation plan<br>**Action**<br>• Follow recommendations arising from review undertaken by qualified professional.<br>• Resample appropriate wells within 6 months (unless monitoring schedule calls for sampling within the period already); collect duplicate samples at the indicator wells that exceeded ST2, and sample surface water monitoring station MH-12 for metals and hydrocarbons.<br>• Review all newly collected sample data within two weeks of receiving the results. |
| | **Specific Threshold 3**<br>• Exceedance of the guideline concentrations provided in Table 3-2 and Table 3-3 collected during a single sampling event (scheduled or re-sampled) collected from any of the indicator wells. | **Notification**<br>• Same as Specific Threshold 1<br>• Plus, Inspector and Liard First Nation<br>**Review**<br>• Same as Specific Threshold 1<br>**Evaluation**<br>• A review of the landfill groundwater data by a qualified professional and appropriate recommendations to be developed, which must consider the risk narrative.<br>o Data review is conducted by a qualified person to determine if exceedance is an anomaly or a trend that will continue and need to be addressed.<br>**Action**<br>• Follow recommendations arising from review undertaken by qualified professional. |

**Table 3-5: Specific Indicators, Performance Thresholds and Responses for Landfill Groundwater Elevation**

| Specific Indicators | Specific Performance Thresholds | Specific Responses |
|---|---|---|
| Groundwater elevation below landfill determined by monitoring wells:<br>MW14-02, -03, and -04 | **Specific Threshold 1**<br>• Water table measurements are **within 3.5 m** of the base of the landfill for 2 sampling event at one or both of the indicator wells. | **Notification**<br>• Teck Representative/Environmental Monitor<br>• Include in scheduled annual reporting<br>**Review**<br>• Confirm groundwater level data: validate original result.<br>**Evaluation**<br>• Compare groundwater elevations to base of landfill and nearby well in regular EMSRP<br>**Action**<br>• Collect additional water levels with 6 months (if not already scheduled) of ST1 being exceeded, at all 4 landfill wells, not just the indicator wells. |
| | **Specific Threshold 2**<br>• Water table measurements are **within 3.5 m** of the base of the landfill for 3 consecutive sampling events (scheduled or re-sampled) at all of the indicator wells. | **Notification**<br>• Same as Specific Threshold 1<br>**Review**<br>• Same as Specific Threshold 1<br>**Evaluation**<br>• A review of the groundwater elevation data and trend analysis by a qualified professional and appropriate recommendations to be developed, which must consider the risk narrative.<br>**Action**<br>• Collect additional water levels with 6 months (if not already scheduled) of the ST2 being exceeded, at all 4 landfill wells (MW14-01,02,03, and 04).<br>• Install a water level datalogger within one of the indicator wells to collect continuous water level data.<br>• Follow recommendations of qualified professional. |
| | **Specific Threshold 3**<br>• Water table measurements are **within 3.0 m** of the base of the landfill for 1 sampling event (scheduled or re-sampled) at all of the indicator wells. | **Notification**<br>• Same as Specific Threshold 1<br>• Inspector and Liard First Nation<br>**Review**<br>• Same as Specific Threshold 1<br>**Evaluation**<br>• A review of the all of groundwater elevation data by a qualified professional and appropriate recommendations to be developed, which must consider the risk narrative.<br>• Investigation into root cause of elevated groundwater levels and if they will continue to remain elevated.<br>**Action**<br>• Review remedial options proposed by qualified professional with regulators and LFN and develop implementation plan and schedule.<br>**Examples of Mitigation Actions**<br>• Construction of additional drainage features, placement of lower permeability cover material to further reduce surface infiltration in the vicinity of the landfill. |

## 3.2 CSR GROUNDWATER MONITORING

### 3.2.1 DESCRIPTION

Between 2011 and 2014, Golder conducted an environmental site assessment of the site, which found petroleum hydrocarbon and metal concentrations in soil that exceeded the Yukon Contaminated Site Regulations at the vicinity of maintenance shops and fuel storage tanks, and metals associated with the mine primary activity areas (i.e., sediment ponds, tailings facilities, waste rock piles) and processing areas (i.e., mill area). The hydrogeological assessment conducted has indicated that groundwater quality has not been impacted by the identified hydrocarbons or metals soil contamination. The remediation plan for the hydrocarbon and metal impacted areas was to cover the areas with fill material to reduce the pathway and exposure to ecological receptors[7].

The EMSRP includes three groundwater wells around the site designed to monitor areas downgradient of where soil contamination has been identified as part of the Contaminated Site Assessment process MW13-05, MW13-10, and MW13-07 as described in Table 3-6. MW13-04 is considered a background conditions well and is monitored for the same parameters as the site assessment wells.

**Table 3-6: Groundwater Monitoring Schedule**

| Stations | Monitoring Frequency [8] |
|---|---|
| MW13-04, MW13-05, MW13-10, & MW13-07 | Quarterly |

### 3.2.2 RISK NARRATIVE

If a hydrocarbon plume or metal leaching was detected in one of the indicator wells for the Tailings Reclaim Pond Site (MW13-07), Mill site (MW13-10), or the Jewelbox (13-05) it would eventually flow into Camp Creek or North Creek, ultimately, impacting surface water quality prior to compliance sites MH-11 and MH-12.

### 3.2.3 SPECIFIC INDICATORS, PERFORMANCE THRESHOLDS AND RESPONSES

The thresholds for groundwater quality are based on the Yukon contaminated sites regulations for the protection of aquatic life. The groundwater quality threshold parameters are hydrocarbons, and dissolved cadmium, lead and zinc, which are detailed in Table 3-2 and Table 3-3. Indicators, performance thresholds and responses specific to groundwater quality and quantity, and the monitoring program are provided below in Table 3-7.

As discussed in Section 1.7, the estimated groundwater flow velocity through the overburden is approximately 80 m/year from the Mill Site to Camp Creek. The distance between these sites is approximately 800 m so that any contamination that originated at the Mill Site would arrive at Camp Creek within 10 years. The Mill site has been in place for greater than 20 years. If contamination had migrated along the groundwater flowpath without attenuation, it would have already been detected in surface water. The proposed sampling frequency provides sufficient time to identify and react, as necessary, when AMP thresholds are triggered.

[7] Although most of the metal impacted areas were covered, a few areas were not covered due to very steep terrain limiting access.

[8] The frequency presented reflects the current water license conditions, which are not intended to remain at this frequency for the duration of the licence. A reduced frequency may be proposed in the future and the water licence subsequently amended.

**Table 3-7: Specific Indicators, Performance Thresholds and Responses for General Site Groundwater Quality**

| Specific Indicators | Specific Performance Thresholds | Specific Responses |
|---|---|---|
| Aqueous concentrations of parameters described in Table 3-2 and 3-3 in monitoring wells:<br>MW13-05, MW13-07 & MW13-10. | **Specific Threshold 1**<br>• Exceedance of 75% of the guideline concentrations provided in Table 3-2 and 3-3 in two (2) consecutive samples collected from the indicator wells | **Notification**<br>• Teck Representative/Environmental Monitor<br>• Include in scheduled annual reporting<br>**Review**<br>• Review laboratory QA/QC report: validate original result or re-run sample in lab if error is indicated.<br>**Evaluation**<br>• Review groundwater data trends for all stations to assess for potential systematic contamination due to sampling.<br>**Action**<br>• During next scheduled sampling event conduct a duplicate at monitoring site that exceeded ST1. |
| | **Specific Threshold 2**<br>• Exceedance of 90% of the guideline concentrations provided Table 3-2 and 3-3 in two (2) consecutive collected (scheduled or re-sampled) from the indicator wells | **Notification**<br>• Same as Specific Threshold 1<br>**Review**<br>• Same as Specific Threshold 1<br>**Evaluation**<br>• A review of the appropriate general site condition groundwater well data and a qualified professional conducts a trend analysis in order to develop appropriate recommendations, which must consider the risk narrative.<br>o Evaluate causes for load contributions and develop investigation plan<br>**Action**<br>• Follow recommendations arising from review undertaken by qualified professional.<br>• Resample appropriate wells within 6 months (unless monitoring schedule calls for sampling within the period already) collect duplicate samples at the indicator wells that exceeded ST2. |
| | **Specific Threshold 3**<br>• Exceedance of the guideline concentrations provided in Table 3-2 and 3-3 collected during a single sampling event (scheduled or re-sampled) from the indicator wells | **Notification**<br>• Same as Specific Threshold 1<br>**Review**<br>• Same as Specific Threshold 1<br>**Evaluation**<br>• A review of the relevant groundwater data by a qualified professional and appropriate recommendations to be developed, which must consider the risk narrative.<br>o Trend analysis is conducted by a qualified person to determine if exceedance is an anomaly or a trend that will continue and needs to be addressed.<br>o anomaly or a trend that will continue and need to be addressed.<br>**Action**<br>• Follow recommendations arising from review undertaken by qualified professional. |

# 4. REPORTING

The reporting associated with AMP will part of the annual Quartz Mining License and Water Use Licence report and will include:

- Summary of monitoring data collected as part of the AMP;
- Trend analysis in water quality in at compliance points MH-11, MH12- and MH-15;
- Trend analysis in mine source water quality stations;
- Trend analysis for groundwater quantity and quality;
- A detailed assessment of the full suite of parameters being measured at AMP indicators stations;
- Identification of any additional indicator parameters that should be incorporated into the AMP;
- Summary of any thresholds exceeded and any activities undertaken in relation the AMP; and
- Proposed updates and revisions to the AMP.

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Teck Resources Limited, 2017. *Sä Dena Hes Mine Environmental Monitoring, Reporting, and Surveillance Plan*.

Teck Resources Limited, 2015. *Sä Dena Hes Mine Detailed Decommisioning & Reclmation Plan.* August 2015.

# Appendix C:

# Lab Reports

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200110** | Page | : 1 of 10 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : ECA21YT00086 | Date Samples Received | : 11-Feb-2022 14:50 |
| PO | : 10145 | Date Analysis Commenced | : 15-Feb-2022 |
| C-O-C number | : ---- | Issue Date | : 23-Feb-2022 14:41 |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : Q62635 | | |
| No. of samples received | : 7 | | |
| No. of samples analysed | : 6 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Brieanna Allen | Production/Validation Manager | Organics, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Inorganics, Burnaby, British Columbia |
| Monica Ko | Lab Assistant | Metals, Burnaby, British Columbia |
| Owen Cheng | | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

| Unit | Description |
|---|---|
| - | No Unit |
| µg/L | micrograms per litre |
| µS/cm | Microsiemens per centimetre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

| Sample | Client Id | Comment |
|---|---|---|
| WR2200110-001 | MW13-01 | ***Sample(002,004,006,007) : Water sample for VOC analysis contained > 5% headspace. Results may be biased low.*** |

## Qualifiers

| Qualifier | Description |
|---|---|
| *DLM* | *Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).* |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | MW13-01 | MW13-07 | MW13-08 | MW13-10 | MW14-04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Feb-2022 | 09-Feb-2022 | 07-Feb-2022 | 10-Feb-2022 | 09-Feb-2022 |
| | | | | | WR2200110-001 | WR2200110-002 | WR2200110-003 | WR2200110-004 | WR2200110-006 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 151 | 224 | 306 | 211 | 160 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 307 | 457 | 579 | 450 | 294 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 169 | 251 | 351 | 254 | 168 |
| **pH** | ---- | E108 | 0.10 | pH units | 7.80 | 8.10 | 7.89 | 8.10 | 8.21 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | 0.144 | 0.0056 | 0.0080 | 0.0136 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | 0.58 | <0.50 | <0.50 |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | 0.346 | 0.294 | 0.055 | 0.058 | 0.041 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.289 | 0.0056 | 0.315 | 0.510 | 0.144 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | 0.0019 | <0.0010 | <0.0010 | <0.0010 |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 11.1 | 29.4 | 19.7 | 35.6 | 3.77 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0041 | 0.0012 | 0.0276 | 0.879 | 0.0087 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00012 | <0.00010 | 0.00018 | 0.00024 | 0.00017 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00038 | 0.00157 | 0.00028 | 0.00786 | 0.00048 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0220 | 0.0403 | 0.233 | 0.0228 | 0.0858 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | 0.000050 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | 0.022 | <0.010 | <0.010 | <0.010 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.000740 | <0.0000050 | 0.0000604 | 0.0000649 | 0.0000072 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 61.2 | 72.5 | 121 | 87.4 | 57.6 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.00210 | 0.00137 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00069 | <0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0.00102 | 0.00266 | 0.00025 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | 0.674 | 0.055 | 0.984 | <0.010 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.00154 | <0.000050 | 0.000141 | 0.00536 | <0.000050 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0014 | 0.0095 | 0.0022 | 0.0025 | 0.0013 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 3.93 | 17.1 | 11.9 | 8.75 | 5.92 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00148 | 0.0922 | 0.00189 | 0.0168 | 0.00033 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |

## Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | MW13-01 | MW13-07 | MW13-08 | MW13-10 | MW14-04 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 10-Feb-2022 | 09-Feb-2022 | 07-Feb-2022 | 10-Feb-2022 | 09-Feb-2022 |
| | | | | | WR2200110-001 | WR2200110-002 | WR2200110-003 | WR2200110-004 | WR2200110-006 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000659 | 0.00303 | 0.000755 | 0.00142 | 0.000801 |
| nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.00165 | <0.00050 |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | 0.096 | <0.050 |
| potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 0.637 | 2.82 | 0.761 | 1.33 | 0.596 |
| selenium, dissolved | 7782-49-2 | E421 | 0.050 | µg/L | 1.57 | <0.050 | 1.55 | 1.77 | 0.506 |
| silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 3.32 | 7.61 | 4.23 | 5.70 | 3.99 |
| silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | 0.000054 | <0.000010 |
| sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 0.764 | 4.61 | 1.30 | 1.89 | 2.42 |
| strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.177 | 0.542 | 0.390 | 0.385 | 0.193 |
| sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 3.85 | 10.6 | 7.60 | 12.6 | 1.76 |
| thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | 0.000014 | <0.000010 |
| tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0.00111 | <0.0366 DLM | <0.00030 |
| uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000867 | 0.00637 | 0.00187 | 0.00295 | 0.000433 |
| vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.00301 | <0.00050 |
| zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0310 | 0.0011 | 0.0034 | 0.0191 | <0.0010 |
| zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00080 DLM | <0.00020 |
| dissolved mercury filtration location | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| dissolved metals filtration location | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| styrene | 100-42-5 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| toluene | 108-88-3 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | ---- | <0.40 | ---- | <0.40 | <0.40 |
| xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | ---- | <0.30 | ---- | <0.30 | <0.30 |
| xylenes, total | 1330-20-7 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| bromofluorobenzene, 4- | 460-00-4 | E611A | 1.0 | % | ---- | 98.2 | ---- | 101 | 98.5 |
| difluorobenzene, 1,4- | 540-36-3 | E611A | 1.0 | % | ---- | 97.8 | ---- | 98.1 | 97.4 |
| **Hydrocarbons** | | | | | | | | | |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | MW13-01 | MW13-07 | MW13-08 | MW13-10 | MW14-04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Feb-2022 | 09-Feb-2022 | 07-Feb-2022 | 10-Feb-2022 | 09-Feb-2022 |
| | | | | | WR2200110-001 | WR2200110-002 | WR2200110-003 | WR2200110-004 | WR2200110-006 |
| | | | | | Result | Result | Result | Result | Result |
| **Hydrocarbons** | | | | | | | | | |
| **EPH (C10-C19)** | ---- | E601A | 250 | µg/L | ---- | <250 | ---- | <250 | <250 |
| **EPH (C19-C32)** | ---- | E601A | 250 | µg/L | ---- | <250 | ---- | <250 | <250 |
| **VHw (C6-C10)** | ---- | E581.VH+F1 | 100 | µg/L | ---- | <100 | ---- | <100 | <100 |
| **HEPHw** | ---- | EC600A | 250 | µg/L | ---- | <250 | ---- | <250 | <250 |
| **LEPHw** | ---- | EC600A | 250 | µg/L | ---- | <250 | ---- | <250 | <250 |
| **VPHw** | ---- | EC580A | 100 | µg/L | ---- | <100 | ---- | <100 | <100 |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| **bromobenzotrifluoride, 2- (EPH surr)** | 392-83-6 | E601A | 1.0 | % | ---- | 81.6 | ---- | 84.8 | 89.8 |
| **dichlorotoluene, 3,4-** | 97-75-0 | E581.VH+F1 | 1.0 | % | ---- | 92.8 | ---- | 111 | 105 |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **acenaphthene** | 83-32-9 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **acenaphthylene** | 208-96-8 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **acridine** | 260-94-6 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **anthracene** | 120-12-7 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **benz(a)anthracene** | 56-55-3 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **benzo(a)pyrene** | 50-32-8 | E641A | 0.0050 | µg/L | ---- | <0.0050 | ---- | <0.0050 | <0.0050 |
| **benzo(b+j)fluoranthene** | n/a | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **benzo(b+j+k)fluoranthene** | n/a | E641A | 0.015 | µg/L | ---- | <0.015 | ---- | <0.015 | <0.015 |
| **benzo(g,h,i)perylene** | 191-24-2 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **benzo(k)fluoranthene** | 207-08-9 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **chrysene** | 218-01-9 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **dibenz(a,h)anthracene** | 53-70-3 | E641A | 0.0050 | µg/L | ---- | <0.0050 | ---- | <0.0050 | <0.0050 |
| **fluoranthene** | 206-44-0 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **fluorene** | 86-73-7 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **indeno(1,2,3-c,d)pyrene** | 193-39-5 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **methylnaphthalene, 1-** | 90-12-0 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **methylnaphthalene, 2-** | 91-57-6 | E641A | 0.010 | µg/L | ---- | 0.013 | ---- | <0.010 | <0.010 |
| **naphthalene** | 91-20-3 | E641A | 0.050 | µg/L | ---- | <0.050 | ---- | <0.050 | <0.050 |
| **phenanthrene** | 85-01-8 | E641A | 0.020 | µg/L | ---- | <0.020 | ---- | <0.020 | <0.020 |
| **pyrene** | 129-00-0 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | 0.012 |
| **quinoline** | 91-22-5 | E641A | 0.050 | µg/L | ---- | <0.050 | ---- | <0.050 | <0.050 |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |

## Analytical Results

Sub-Matrix: **Groundwater**

**(**Matrix: **Water)**

| | | | | | Client sample ID | MW13-01 | MW13-07 | MW13-08 | MW13-10 | MW14-04 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 10-Feb-2022 | 09-Feb-2022 | 07-Feb-2022 | 10-Feb-2022 | 09-Feb-2022 |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | | **WR2200110-001** | **WR2200110-002** | **WR2200110-003** | **WR2200110-004** | **WR2200110-006** |
| | | | | | | Result | Result | Result | Result | Result |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | | |
| **chrysene-d12** | 1719-03-5 | E641A | 0.1 | % | | ---- | 98.6 | ---- | 95.9 | 106 |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | | ---- | 101 | ---- | 99.5 | 105 |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | | ---- | 106 | ---- | 102 | 108 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## *Analytical Results*

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| | | | | Client sample ID | MW-GW | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 09-Feb-2022 | ---- | ---- | ---- | ---- |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | **WR2200110-007** | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 160 | ---- | ---- | ---- | ---- |
| **conductivity** | ---- | E100 | 2.0 | μS/cm | 300 | ---- | ---- | ---- | ---- |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 169 | ---- | ---- | ---- | ---- |
| **pH** | ---- | E108 | 0.10 | pH units | 8.26 | ---- | ---- | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | ---- | ---- | ---- | ---- |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | 0.042 | ---- | ---- | ---- | ---- |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.149 | ---- | ---- | ---- | ---- |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 3.92 | ---- | ---- | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0044 | ---- | ---- | ---- | ---- |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00023 | ---- | ---- | ---- | ---- |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00046 | ---- | ---- | ---- | ---- |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0861 | ---- | ---- | ---- | ---- |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | ---- | ---- | ---- | ---- |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000091 | ---- | ---- | ---- | ---- |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 57.9 | ---- | ---- | ---- | ---- |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | 0.00136 | ---- | ---- | ---- | ---- |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0012 | ---- | ---- | ---- | ---- |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 6.05 | ---- | ---- | ---- | ---- |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00021 | ---- | ---- | ---- | ---- |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | ---- | ---- | ---- | ---- |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000734 | ---- | ---- | ---- | ---- |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | MW-GW | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 09-Feb-2022 | ---- | ---- | ---- | ---- |
| | | | | | WR2200110-007 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.578 | ---- | ---- | ---- | ---- |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.486 | ---- | ---- | ---- | ---- |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 3.89 | ---- | ---- | ---- | ---- |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 2.28 | ---- | ---- | ---- | ---- |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.197 | ---- | ---- | ---- | ---- |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 1.71 | ---- | ---- | ---- | ---- |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | ---- | ---- | ---- | ---- |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000422 | ---- | ---- | ---- | ---- |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | ---- | ---- | ---- | ---- |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | ---- | ---- | ---- | ---- |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| **benzene** | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| **ethylbenzene** | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| **methyl-tert-butyl ether [MTBE]** | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| **styrene** | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| **toluene** | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| **xylene, m+p-** | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | ---- | ---- | ---- | ---- |
| **xylene, o-** | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | ---- | ---- | ---- | ---- |
| **xylenes, total** | 1330-20-7 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| **bromofluorobenzene, 4-** | 460-00-4 | E611A | 1.0 | % | 97.0 | ---- | ---- | ---- | ---- |
| **difluorobenzene, 1,4-** | 540-36-3 | E611A | 1.0 | % | 97.8 | ---- | ---- | ---- | ---- |
| **Hydrocarbons** | | | | | | | | | |
| **EPH (C10-C19)** | ---- | E601A | 250 | µg/L | <250 | ---- | ---- | ---- | ---- |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| | | | | Client sample ID | MW-GW | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 09-Feb-2022 | ---- | ---- | ---- | ---- |
| Analyte | CAS Number | Method | LOR | Unit | WR2200110-007 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Hydrocarbons** | | | | | | | | | |
| EPH (C19-C32) | ---- | E601A | 250 | μg/L | <250 | ---- | ---- | ---- | ---- |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | μg/L | <100 | ---- | ---- | ---- | ---- |
| HEPHw | ---- | EC600A | 250 | μg/L | <250 | ---- | ---- | ---- | ---- |
| LEPHw | ---- | EC600A | 250 | μg/L | <250 | ---- | ---- | ---- | ---- |
| VPHw | ---- | EC580A | 100 | μg/L | <100 | ---- | ---- | ---- | ---- |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| bromobenzotrifluoride, 2- (EPH surr) | 392-83-6 | E601A | 1.0 | % | 85.1 | ---- | ---- | ---- | ---- |
| dichlorotoluene, 3,4- | 97-75-0 | E581.VH+F1 | 1.0 | % | 107 | ---- | ---- | ---- | ---- |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| acridine | 260-94-6 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| anthracene | 120-12-7 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.0050 | μg/L | <0.0050 | ---- | ---- | ---- | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| benzo(b+j+k)fluoranthene | n/a | E641A | 0.015 | μg/L | <0.015 | ---- | ---- | ---- | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| chrysene | 218-01-9 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.0050 | μg/L | <0.0050 | ---- | ---- | ---- | ---- |
| fluoranthene | 206-44-0 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| fluorene | 86-73-7 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| naphthalene | 91-20-3 | E641A | 0.050 | μg/L | <0.050 | ---- | ---- | ---- | ---- |
| phenanthrene | 85-01-8 | E641A | 0.020 | μg/L | <0.020 | ---- | ---- | ---- | ---- |
| pyrene | 129-00-0 | E641A | 0.010 | μg/L | <0.010 | ---- | ---- | ---- | ---- |
| quinoline | 91-22-5 | E641A | 0.050 | μg/L | <0.050 | ---- | ---- | ---- | ---- |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| chrysene-d12 | 1719-03-5 | E641A | 0.1 | % | 103 | ---- | ---- | ---- | ---- |

## Analytical Results

Sub-Matrix: **Groundwater**

**(**Matrix: **Water)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sample ID | **MW-GW** | ---- | ---- | ---- | ---- |
| | | | | Client sampling date / time | 09-Feb-2022 | ---- | ---- | ---- | ---- |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | **WR2200110-007** | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | 106 | ---- | ---- | ---- | ---- |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | 110 | ---- | ---- | ---- | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| Work Order | : **WR2200110** | Page | : 1 of 18 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : ECA21YT00086 | Date Samples Received | : 11-Feb-2022 14:50 |
| PO | : 10145 | Issue Date | : 23-Feb-2022 14:41 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : Q62635 | | |
| No. of samples received | : 7 | | |
| No. of samples analysed | : 6 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**
**CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.**
**DQO: Data Quality Objective.**
**LOR: Limit of Reporting (detection limit).**
**RPD: Relative Percent Difference.**

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

## *Outliers : Frequency of Quality Control Samples*

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** MW13-08 | E298 | 07-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 11 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** MW13-01 | E298 | 10-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** MW13-10 | E298 | 10-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** MW13-07 | E298 | 09-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** MW14-04 | E298 | 09-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** MW-GW | E298 | 09-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW13-01 | E235.Br-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW13-10 | E235.Br-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW13-07 | E235.Br-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW14-04 | E235.Br-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW-GW | E235.Br-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW13-08 | E235.Br-L | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** MW13-01 | E235.Cl | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** MW13-10 | E235.Cl | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** MW13-07 | E235.Cl | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** MW14-04 | E235.Cl | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW-GW | E235.Cl | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-08 | E235.Cl | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-01 | E235.F | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-10 | E235.F | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-07 | E235.F | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW14-04 | E235.F | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW-GW | E235.F | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-08 | E235.F | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-01 | E235.NO3-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 6 days | × EHT |

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW13-10 | E235.NO3-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 6 days | ✘ EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW13-07 | E235.NO3-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 7 days | ✘ EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW14-04 | E235.NO3-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 7 days | ✘ EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW-GW | E235.NO3-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 7 days | ✘ EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW13-08 | E235.NO3-L | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 9 days | ✘ EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW13-01 | E235.NO2-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 6 days | ✘ EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW13-10 | E235.NO2-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 6 days | ✘ EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW13-07 | E235.NO2-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 7 days | ✘ EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW14-04 | E235.NO2-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 7 days | ✘ EHT |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW-GW | E235.NO2-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MW13-08 | E235.NO2-L | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** MW13-01 | E235.SO4 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** MW13-10 | E235.SO4 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** MW13-07 | E235.SO4 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** MW14-04 | E235.SO4 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** MW-GW | E235.SO4 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** MW13-08 | E235.SO4 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** MW13-08 | E509 | 07-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 11 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** MW13-01 | E509 | 10-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** MW13-10 | E509 | 10-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** MW13-07 | E509 | 09-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** MW14-04 | E509 | 09-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** MW-GW | E509 | 09-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MW13-01 | E421 | 10-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MW13-10 | E421 | 10-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MW13-07 | E421 | 09-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 14 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MW14-04 | E421 | 09-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 14 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MW-GW | E421 | 09-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 14 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MW13-08 | E421 | 07-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 16 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** MW13-07 | E601A | 09-Feb-2022 | 18-Feb-2022 | 14 days | 10 days | ✓ | 19-Feb-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** MW14-04 | E601A | 09-Feb-2022 | 18-Feb-2022 | 14 days | 10 days | ✓ | 19-Feb-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** MW-GW | E601A | 09-Feb-2022 | 18-Feb-2022 | 14 days | 10 days | ✓ | 19-Feb-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** MW13-10 | E601A | 10-Feb-2022 | 18-Feb-2022 | 14 days | 9 days | ✓ | 19-Feb-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** MW13-10 | E581.VH+F1 | 10-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 19-Feb-2022 | 14 days | 10 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** MW13-07 | E581.VH+F1 | 09-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 19-Feb-2022 | 14 days | 11 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** MW14-04 | E581.VH+F1 | 09-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 19-Feb-2022 | 14 days | 11 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** | | | | | | | | | | |
| MW-GW | E581.VH+F1 | 09-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 19-Feb-2022 | 14 days | 11 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-01 | E290 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-10 | E290 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-07 | E290 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW14-04 | E290 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW-GW | E290 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-08 | E290 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 9 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-01 | E100 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MW13-10 | E100 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** MW13-07 | E100 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** MW14-04 | E100 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** MW-GW | E100 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** MW13-08 | E100 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** MW13-01 | E108 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 143 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** MW13-10 | E108 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 143 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** MW13-07 | E108 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 167 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** MW14-04 | E108 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 167 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** MW-GW | E108 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 167 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation<br>Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis<br>Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>MW13-08 | E108 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 215 hrs | ×<br>EHTR-FM |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>MW13-07 | E641A | 09-Feb-2022 | 18-Feb-2022 | 14 days | 10 days | ✓ | 19-Feb-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>MW14-04 | E641A | 09-Feb-2022 | 18-Feb-2022 | 14 days | 10 days | ✓ | 19-Feb-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>MW-GW | E641A | 09-Feb-2022 | 18-Feb-2022 | 14 days | 10 days | ✓ | 19-Feb-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>MW13-10 | E641A | 10-Feb-2022 | 18-Feb-2022 | 14 days | 9 days | ✓ | 19-Feb-2022 | 40 days | 1 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)**<br>MW13-10 | E611A | 10-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 19-Feb-2022 | 14 days | 10 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)**<br>MW13-07 | E611A | 09-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 19-Feb-2022 | 14 days | 11 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)**<br>MW14-04 | E611A | 09-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 19-Feb-2022 | 14 days | 11 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)**<br>MW-GW | E611A | 09-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 19-Feb-2022 | 14 days | 11 days | ✓ |

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 411072 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 411836 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 411076 | 1 | 16 | 6.2 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 413819 | 1 | 9 | 11.1 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 411075 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Conductivity in Water | E100 | 411073 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 413246 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 414936 | 2 | 30 | 6.6 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 411074 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 411077 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 411078 | 1 | 17 | 5.8 | 5.0 | ✓ |
| pH by Meter | E108 | 411071 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 411079 | 1 | 17 | 5.8 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 413818 | 1 | 6 | 16.6 | 5.0 | ✓ |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 411072 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 411836 | 1 | 18 | 5.5 | 5.0 | ✓ |
| BC PHCs - EPH by GC-FID | E601A | 413223 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 411076 | 1 | 16 | 6.2 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 413819 | 1 | 9 | 11.1 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 411075 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Conductivity in Water | E100 | 411073 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 413246 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 414936 | 2 | 30 | 6.6 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 411074 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 411077 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 411078 | 1 | 17 | 5.8 | 5.0 | ✓ |
| PAHs by Hexane LVI GC-MS | E641A | 413224 | 1 | 4 | 25.0 | 5.0 | ✓ |
| pH by Meter | E108 | 411071 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 411079 | 1 | 17 | 5.8 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 413818 | 1 | 6 | 16.6 | 5.0 | ✓ |
| **Method Blanks (MB)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 411072 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 411836 | 1 | 18 | 5.5 | 5.0 | ✓ |
| BC PHCs - EPH by GC-FID | E601A | 413223 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 411076 | 1 | 16 | 6.2 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 413819 | 1 | 9 | 11.1 | 5.0 | ✓ |

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Method Blanks (MB) - Continued** | | | | | | | |
| Chloride in Water by IC | E235.Cl | 411075 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Conductivity in Water | E100 | 411073 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 413246 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 414936 | 2 | 30 | 6.6 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 411074 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 411077 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 411078 | 1 | 17 | 5.8 | 5.0 | ✓ |
| PAHs by Hexane LVI GC-MS | E641A | 413224 | 0 | 4 | 0.0 | 5.0 | × |
| Sulfate in Water by IC | E235.SO4 | 411079 | 1 | 17 | 5.8 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 413818 | 1 | 6 | 16.6 | 5.0 | ✓ |
| **Matrix Spikes (MS)** | | | | | | | |
| Ammonia by Fluorescence | E298 | 411836 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 411076 | 1 | 16 | 6.2 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 413819 | 1 | 9 | 11.1 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 411075 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 413246 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 414936 | 2 | 30 | 6.6 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 411074 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 411077 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 411078 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 411079 | 1 | 17 | 5.8 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 413818 | 1 | 6 | 16.6 | 5.0 | ✓ |

## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Conductivity in Water | E100<br><br>Vancouver - Environmental | Water | APHA 2510 (mod) | Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C. |
| pH by Meter | E108<br><br>Vancouver - Environmental | Water | APHA 4500-H (mod) | pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time. |
| Bromide in Water by IC (Low Level) | E235.Br-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Chloride in Water by IC | E235.Cl<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Fluoride in Water by IC | E235.F<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrite in Water by IC (Low Level) | E235.NO2-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrate in Water by IC (Low Level) | E235.NO3-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Sulfate in Water by IC | E235.SO4<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Alkalinity Species by Titration | E290<br><br>Vancouver - Environmental | Water | APHA 2320 B (mod) | Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. |
| Ammonia by Fluorescence | E298<br><br>Vancouver - Environmental | Water | J. Environ. Monit., 2005, 7, 37-42 (mod) | Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA). |

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Dissolved Metals in Water by CRC ICPMS | E421<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 6020B (mod) | Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Dissolved Mercury in Water by CVAAS | E509<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 1631E (mod) | Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS. |
| VH and F1 by Headspace GC-FID | E581.VH+F1<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod) | Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. |
| BC PHCs - EPH by GC-FID | E601A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual | Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions. |
| BTEX by Headspace GC-MS | E611A<br><br>Vancouver - Environmental | Water | EPA 8260D (mod) | Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. |
| PAHs by Hexane LVI GC-MS | E641A<br><br>Vancouver - Environmental | Water | EPA 8270E (mod) | Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS. |
| Dissolved Hardness (Calculated) | EC100<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. |
| VPH: VH-BTEX-Styrene | EC580A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual (VPH in Water and Solids) (mod) | Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VPHw = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene. |
| LEPH and HEPH: EPH-PAH | EC600A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual (LEPH and HEPH) (mod) | Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Acenaphthene, Acridine, Anthracene, Fluorene, Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(a)pyrene, Fluoranthene, and Pyrene. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Preparation for Ammonia | EP298<br><br>Vancouver - Environmental | Water | | Sample preparation for Preserved Nutrients Water Quality Analysis. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
| --- | --- | --- | --- | --- |
| Dissolved Metals Water Filtration | EP421<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HNO3. |
| Dissolved Mercury Water Filtration | EP509<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HCl. |
| VOCs Preparation for Headspace Analysis | EP581<br><br>Vancouver - Environmental | Water | EPA 5021A (mod) | Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system. |
| PHCs and PAHs Hexane Extraction | EP601<br><br>Vancouver - Environmental | Water | EPA 3511 (mod) | Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction. |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | :**WR2200110** | Page | : 1 of 15 |
| Client | :Teck Metals Ltd | Laboratory | :Whitehorse - Environmental |
| Contact | :Michelle Unger | Account Manager | :Can Dang |
| Address | :601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | :#12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | :250 427 8404 | Telephone | :+1 867 668 6689 |
| Project | :ECA21YT00086 | Date Samples Received | :11-Feb-2022 14:50 |
| PO | :10145 | Date Analysis Commenced | :15-Feb-2022 |
| C-O-C number | :---- | Issue Date | :23-Feb-2022 14:41 |
| Sampler | :---- | | |
| Site | :Sa Dena Hes | | |
| Quote number | :Q62635 | | |
| No. of samples received | :7 | | |
| No. of samples analysed | :6 | | |



This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Brieanna Allen | Production/Validation Manager | Organics, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Inorganics, Burnaby, British Columbia |
| Monica Ko | Lab Assistant | Metals, Burnaby, British Columbia |
| Owen Cheng | | Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests (QC Lot: 411071)** | | | | | | | | | | | |
| WR2200110-002 | MW13-07 | pH | ---- | E108 | 0.10 | pH units | 8.10 | 8.12 | 0.247% | 4% | ---- |
| **Physical Tests (QC Lot: 411072)** | | | | | | | | | | | |
| WR2200110-002 | MW13-07 | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 224 | 225 | 0.491% | 20% | ---- |
| **Physical Tests (QC Lot: 411073)** | | | | | | | | | | | |
| WR2200110-002 | MW13-07 | conductivity | ---- | E100 | 2.0 | µS/cm | 457 | 458 | 0.218% | 10% | ---- |
| **Anions and Nutrients (QC Lot: 411074)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | fluoride | 16984-48-8 | E235.F | 0.020 | mg/L | 0.058 | 0.058 | 0.0001 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 411075)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | chloride | 16887-00-6 | E235.Cl | 0.50 | mg/L | 1.09 | 1.06 | 0.02 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 411076)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 411077)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | <0.0050 | <0.0050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 411078)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 411079)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 10.0 | 10.2 | 1.77% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 411836)** | | | | | | | | | | | |
| VA22A2769-002 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 1.00 | mg/L | 61.7 | 61.9 | 0.346% | 20% | ---- |
| **Dissolved Metals (QC Lot: 413246)** | | | | | | | | | | | |
| FJ2200431-001 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 414936)** | | | | | | | | | | | |
| FJ2200419-006 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0017 | 0.0019 | 0.0002 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00059 | 0.00059 | 0.000002 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00035 | 0.00031 | 0.00004 | Diff <2x LOR | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0878 | 0.0902 | 2.70% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | 0.066 | 0.068 | 0.002 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000212 | 0.0000249 | 0.0000037 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 96.2 | 98.0 | 1.85% | 20% | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Dissolved Metals (QC Lot: 414936) - continued** | | | | | | | | | | | |
| FJ2200419-006 | Anonymous | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00050 | 0.00049 | 0.000008 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.121 | 0.122 | 0.714% | 20% | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.0050 | mg/L | 140 | 139 | 0.462% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00657 | 0.00679 | 3.35% | 20% | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00206 | 0.00207 | 0.199% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00167 | 0.00166 | 0.00001 | Diff <2x LOR | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.050 | mg/L | 4.22 | 4.35 | 3.14% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.050 | mg/L | 37.8 µg/L | 0.0386 | 2.05% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 1.57 | 1.64 | 4.67% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 23.3 | 23.4 | 0.533% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.601 | 0.599 | 0.300% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 200 | 203 | 1.79% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | 0.00075 | 0.00076 | 0.000007 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00639 | 0.00639 | 0.104% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 414937)** | | | | | | | | | | | |
| CG2201618-001 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0020 | mg/L | <0.0020 | <0.0020 | 0 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00020 | mg/L | 0.00186 | 0.00185 | 0.000010 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00020 | mg/L | 0.00024 | 0.00022 | 0.00002 | Diff <2x LOR | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00020 | mg/L | 0.0234 | 0.0234 | 0.0337% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.040 | mg/L | <0.040 µg/L | <0.000040 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000100 | mg/L | <0.000100 | <0.000100 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.020 | mg/L | 0.104 | 0.105 | 0.0010 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0100 | mg/L | 0.741 µg/L | 0.000737 | 0.453% | 20% | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.100 | mg/L | 578 | 580 | 0.358% | 20% | ---- |

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QC Lot: 414937) - continued** | | | | | | | | | | | |
| CG2201618-001 | Anonymous | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.20 | mg/L | 48.0 µg/L | 0.0476 | 0.780% | 20% | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00040 | mg/L | <0.00040 | <0.00040 | 0 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.020 | mg/L | <0.020 | <0.020 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000100 | mg/L | <0.000100 | <0.000100 | 0 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0020 | mg/L | 1.09 | 1.07 | 1.98% | 20% | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.0100 | mg/L | 243 | 240 | 1.23% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00020 | mg/L | 0.321 | 0.320 | 0.344% | 20% | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000100 | mg/L | 0.00654 | 0.00659 | 0.772% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00100 | mg/L | 0.332 | 0.330 | 0.560% | 20% | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.100 | mg/L | <0.100 | <0.100 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 16.5 | 16.3 | 1.68% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.100 | mg/L | 7.62 µg/L | 0.00762 | 0.102% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.100 | mg/L | 3.00 | 3.05 | 1.52% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.100 | mg/L | 29.8 | 29.2 | 2.14% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00040 | mg/L | 0.995 | 0.986 | 0.899% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 1.00 | mg/L | 436 | 442 | 1.27% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000020 | mg/L | 0.000192 | 0.000190 | 0.000003 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00060 | mg/L | <0.00060 | <0.00060 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000020 | mg/L | 0.0371 | 0.0365 | 1.43% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00100 | mg/L | <0.00100 | <0.00100 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0020 | mg/L | 0.0658 | 0.0653 | 0.706% | 20% | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00040 | mg/L | <0.00040 | <0.00040 | 0 | Diff <2x LOR | ---- |
| **Volatile Organic Compounds (QC Lot: 413819)** | | | | | | | | | | | |
| VA22A2879-002 | Anonymous | benzene | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | styrene | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | toluene | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | 0 | Diff <2x LOR | ---- |
| | | xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | 0 | Diff <2x LOR | ---- |
| **Hydrocarbons (QC Lot: 413818)** | | | | | | | | | | | |
| VA22A2879-002 | Anonymous | VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | 0.0% | 30% | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Physical Tests (QCLot: 411072)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 411073)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | <1.0 | ---- |
| **Anions and Nutrients (QCLot: 411074)** | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | <0.020 | ---- |
| **Anions and Nutrients (QCLot: 411075)** | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | <0.50 | ---- |
| **Anions and Nutrients (QCLot: 411076)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 411077)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 411078)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 411079)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 411836)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Dissolved Metals (QCLot: 413246)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 414936)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 414936) - continued** | | | | | | |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 414937)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 414937) - continued** | | | | | | |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Volatile Organic Compounds (QCLot: 413819)** | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | <0.50 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | <0.50 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | <0.50 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | <0.40 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | <0.30 | ---- |
| **Hydrocarbons (QCLot: 413223)** | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | <250 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | <250 | ---- |
| **Hydrocarbons (QCLot: 413818)** | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | ---- |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 411071)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 99.8 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 411072)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 102 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 411073)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 100 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 411074)** | | | | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | 1 mg/L | 101 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 411075)** | | | | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | 100 mg/L | 102 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 411076)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 100 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 411077)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 102 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 411078)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 98.5 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 411079)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 103 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 411836)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 95.8 | 85.0 | 115 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 98.8 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 414936)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 99.1 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 98.4 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 99.2 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 97.1 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 100 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 99.9 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 96.1 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 98.0 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 95.8 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 96.7 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 414936) - continued** | | | | | | | | | |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 96.0 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 92.8 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 95.0 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 97.4 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 98.8 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 95.6 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 108 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 97.2 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 97.8 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 97.4 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 88.6 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 98.6 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 96.8 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 96.2 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 97.6 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 99.1 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 104 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 98.8 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 96.4 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 94.3 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 414937)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 104 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 99.8 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 98.9 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 95.6 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 100 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 97.2 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 97.6 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 104 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 100 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 98.1 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 97.6 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 93.5 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 414937) - continued** | | | | | | | | | |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 102 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 98.3 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 96.5 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 103 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 97.5 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 98.3 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 99.6 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 98.7 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 103 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 89.6 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 99.8 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 100 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 104 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 99.3 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 97.4 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 101 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 97.9 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 96.2 | 80.0 | 120 | ---- |
| **Volatile Organic Compounds (QCLot: 413819)** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | 100 µg/L | 91.6 | 70.0 | 130 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | 100 µg/L | 88.6 | 70.0 | 130 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | 100 µg/L | 104 | 70.0 | 130 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | 100 µg/L | 98.5 | 70.0 | 130 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | 100 µg/L | 86.4 | 70.0 | 130 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | 200 µg/L | 99.0 | 70.0 | 130 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | 100 µg/L | 93.3 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 413223)** | | | | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | 6491 µg/L | 110 | 70.0 | 130 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | 3363 µg/L | 110 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 413818)** | | | | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | 6310 µg/L | 88.3 | 70.0 | 130 | ---- |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 413224)** | | | | | | | | | |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 413224) - continued** | | | | | | | | | |
| acenaphthene | 83-32-9 | E641A | ---- | µg/L | 0.5 µg/L | 114 | 60.0 | 130 | ---- |
| acenaphthylene | 208-96-8 | E641A | ---- | µg/L | 0.5 µg/L | 112 | 60.0 | 130 | ---- |
| acridine | 260-94-6 | E641A | ---- | µg/L | 0.5 µg/L | 106 | 60.0 | 130 | ---- |
| anthracene | 120-12-7 | E641A | ---- | µg/L | 0.5 µg/L | 122 | 60.0 | 130 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | ---- | µg/L | 0.5 µg/L | 108 | 60.0 | 130 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | ---- | µg/L | 0.5 µg/L | 119 | 60.0 | 130 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | ---- | µg/L | 0.5 µg/L | 126 | 60.0 | 130 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | ---- | µg/L | 0.5 µg/L | 125 | 60.0 | 130 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | ---- | µg/L | 0.5 µg/L | 124 | 60.0 | 130 | ---- |
| chrysene | 218-01-9 | E641A | ---- | µg/L | 0.5 µg/L | 117 | 60.0 | 130 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | ---- | µg/L | 0.5 µg/L | 116 | 60.0 | 130 | ---- |
| fluoranthene | 206-44-0 | E641A | ---- | µg/L | 0.5 µg/L | 121 | 60.0 | 130 | ---- |
| fluorene | 86-73-7 | E641A | ---- | µg/L | 0.5 µg/L | 114 | 60.0 | 130 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | ---- | µg/L | 0.5 µg/L | 115 | 60.0 | 130 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | ---- | µg/L | 0.5 µg/L | 115 | 60.0 | 130 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | ---- | µg/L | 0.5 µg/L | 112 | 60.0 | 130 | ---- |
| naphthalene | 91-20-3 | E641A | ---- | µg/L | 0.5 µg/L | 115 | 50.0 | 130 | ---- |
| phenanthrene | 85-01-8 | E641A | ---- | µg/L | 0.5 µg/L | 117 | 60.0 | 130 | ---- |
| pyrene | 129-00-0 | E641A | ---- | µg/L | 0.5 µg/L | 118 | 60.0 | 130 | ---- |
| quinoline | 91-22-5 | E641A | ---- | µg/L | 0.5 µg/L | 122 | 60.0 | 130 | ---- |

## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 411074)** | | | | | | | | | | |
| WR2200110-001 | MW13-01 | fluoride | 16984-48-8 | E235.F | 0.968 mg/L | 1 mg/L | 96.8 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411075)** | | | | | | | | | | |
| WR2200110-001 | MW13-01 | chloride | 16887-00-6 | E235.Cl | 94.0 mg/L | 100 mg/L | 94.0 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411076)** | | | | | | | | | | |
| WR2200110-001 | MW13-01 | bromide | 24959-67-9 | E235.Br-L | 0.460 mg/L | 0.5 mg/L | 92.0 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411077)** | | | | | | | | | | |
| WR2200110-001 | MW13-01 | nitrate (as N) | 14797-55-8 | E235.NO3-L | 2.33 mg/L | 2.5 mg/L | 93.4 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411078)** | | | | | | | | | | |
| WR2200110-001 | MW13-01 | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.438 mg/L | 0.5 mg/L | 87.5 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411079)** | | | | | | | | | | |
| WR2200110-001 | MW13-01 | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 93.3 mg/L | 100 mg/L | 93.3 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411836)** | | | | | | | | | | |
| VA22A2773-001 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | ND mg/L | 0.1 mg/L | ND | 75.0 | 125 | MS-B |
| **Dissolved Metals (QCLot: 413246)** | | | | | | | | | | |
| FJ2200431-002 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000987 mg/L | 0.0001 mg/L | 98.7 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 414936)** | | | | | | | | | | |
| VA22A2740-006 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.195 mg/L | 0.2 mg/L | 97.4 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0201 mg/L | 0.02 mg/L | 100 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0196 mg/L | 0.02 mg/L | 97.9 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.0205 mg/L | 0.02 mg/L | 102 | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0400 mg/L | 0.04 mg/L | 99.9 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00882 mg/L | 0.01 mg/L | 88.2 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.102 mg/L | 0.1 mg/L | 102 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00404 mg/L | 0.004 mg/L | 101 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 3.95 mg/L | 4 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0390 mg/L | 0.04 mg/L | 97.6 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0198 mg/L | 0.02 mg/L | 99.0 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0199 mg/L | 0.02 mg/L | 99.4 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 2.00 mg/L | 2 mg/L | 99.8 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Matrix Spike (MS) Report - Spike Concentration | Spike Target | Recovery (%) MS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 414936) - continued** | | | | | | | | | | |
| VA22A2740-006 | Anonymous | lead, dissolved | 7439-92-1 | E421 | 0.0197 mg/L | 0.02 mg/L | 98.4 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0995 mg/L | 0.1 mg/L | 99.5 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.978 mg/L | 1 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0200 mg/L | 0.02 mg/L | 99.8 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0202 mg/L | 0.02 mg/L | 101 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0396 mg/L | 0.04 mg/L | 98.9 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 9.78 mg/L | 10 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 3.91 mg/L | 4 mg/L | 97.7 | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0418 mg/L | 0.04 mg/L | 104 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 9.62 mg/L | 10 mg/L | 96.2 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00389 mg/L | 0.004 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 2.00 mg/L | 2 mg/L | 99.8 | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.0202 mg/L | 0.02 mg/L | 101 | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 20.7 mg/L | 20 mg/L | 103 | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00379 mg/L | 0.004 mg/L | 94.8 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0197 mg/L | 0.02 mg/L | 98.7 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0396 mg/L | 0.04 mg/L | 98.9 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.00408 mg/L | 0.004 mg/L | 102 | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.0987 mg/L | 0.1 mg/L | 98.7 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.423 mg/L | 0.4 mg/L | 106 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0416 mg/L | 0.04 mg/L | 104 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 414937)** | | | | | | | | | | |
| CG2201618-002 | Anonymous | antimony, dissolved | 7440-36-0 | E421 | 0.0412 mg/L | 0.04 mg/L | 103 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0429 mg/L | 0.04 mg/L | 107 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.0378 mg/L | 0.04 mg/L | 94.5 | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0753 mg/L | 0.08 mg/L | 94.1 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.0165 mg/L | 0.02 mg/L | 82.7 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.197 mg/L | 0.2 mg/L | 98.6 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00761 mg/L | 0.008 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 8 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0788 mg/L | 0.08 mg/L | 98.6 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0352 mg/L | 0.04 mg/L | 87.9 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 3.88 mg/L | 4 mg/L | 97.1 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0360 mg/L | 0.04 mg/L | 89.9 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | ND mg/L | 0.2 mg/L | ND | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

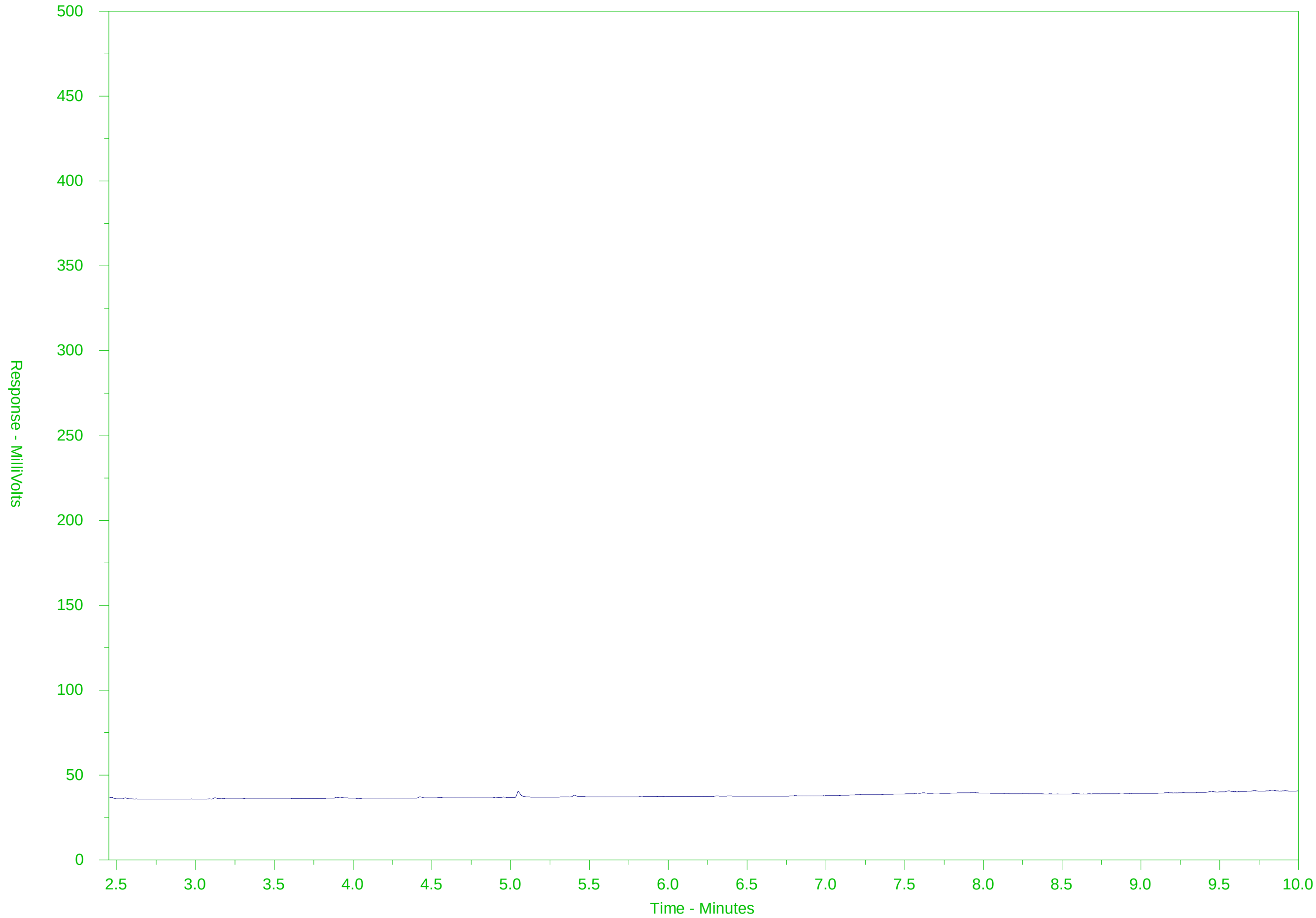
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| | | | | | Concentration | Target | MS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 414937) - continued** | | | | | | | | | | |
| CG2201618-002 | Anonymous | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0437 mg/L | 0.04 mg/L | 109 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | ND mg/L | 0.08 mg/L | ND | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 20.7 mg/L | 20 mg/L | 103 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | ND mg/L | 8 mg/L | ND | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0970 mg/L | 0.08 mg/L | 121 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 20.4 mg/L | 20 mg/L | 102 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00751 mg/L | 0.008 mg/L | 93.9 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | ND mg/L | 40 mg/L | ND | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00703 mg/L | 0.008 mg/L | 87.8 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0823 mg/L | 0.08 mg/L | 103 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | ND mg/L | 0.008 mg/L | ND | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.206 mg/L | 0.2 mg/L | 103 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.725 mg/L | 0.8 mg/L | 90.6 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0876 mg/L | 0.08 mg/L | 109 | 70.0 | 130 | ---- |
| **Volatile Organic Compounds (QCLot: 413819)** | | | | | | | | | | |
| VA22A2926-003 | Anonymous | benzene | 71-43-2 | E611A | 80.7 µg/L | 100 µg/L | 80.7 | 70.0 | 130 | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 85.3 µg/L | 100 µg/L | 85.3 | 70.0 | 130 | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 101 µg/L | 100 µg/L | 101 | 70.0 | 130 | ---- |
| | | styrene | 100-42-5 | E611A | 96.8 µg/L | 100 µg/L | 96.8 | 70.0 | 130 | ---- |
| | | toluene | 108-88-3 | E611A | 84.1 µg/L | 100 µg/L | 84.1 | 70.0 | 130 | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | ND µg/L | 200 µg/L | ND | 70.0 | 130 | ---- |
| | | xylene, o- | 95-47-6 | E611A | ND µg/L | 100 µg/L | ND | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 413818)** | | | | | | | | | | |
| WR2200110-002 | MW13-07 | VHw (C6-C10) | ---- | E581.VH+F1 | 4810 µg/L | 6310 µg/L | 76.2 | 60.0 | 140 | ---- |

## *Qualifiers*

| *Qualifier* | *Description* |
|---|---|
| *MS-B* | *Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.* |

# BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WR2200110-002-E601A
Client Sample ID: MW13-07




| | | |
|---|---|---|
| ← EPH10-19 → | ← EPH19-32 → | |
| nC10 | nC19 | nC32 |
| 174°C | 330°C | 467°C |
| 346°F | 626°F | 873°F |
| ← Gasoline → | ← Motor Oils/ Lube Oils/ Grease → | |
| ← Diesel/ Jet Fuels → | | |

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

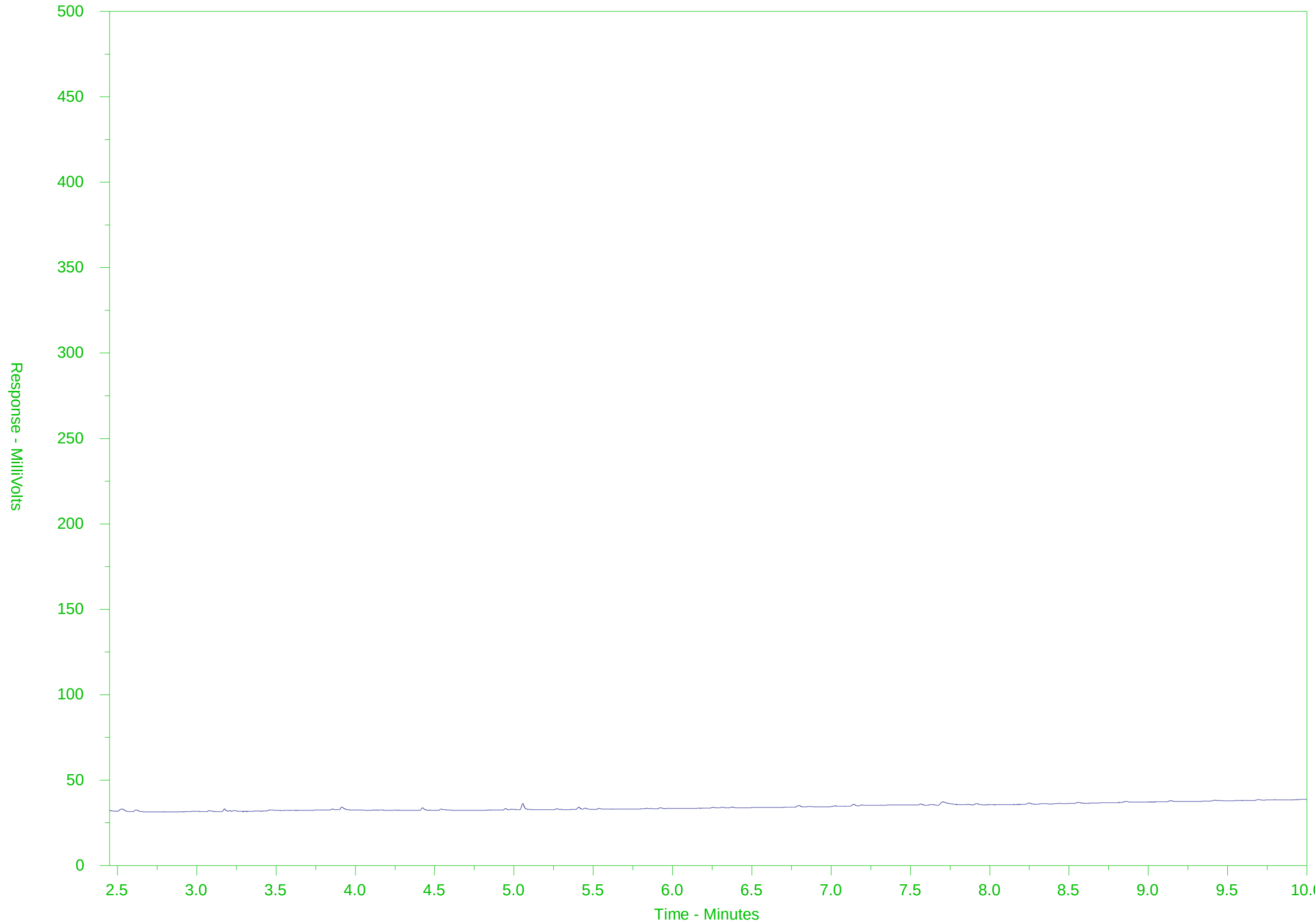
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

# BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WR2200110-004-E601A
Client Sample ID: MW13-10




| ← EPH10-19 → | ← EPH19-32 → | |
|---|---|---|
| nC10 | nC19 | nC32 |
| 174°C | 330°C | 467°C |
| 346°F | 626°F | 873°F |
| ← Gasoline → | ← Motor Oils/ Lube Oils/ Grease → | |
| ← Diesel/ Jet Fuels → | | |

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

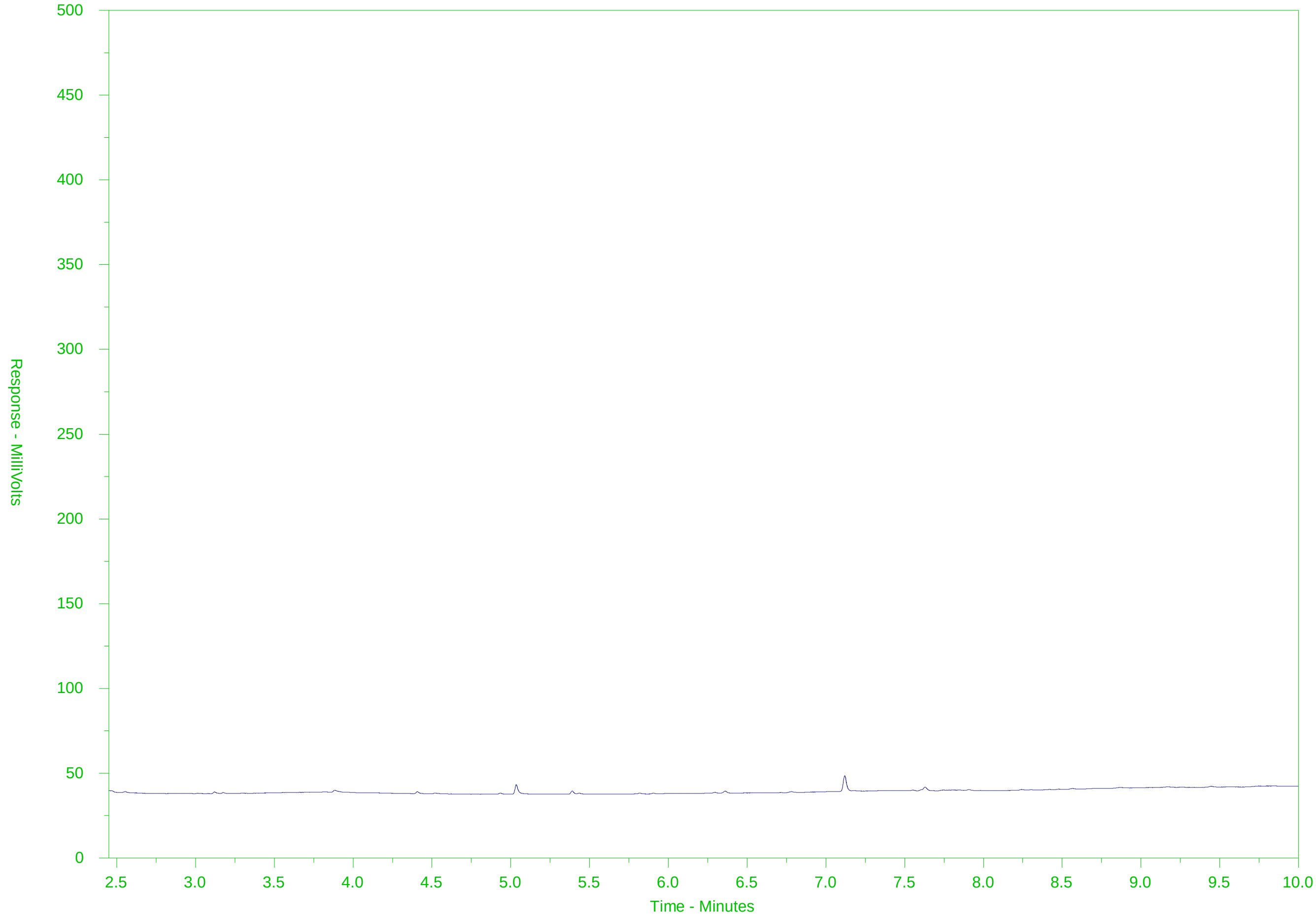
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

# BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WR2200110-006-E601A
Client Sample ID: MW14-04




| ← EPH10-19 → | | ← EPH19-32 → |
|---|---|---|
| nC10 | nC19 | nC32 |
| 174°C | 330°C | 467°C |
| 346°F | 626°F | 873°F |
| ← Gasoline → | ← Motor Oils/ Lube Oils/ Grease → | |
| ← Diesel/ Jet Fuels → | | |

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

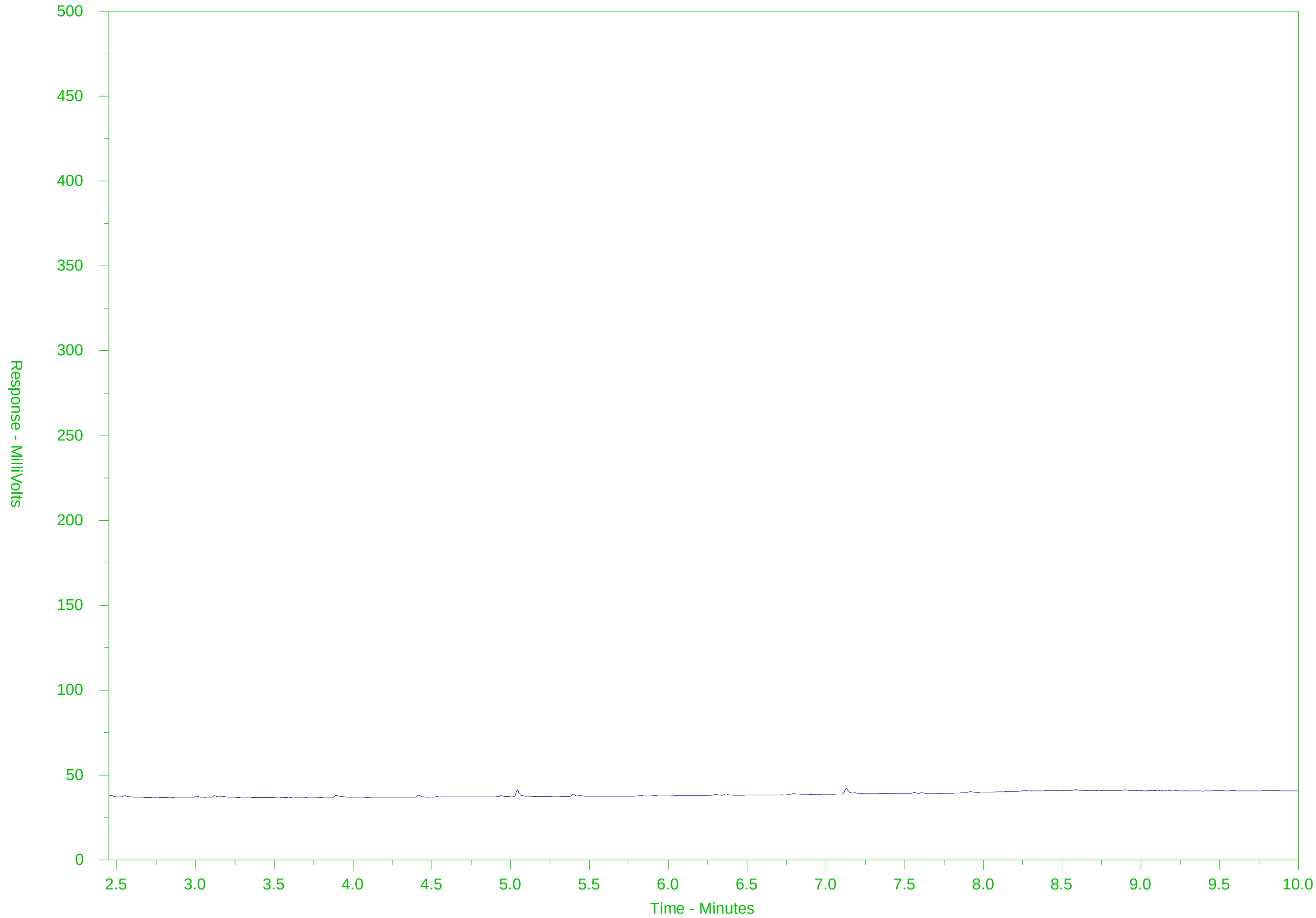
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

# BC EPH HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WR2200110-007-E601A
Client Sample ID: MW-GW




| ← EPH10-19 → | ← EPH19-32 → | |
|---|---|---|
| nC10 | nC19 | nC32 |
| 174°C | 330°C | 467°C |
| 346°F | 626°F | 873°F |
| ← Gasoline → | ← Motor Oils/ Lube Oils/ Grease → | |
| ← Diesel/ Jet Fuels → | | |

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

**Chain of Custody / Analytical Request Form**
**Canada Toll Free: 1 800 668 9878**
www.alsglobal.com

COC # ______

Page __

Environmental Division
Whitehorse
Work Order Reference
WR2200110

Telephone : +1 867 668 6689

| Report To | | Report Format / Distribution | |
|---|---|---|---|
| Company: | TECK Metals Ltd | ☑ Standard ☐ Other | |
| Contact: | Michelle Unger | ☑ PDF ☑ Excel ☑ Digital ☐ Fax | |
| Address: | 601 Knightton Road | Email 1: | azheng@ensero.com, ebouchard@ensero.com |
| | Kimberly, BC | Email 2: | michelle.unger@teck.com |
| Phone: | 250-427-8422 Fax: | Email 3: | chanson@ensero.com |
| Invoice To | Same as Report ? ☑ Yes ☐ No | **Client / Project Information** | |
| Hardcopy of Invoice with Report? | ☐ Yes ☑ No | Project # | ECA21YT00086 |
| Company: | | PO / AFE: | TECK PO9516 |
| Contact: | | LSD: | |
| Address: | | | |
| Phone: | | Quote #: | Q62635 |
| Lab Work Order # (lab use only) | | ALS Contact: Can Dang | Sampler: |

**Service Requested** (Rush for routine analysis subject to availability)
- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TA
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

**Analysis Request**
Please indicate below Filtered, Preserved or both (F, F

| Sample # | Sample Identification (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | pH, SPC, alkalinity, hardness | dissolved metals low level +Hg (F/P) | Anions (nitrate, nitrite, sulphate, Cl, F, Br) | Ammonia (P) | BTEX, LEPH, HEPH (P) | VPH, PAH (P) | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW13-01 (LP) | 10-Feb-22 | 11:30 | Groundwater | X | X | X | X | | | |
| | | | | Groundwater | X | X | X | X | X | X | |
| | | | | Groundwater | X | X | X | X | X | X | |
| | | | | Groundwater | X | X | X | X | | | |
| 2 | MW13-07 (LP) | 09-Feb-22 | 11:00 | Groundwater | X | X | X | X | X | X | |
| 3 | MW13-08 (LP) | 07-Feb-22 | 17:00 | Groundwater | X | X | X | X | | | |
| 4 | MW13-10 (LP) | 10-Feb-22 | 14:45 | Groundwater | X | X | X | X | X | X | |
| | | | | Groundwater | X | X | X | X | | | |
| | | | | Groundwater | X | X | X | X | X | X | |
| | | | | Groundwater | X | X | X | X | X | X | |
| 5 | MW14-03 (LP) | | | Groundwater | X | X | X | X | X | X | |
| 6 | MW14-04 (LP) | 09-Feb-22 | 13:20 | Groundwater | X | X | X | X | X | X | |
| 7 | MW-GW (LQR) | 09-Feb-22 | | Groundwater | X | X | X | X | X | X | |
| | | | | | | | | | | | |

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

Yukon EQWin and ACC200 digital formats. **General A:** pH, EC, TSS (low) **General B:** pH, EC, TSS (low), anions-all
**General C:** pH, EC, TSS (low), anions-all, ion balance, alkalinity **General D:** pH, EC, TSS (low), SO4, ion balance, alkalinity **General E:** pH, EC, TSS (low), SO4, ion balance

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**

**By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.**

**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use onl | | |
|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh-mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: |
| | | | | FEB 11/22 | 14:50 | 2/-1/ °C/4 | | | |

3/4

ALS Environmental

**Chain of Custody / Analytical Request Form**
**Canada Toll Free: 1 800 668 9878**
www.alsglobal.com

COC #

Page

Environmental Division
Whitehorse
Work Order Reference
WR2200110

Telephone : - 1 867 668 6689

| Report To | |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Address: | 601 Knightton Road |
| | Kimberly, BC |
| Phone: | 250-427-8422 Fax: |
| Invoice To | Same as Report ? ☑ Yes ☐ No |
| Hardcopy of Invoice with Report? | ☐ Yes ☑ No |
| Company: | |
| Contact: | |
| Address: | |
| Phone: | |
| Lab Work Order # (lab use only) | |

| Report Format / Distribution | |
|---|---|
| ☑ Standard ☐ Other | |
| ☑ PDF ☑ Excel ☑ Digital ☐ Fax | |
| Email 1: | azheng@ensero.com, ebouchard@ensero.com |
| Email 2: | michelle.unger@teck.com |
| Email 3: | chanson@ensero.com |
| **Client / Project Information** | |
| Project # | ECA21YT00086 |
| PO / AFE: | TECK PO9516 |
| LSD: | |
| Quote #: | Q62635 |
| ALS Contact: | Can Dang |
| Sampler: | |

**Service Requested** (Rush for routine analysis subject to availability)
- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TA
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

**Analysis Request**
Please indicate below Filtered, Preserved or both (F, P

| Sample # | Sample Identification (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | pH, SPC, alkalinity, hardness | dissolved metals low level +Hg (F/P) | Anions (nitrate, nitrite, sulphate, Cl, F, Br) | Ammonia (P) | BTEX, LEPH, HEPH (P) | VPH, PAH (P) | | | | | | | | | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW13-01 (LP) | 10-Feb-22 | 11:30 | Groundwater | X | X | X | X | | | | | | | | | | | |
| | | | | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | | | | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | | | | Groundwater | X | X | X | X | | | | | | | | | | | |
| 2 | MW13-07 (LP) | 09-Feb-22 | 11:00 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| 3 | MW13-08 (LP) | 07-Feb-22 | 17:00 | Groundwater | X | X | X | X | | | | | | | | | | | |
| 4 | MW13-10 (LP) | 10-Feb-22 | 14:45 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | | | | Groundwater | X | X | X | X | | | | | | | | | | | |
| | | | | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | | | | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| 5 | MW14-03 (LP) | | | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| 6 | MW14-04 (LP) | 09-Feb-22 | 13:20 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| 7 | MW-GW (LQR) | 09-Feb-22 | | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

**Yukon EQWin and ACC200 digital formats. General A:** pH, EC, TSS (low) **General B:** pH, EC, TSS (low), anions-all
**General C:** pH, EC, TSS (low), anions-all, ion balance, alkalinity **General D:** pH, EC, TSS (low), SO4, ion balance, alkalinity **General E:** pH, EC, TSS (low), SO4, ion balance

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**
**By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.**
**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use onl | | |
|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh-mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: |
| | | | 9 | FEB 11/22 | 14:50 | 2/1/°C/4 | | | |

JA 2/15/2022 1130am 6C

3/4

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200111** | Page | : 1 of 10 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Feb-2022 14:50 |
| PO | : 10145 | Date Analysis Commenced | : 15-Feb-2022 |
| C-O-C number | : ---- | Issue Date | : 25-Feb-2022 17:18 |
| Sampler | : ---- | | |
| Site | : | | |
| Quote number | : Q62635 | | |
| No. of samples received | : 10 | | |
| No. of samples analysed | : 10 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Metals, Burnaby, British Columbia |
| Caleb Deroche | Lab Analyst | Metals, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Inorganics, Burnaby, British Columbia |
| Monica Ko | Lab Assistant | Metals, Burnaby, British Columbia |
| Owen Cheng | | Metals, Burnaby, British Columbia |
| Ruby Pham | Lab Assistant | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| - | No Unit |
| µg/L | micrograms per litre |
| µS/cm | Microsiemens per centimetre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLM* | *Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).* |
| *DTC* | *Dissolved concentration exceeds total. Results were confirmed by re-analysis.* |
| *HTD* | *Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.* |
| *RRV* | *Reported result verified by repeat analysis.* |

## Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | MH-12 | MH-04 | MH-11 | MH-29 | MH-13 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 02-Feb-2022 16:30 | 07-Feb-2022 16:35 | 09-Feb-2022 16:30 | 09-Feb-2022 17:45 | 06-Feb-2022 13:45 |
| | | | | | **WR2200111-001** | **WR2200111-002** | **WR2200111-003** | **WR2200111-004** | **WR2200111-005** |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 171 | 153 | 215 | 204 | 212 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 339 | 321 | 405 | 372 | 390 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 188 | 174 | 230 | 217 | 229 |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | 190 | 176 | 242 | 215 | 222 |
| **pH** | ---- | E108 | 0.10 | pH units | 8.29 | 8.22 | 8.32 | 8.29 | 8.29 |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 200 | 198 | 258 | 232 | 227 |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 4.0 | 6.1 | <1.0 | 18.9 | 4.1 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0254 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | 0.109 | 0.147 | 0.085 | 0.049 | 0.056 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.126 | 0.953 | 0.123 | 0.124 | 0.111 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 10.6 | 15.9 | 14.0 | 5.64 | 8.73 |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0128 | 0.0045 | 0.0056 | 0.0063 | 0.0066 |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00021 | 0.00014 | 0.00014 | 0.00016 | 0.00010 |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00076 | 0.00039 | 0.00049 | 0.00059 | 0.00039 |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | 0.0785 | 0.0249 | 0.0754 | 0.0548 | 0.173 |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000522 | 0.000278 | 0.0000525 | 0.0000563 | 0.0000204 |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | 64.5 | 64.2 | 80.6 | 74.5 | 61.8 |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0.00245 | <0.00050 | <0.00050 |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | 0.020 | <0.010 | 0.088 | 0.017 | 0.276 |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000313 | 0.000187 | 0.000154 | <0.000050 | <0.000050 |

## Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | MH-12 | MH-04 | MH-11 | MH-29 | MH-13 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 02-Feb-2022 16:30 | 07-Feb-2022 16:35 | 09-Feb-2022 16:30 | 09-Feb-2022 17:45 | 06-Feb-2022 13:45 |
| | | | | | WR2200111-001 | WR2200111-002 | WR2200111-003 | WR2200111-004 | WR2200111-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0021 | 0.0021 | 0.0023 | 0.0018 | 0.0016 |
| magnesium, total | 7439-95-4 | E420 | 0.100 | mg/L | 7.15 | 3.87 | 9.90 | 7.12 | 16.4 |
| manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.00143 | 0.00064 | 0.0103 | 0.00604 | 0.0135 |
| mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00142 | 0.000768 | 0.000867 | 0.000679 | 0.00114 |
| nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| potassium, total | 7440-09-7 | E420 | 0.100 | mg/L | 0.470 | 0.436 | 0.468 | 0.291 | 0.415 |
| selenium, total | 7782-49-2 | E420 | 0.050 | µg/L | 0.862 | 0.987 | 0.733 | 0.614 | 0.713 |
| silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 4.51 | 3.92 | 4.58 | 4.69 | 3.90 |
| silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 1.19 | 0.939 | 1.38 | 1.01 | 1.05 |
| strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.257 | 0.246 | 0.340 | 0.292 | 0.244 |
| sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 4.15 | 6.54 | 5.67 | 2.07 | 3.66 |
| thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00060 DLM | <0.00030 | <0.00030 | 0.00041 | <0.00030 |
| uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00112 | 0.000998 | 0.00137 | 0.000842 | 0.00160 |
| vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | 0.0031 | 0.0063 | 0.0061 | <0.0030 | <0.0030 |
| zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0023 | 0.0034 | 0.0014 | 0.0022 | 0.0010 |
| antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00021 | 0.00015 | 0.00012 | 0.00016 | <0.00010 |
| arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00073 | 0.00041 | 0.00036 | 0.00053 | 0.00024 |
| barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0738 | 0.0232 | 0.0683 | 0.0515 | 0.164 |
| beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000393 | 0.000280 | 0.0000468 | 0.0000419 | 0.0000131 |
| calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 64.3 | 64.1 | 77.5 | 76.2 | 65.6 |

## Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | MH-12 | MH-04 | MH-11 | MH-29 | MH-13 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sample ID | MH-12 | MH-04 | MH-11 | MH-29 | MH-13 |
| | | | | Client sampling date / time | 02-Feb-2022 16:30 | 07-Feb-2022 16:35 | 09-Feb-2022 16:30 | 09-Feb-2022 17:45 | 06-Feb-2022 13:45 |
| | | | | | **WR2200111-001** | **WR2200111-002** | **WR2200111-003** | **WR2200111-004** | **WR2200111-005** |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | 0.00051 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00045 | 0.00085 DTC | <0.00020 | 0.00021 | 0.00024 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0.021 | <0.010 | 0.023 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000064 | 0.000165 | <0.000050 | <0.000050 | <0.000050 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0013 | 0.0015 | 0.0017 | 0.0014 | 0.0012 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 6.68 | 3.43 | 8.77 | 6.57 | 15.8 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00045 | 0.00072 | 0.00824 | 0.00483 | 0.00955 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00138 | 0.000743 | 0.000800 | 0.000641 | 0.00115 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.536 | 0.461 | 0.413 | 0.271 | 0.414 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.924 | 0.985 | 0.741 | 0.529 | 0.751 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 4.26 | 3.55 | 4.08 | 3.99 | 3.52 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 1.14 | 0.957 | 1.17 | 1.02 | 1.04 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.237 | 0.228 | 0.298 | 0.255 | 0.226 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 3.70 | 5.52 | 4.85 | 1.58 | 3.28 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000981 | 0.000868 | 0.00113 | 0.000765 | 0.00155 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0036 | 0.0077 | 0.0061 | 0.0020 | 0.0013 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Speciated Metals** | | | | | | | | | |
| **chromium, hexavalent [Cr VI], total** | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0.00245 | <0.00050 | <0.00050 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | MH-30 | MH-15 | MH-SW | MH-FB | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 06-Feb-2022 11:45 | 07-Feb-2022 11:00 | 10-Feb-2022 | 10-Feb-2022 | 11-Feb-2022 |
| | | | | | WR2200111-006 | WR2200111-007 | WR2200111-008 | WR2200111-009 | WR2200111-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 174 | 203 | 214 | <1.0 | <1.0 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 320 | 368 | 409 | <2.0 | <2.0 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 196 | 216 | 237 | <0.60 | ---- |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | 197 | 207 | 225 | <0.60 | <0.60 |
| **pH** | ---- | E108 | 0.10 | pH units | 8.08 | 8.28 | 8.26 | 5.37 | 5.51 |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 178 HTD | 208 | 248 | <10 | <10 |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 3.1 | 2.0 | <1.0 | <1.0 | <1.0 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0710 | 0.0093 | 0.0096 | <0.0050 | <0.0050 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | 0.053 | 0.093 | 0.086 | <0.020 | <0.020 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.0641 | 0.0720 | 0.125 | <0.0050 | <0.0050 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 4.72 | 4.18 | 14.4 | <0.30 | <0.30 |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0103 | 0.0092 | 0.0050 | <0.0030 | <0.0030 |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00019 | 0.00013 | 0.00013 | <0.00010 | <0.00010 |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00034 | 0.00040 | 0.00045 | <0.00010 | <0.00010 |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | 0.256 | 0.197 | 0.0674 | <0.00010 | 0.00010 RRV |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000436 | 0.0000114 | 0.0000427 | <0.0000050 | <0.0000050 |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | 49.3 | 60.4 | 75.2 | <0.050 | <0.050 |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | 0.00012 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | 0.00141 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | 0.717 | 0.258 | 0.048 | <0.010 | <0.010 |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000273 | <0.000050 | 0.000125 | <0.000050 | <0.000050 |
| **lithium, total** | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0011 | 0.0014 | 0.0019 | <0.0010 | <0.0010 |

## Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | MH-30 | MH-15 | MH-SW | MH-FB | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 06-Feb-2022 11:45 | 07-Feb-2022 11:00 | 10-Feb-2022 | 10-Feb-2022 | 11-Feb-2022 |
| | | | | | WR2200111-006 | WR2200111-007 | WR2200111-008 | WR2200111-009 | WR2200111-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| **magnesium, total** | 7439-95-4 | E420 | 0.100 | mg/L | 17.9 | 13.7 | 8.96 | <0.100 | <0.100 |
| **manganese, total** | 7439-96-5 | E420 | 0.00010 | mg/L | 0.0317 | 0.0171 | 0.00939 | <0.00010 | <0.00010 |
| **mercury, total** | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, total** | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00152 | 0.00195 | 0.000814 | <0.000050 | <0.000050 |
| **nickel, total** | 7440-02-0 | E420 | 0.00050 | mg/L | 0.00079 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, total** | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, total** | 7440-09-7 | E420 | 0.100 | mg/L | 0.827 | 0.422 | 0.432 | <0.100 | <0.100 |
| **selenium, total** | 7782-49-2 | E420 | 0.050 | µg/L | 0.634 | 0.740 | 0.732 | <0.050 | <0.050 |
| **silicon, total** | 7440-21-3 | E420 | 0.10 | mg/L | 3.89 | 4.54 | 4.22 | <0.10 | <0.10 |
| **silver, total** | 7440-22-4 | E420 | 0.000010 | mg/L | 0.000019 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, total** | 7440-23-5 | E420 | 0.050 | mg/L | 1.01 | 1.07 | 1.29 | <0.050 | <0.050 |
| **strontium, total** | 7440-24-6 | E420 | 0.00020 | mg/L | 0.146 | 0.204 | 0.311 | <0.00020 | <0.00020 |
| **sulfur, total** | 7704-34-9 | E420 | 0.50 | mg/L | 2.09 | 1.66 | 5.30 | <0.50 | <0.50 |
| **thallium, total** | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, total** | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, total** | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, total** | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00165 | 0.000926 | 0.00117 | <0.000010 | <0.000010 |
| **vanadium, total** | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, total** | 7440-66-6 | E420 | 0.0030 | mg/L | 0.0467 | <0.0030 | 0.0058 | <0.0030 | <0.0030 |
| **zirconium, total** | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0024 | 0.0014 | 0.0015 | 0.0017 RRV | ---- |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | <0.00010 | 0.00012 | 0.00012 | <0.00010 | ---- |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00020 | 0.00028 | 0.00039 | <0.00010 | ---- |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.243 | 0.202 | 0.0701 | <0.00010 | ---- |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | ---- |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | ---- |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000275 | 0.0000108 | 0.0000430 | <0.0000050 | ---- |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 49.7 | 64.6 | 79.7 | <0.050 | ---- |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | ---- |

## Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | MH-30 | MH-15 | MH-SW | MH-FB | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 06-Feb-2022 11:45 | 07-Feb-2022 11:00 | 10-Feb-2022 | 10-Feb-2022 | 11-Feb-2022 |
| | | | | | WR2200111-006 | WR2200111-007 | WR2200111-008 | WR2200111-009 | WR2200111-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | ---- |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00036 | 0.00047 | <0.00020 | <0.00020 | ---- |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | 0.179 | 0.051 | 0.021 | <0.010 | ---- |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000072 | <0.000050 | <0.000050 | <0.000050 | ---- |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0010 | 0.0012 | 0.0017 | <0.0010 | ---- |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 17.4 | 13.4 | 9.23 | <0.100 | ---- |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.0281 | 0.00980 | 0.00837 | <0.00010 | ---- |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | ---- |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00147 | 0.00205 | 0.000808 | 0.000131 RRV | ---- |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00054 | <0.00050 | <0.00050 | <0.00050 | ---- |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | ---- |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.503 | 0.454 | 0.430 | <0.100 | ---- |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.591 | 0.775 | 0.748 | <0.050 | ---- |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 3.56 | 4.17 | 3.96 | <0.050 | ---- |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | ---- |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 0.857 | 1.06 | 1.23 | <0.050 | ---- |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.129 | 0.198 | 0.302 | <0.00020 | ---- |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 1.89 | 1.52 | 5.14 | <0.50 | ---- |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | ---- |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | ---- |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | ---- |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00157 | 0.000930 | 0.00123 | <0.000010 | ---- |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | ---- |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0164 | 0.0014 | 0.0062 | <0.0010 | ---- |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | ---- |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | ---- |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | ---- |
| **Speciated Metals** | | | | | | | | | |
| **chromium, hexavalent [Cr VI], total** | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | ---- |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| Work Order | : **WR2200111** | Page | : 1 of 26 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Feb-2022 14:50 |
| PO | : 10145 | Issue Date | : 25-Feb-2022 17:19 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : | | |
| Quote number | : Q62635 | | |
| No. of samples received | : 10 | | |
| No. of samples analysed | : 10 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**

**CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.**

**DQO: Data Quality Objective.**

**LOR: Limit of Reporting (detection limit).**

**RPD: Relative Percent Difference.**

## *Workorder Comments*

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### *Outliers: Reference Material (RM) Samples*

- No Reference Material (RM) Sample outliers occur.

### *Outliers : Analysis Holding Time Compliance (Breaches)*

- Analysis Holding Time Outliers exist - please see following pages for full details.

### *Outliers : Frequency of Quality Control Samples*

- No Quality Control Sample Frequency Outliers occur.

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>MH-04 | E298 | 07-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 10 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>MH-15 | E298 | 07-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 10 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>MH-13 | E298 | 06-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 11 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>MH-30 | E298 | 06-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 11 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>MH-12 | E298 | 02-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 15 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>MH-SW | E298 | 10-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>MH-11 | E298 | 09-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** MH-29 | E298 | 09-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** MH-FB | E298 | 10-Feb-2022 | 16-Feb-2022 | ---- | ---- | | 17-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** Trip Blank | E298 | 11-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 19-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-12 | E235.Br-L | 02-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 13 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-SW | E235.Br-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-11 | E235.Br-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-29 | E235.Br-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-FB | E235.Br-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-04 | E235.Br-L | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>MH-15 | E235.Br-L | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>Trip Blank | E235.Br-L | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>MH-13 | E235.Br-L | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>MH-30 | E235.Br-L | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-12 | E235.Cl | 02-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 13 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-SW | E235.Cl | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-11 | E235.Cl | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-29 | E235.Cl | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-FB | E235.Cl | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-04 | E235.Cl | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-15 | E235.Cl | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** Trip Blank | E235.Cl | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-13 | E235.Cl | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-30 | E235.Cl | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-12 | E235.F | 02-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 13 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-SW | E235.F | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-11 | E235.F | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-29 | E235.F | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-FB | E235.F | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-04 | E235.F | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-15 | E235.F | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** Trip Blank | E235.F | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-13 | E235.F | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** MH-30 | E235.F | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-12 | E235.NO3-L | 02-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 13 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-SW | E235.NO3-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 5 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-11 | E235.NO3-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 6 days | × EHT |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-29 | E235.NO3-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-FB | E235.NO3-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-04 | E235.NO3-L | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-15 | E235.NO3-L | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** Trip Blank | E235.NO3-L | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 3 days | 8 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-13 | E235.NO3-L | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-30 | E235.NO3-L | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-12 | E235.NO2-L | 02-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 13 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** MH-SW | E235.NO2-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 5 days | × EHT |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation<br>Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis<br>Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>MH-11 | E235.NO2-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>MH-29 | E235.NO2-L | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>MH-FB | E235.NO2-L | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>MH-04 | E235.NO2-L | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>MH-15 | E235.NO2-L | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>Trip Blank | E235.NO2-L | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 3 days | 8 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>MH-13 | E235.NO2-L | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>MH-30 | E235.NO2-L | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-12 | E235.SO4 | 02-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 13 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-SW | E235.SO4 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-11 | E235.SO4 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-29 | E235.SO4 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-FB | E235.SO4 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-04 | E235.SO4 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-15 | E235.SO4 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>Trip Blank | E235.SO4 | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-13 | E235.SO4 | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>MH-30 | E235.SO4 | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** | | | | | | | | | | |
| MH-04 | E509 | 07-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 11 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** | | | | | | | | | | |
| MH-15 | E509 | 07-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 11 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** | | | | | | | | | | |
| MH-13 | E509 | 06-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 12 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** | | | | | | | | | | |
| MH-30 | E509 | 06-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 12 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** | | | | | | | | | | |
| MH-12 | E509 | 02-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 16 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** | | | | | | | | | | |
| MH-29 | E509 | 09-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** | | | | | | | | | | |
| MH-FB | E509 | 10-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** | | | | | | | | | | |
| MH-SW | E509 | 10-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** | | | | | | | | | | |
| MH-11 | E509 | 09-Feb-2022 | 18-Feb-2022 | ---- | ---- | | 18-Feb-2022 | 28 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* | *Method* | *Sampling Date* | *Extraction / Preparation* | | | | *Analysis* | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Container / Client Sample ID(s)** | | | *Preparation Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* | *Analysis Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MH-SW | E421 | 10-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 12 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MH-11 | E421 | 09-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MH-29 | E421 | 09-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MH-FB | E421 | 10-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MH-04 | E421 | 07-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 15 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MH-15 | E421 | 07-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 15 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MH-13 | E421 | 06-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 16 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MH-30 | E421 | 06-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 16 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** MH-12 | E421 | 02-Feb-2022 | 20-Feb-2022 | ---- | ---- | | 22-Feb-2022 | 180 days | 20 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE**<br>MH-12 | E290 | 02-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 13 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE**<br>MH-SW | E290 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE**<br>MH-11 | E290 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE**<br>MH-29 | E290 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE**<br>MH-FB | E290 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE**<br>MH-04 | E290 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 8 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE**<br>Trip Blank | E290 | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 14 days | 8 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE**<br>MH-13 | E290 | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 9 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE**<br>MH-15 | E290 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MH-30 | E290 | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 14 days | 9 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MH-12 | E100 | 02-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 13 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MH-SW | E100 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 5 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MH-11 | E100 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MH-29 | E100 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MH-FB | E100 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MH-04 | E100 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 8 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| Trip Blank | E100 | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| MH-13 | E100 | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** MH-15 | E100 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** MH-30 | E100 | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 28 days | 9 days | ✓ |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** MH-SW | E108 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 128 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** MH-FB | E108 | 10-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 143 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** MH-29 | E108 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 149 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** MH-11 | E108 | 09-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 150 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** Trip Blank | E108 | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 0.25 hrs | 186 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** MH-04 | E108 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 198 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** MH-15 | E108 | 07-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 204 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>MH-13 | E108 | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 225 hrs | ✘ EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>MH-30 | E108 | 06-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 227 hrs | ✘ EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>MH-12 | E108 | 02-Feb-2022 | ---- | ---- | ---- | | 15-Feb-2022 | 0.25 hrs | 318 hrs | ✘ EHTR-FM |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>MH-30 | E162 | 06-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 10 days | ✘ EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>MH-12 | E162 | 02-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 13 days | ✘ EHTR |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>MH-SW | E162 | 10-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>MH-11 | E162 | 09-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>MH-29 | E162 | 09-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>MH-FB | E162 | 10-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 6 days | ✓ |

Work Order : WR2200111
Client : Teck Metals Ltd
Project : Sa Dena Hes

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* / Container / Client Sample ID(s) | *Method* | *Sampling Date* | *Extraction / Preparation* Preparation Date | Holding Times Rec | Holding Times Actual | Eval | *Analysis* Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** MH-04 | E162 | 07-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 8 days | ✘ EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** Trip Blank | E162 | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 7 days | 8 days | ✘ EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** MH-13 | E162 | 06-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 9 days | ✘ EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** MH-15 | E162 | 07-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 9 days | ✘ EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE [TSS-WB]** MH-30 | E160-L | 06-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 10 days | ✘ EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE [TSS-WB]** MH-12 | E160-L | 02-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 13 days | ✘ EHTR |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE [TSS-WB]** MH-SW | E160-L | 10-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE [TSS-WB]** MH-11 | E160-L | 09-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE [TSS-WB]** MH-29 | E160-L | 09-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE [TSS-WB]** MH-FB | E160-L | 10-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE [TSS-WB]** MH-04 | E160-L | 07-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE [TSS-WB]** Trip Blank | E160-L | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE [TSS-WB]** MH-13 | E160-L | 06-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 9 days | × EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE [TSS-WB]** MH-15 | E160-L | 07-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 7 days | 9 days | × EHT |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **HDPE - total (sodium hydroxide)** MH-13 | E532 | 06-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 28 days | 10 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **HDPE - total (sodium hydroxide)** MH-30 | E532 | 06-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 28 days | 10 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **HDPE - total (sodium hydroxide)** MH-12 | E532 | 02-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 28 days | 14 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **HDPE - total (sodium hydroxide)** MH-SW | E532 | 10-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times | | Eval | Analysis Date | Holding Times | | Eval |
| | | | | Rec | Actual | | | Rec | Actual | |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **HDPE - total (sodium hydroxide)**<br>MH-11 | E532 | 09-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 28 days | 7 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **HDPE - total (sodium hydroxide)**<br>MH-29 | E532 | 09-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 28 days | 7 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **HDPE - total (sodium hydroxide)**<br>MH-FB | E532 | 10-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 28 days | 7 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **HDPE - total (sodium hydroxide)**<br>MH-04 | E532 | 07-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 28 days | 9 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **HDPE - total (sodium hydroxide)**<br>MH-15 | E532 | 07-Feb-2022 | ---- | ---- | ---- | | 16-Feb-2022 | 28 days | 9 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>MH-04 | E508 | 07-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 10 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>MH-15 | E508 | 07-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 11 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>MH-13 | E508 | 06-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 12 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>MH-30 | E508 | 06-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 12 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** | | | | | | | | | | |
| MH-12 | E508 | 02-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 15 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** | | | | | | | | | | |
| MH-SW | E508 | 10-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 7 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** | | | | | | | | | | |
| MH-11 | E508 | 09-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** | | | | | | | | | | |
| MH-29 | E508 | 09-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** | | | | | | | | | | |
| MH-FB | E508 | 10-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** | | | | | | | | | | |
| Trip Blank | E508 | 11-Feb-2022 | ---- | ---- | ---- | | 18-Feb-2022 | 28 days | 8 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** | | | | | | | | | | |
| MH-11 | E420 | 09-Feb-2022 | ---- | ---- | ---- | | 19-Feb-2022 | 180 days | 10 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** | | | | | | | | | | |
| MH-29 | E420 | 09-Feb-2022 | ---- | ---- | ---- | | 19-Feb-2022 | 180 days | 10 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** | | | | | | | | | | |
| MH-FB | E420 | 10-Feb-2022 | ---- | ---- | ---- | | 19-Feb-2022 | 180 days | 10 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>MH-04 | E420 | 07-Feb-2022 | ---- | ---- | ---- | | 19-Feb-2022 | 180 days | 12 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>MH-15 | E420 | 07-Feb-2022 | ---- | ---- | ---- | | 19-Feb-2022 | 180 days | 12 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>MH-13 | E420 | 06-Feb-2022 | ---- | ---- | ---- | | 19-Feb-2022 | 180 days | 13 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>MH-30 | E420 | 06-Feb-2022 | ---- | ---- | ---- | | 19-Feb-2022 | 180 days | 13 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>MH-12 | E420 | 02-Feb-2022 | ---- | ---- | ---- | | 19-Feb-2022 | 180 days | 17 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>MH-SW | E420 | 10-Feb-2022 | ---- | ---- | ---- | | 19-Feb-2022 | 180 days | 9 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>Trip Blank | E420 | 11-Feb-2022 | ---- | ---- | ---- | | 19-Feb-2022 | 180 days | 9 days | ✓ |

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC Lot # | QC | Regular | Actual | Expected | Evaluation |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 411072 | 2 | 29 | 6.9 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 411836 | 2 | 35 | 5.7 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 411076 | 2 | 25 | 8.0 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 411075 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Conductivity in Water | E100 | 411073 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 413247 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 414928 | 2 | 40 | 5.0 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 411074 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 411077 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 411078 | 2 | 27 | 7.4 | 5.0 | ✓ |
| pH by Meter | E108 | 411071 | 2 | 29 | 6.9 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 411079 | 2 | 27 | 7.4 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 411191 | 2 | 13 | 15.3 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 411779 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 413243 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 414128 | 1 | 20 | 5.0 | 5.0 | ✓ |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 411072 | 2 | 29 | 6.9 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 411836 | 2 | 35 | 5.7 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 411076 | 2 | 25 | 8.0 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 411075 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Conductivity in Water | E100 | 411073 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 413247 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 414928 | 2 | 40 | 5.0 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 411074 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 411077 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 411078 | 2 | 27 | 7.4 | 5.0 | ✓ |
| pH by Meter | E108 | 411071 | 2 | 29 | 6.9 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 411079 | 2 | 27 | 7.4 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 411191 | 2 | 13 | 15.3 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 411779 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 413243 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 414128 | 1 | 20 | 5.0 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 411202 | 2 | 18 | 11.1 | 5.0 | ✓ |
| **Method Blanks (MB)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 411072 | 2 | 29 | 6.9 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 411836 | 2 | 35 | 5.7 | 5.0 | ✓ |

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Method Blanks (MB) - Continued** | | | | | | | |
| Bromide in Water by IC (Low Level) | E235.Br-L | 411076 | 2 | 25 | 8.0 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 411075 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Conductivity in Water | E100 | 411073 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 413247 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 414928 | 2 | 40 | 5.0 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 411074 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 411077 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 411078 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 411079 | 2 | 27 | 7.4 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 411191 | 2 | 13 | 15.3 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 411779 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 413243 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 414128 | 1 | 20 | 5.0 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 411202 | 2 | 18 | 11.1 | 5.0 | ✓ |
| **Matrix Spikes (MS)** | | | | | | | |
| Ammonia by Fluorescence | E298 | 411836 | 2 | 35 | 5.7 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 411076 | 2 | 25 | 8.0 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 411075 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 413247 | 1 | 16 | 6.2 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 414928 | 2 | 40 | 5.0 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 411074 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 411077 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 411078 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 411079 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 411779 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 413243 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 414128 | 1 | 20 | 5.0 | 5.0 | ✓ |

## *Methodology References and Summaries*

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

| *Analytical Methods* | *Method / Lab* | *Matrix* | *Method Reference* | *Method Descriptions* |
|---|---|---|---|---|
| Conductivity in Water | E100<br><br>Vancouver - Environmental | Water | APHA 2510 (mod) | Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C. |
| pH by Meter | E108<br><br>Vancouver - Environmental | Water | APHA 4500-H (mod) | pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time. |
| TSS by Gravimetry (Low Level) | E160-L<br><br>Vancouver - Environmental | Water | APHA 2540 D (mod) | Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples. |
| TDS by Gravimetry | E162<br><br>Vancouver - Environmental | Water | APHA 2540 C (mod) | Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue. |
| Bromide in Water by IC (Low Level) | E235.Br-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Chloride in Water by IC | E235.Cl<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Fluoride in Water by IC | E235.F<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrite in Water by IC (Low Level) | E235.NO2-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrate in Water by IC (Low Level) | E235.NO3-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Sulfate in Water by IC | E235.SO4<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Alkalinity Species by Titration | E290<br><br>Vancouver - Environmental | Water | APHA 2320 B (mod) | Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. |
| Ammonia by Fluorescence | E298<br><br>Vancouver - Environmental | Water | J. Environ. Monit., 2005, 7, 37-42 (mod) | Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA). |
| Total Metals in Water by CRC ICPMS | E420<br><br>Vancouver - Environmental | Water | EPA 200.2/6020B (mod) | Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Dissolved Metals in Water by CRC ICPMS | E421<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 6020B (mod) | Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Total Mercury in Water by CVAAS | E508<br><br>Vancouver - Environmental | Water | EPA 1631E (mod) | Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS |
| Dissolved Mercury in Water by CVAAS | E509<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 1631E (mod) | Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS. |
| Total Hexavalent Chromium (Cr VI) by IC | E532<br><br>Vancouver - Environmental | Water | APHA 3500-Cr C (Ion Chromatography) | Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.<br><br>Results are based on an un-filtered, field-preserved sample. |
| Dissolved Hardness (Calculated) | EC100<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. |
| Hardness (Calculated) from Total Ca/Mg | EC100A<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters. |
| Total Trivalent Chromium (Cr III) by Calculation | EC535<br><br>Vancouver - Environmental | Water | APHA 3030B/6020A/EPA 7196A (mod) | Chromium (III)-Total is calculated as the difference between the total chromium and the total hexavalent chromium (Cr(VI)) results.The Limit of Reporting for Chromium (III) varies as a function of the test results. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Preparation for Ammonia | EP298<br><br>Vancouver - Environmental | Water | | Sample preparation for Preserved Nutrients Water Quality Analysis. |
| Dissolved Metals Water Filtration | EP421<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with $HNO_3$. |
| Dissolved Mercury Water Filtration | EP509<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HCl. |

# QUALITY CONTROL REPORT

| | | | | |
|---|---|---|---|---|
| **Work Order** | : **WR2200111** | | Page | : 1 of 22 |
| Client | : Teck Metals Ltd | | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | | Date Samples Received | : 11-Feb-2022 14:50 |
| PO | : 10145 | | Date Analysis Commenced | : 15-Feb-2022 |
| C-O-C number | : ---- | | Issue Date | : 25-Feb-2022 17:18 |
| Sampler | : ---- | | | |
| Site | : | | | |
| Quote number | : Q62635 | | | |
| No. of samples received | : 10 | | | |
| No. of samples analysed | : 10 | | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Metals, Burnaby, British Columbia |
| Caleb Deroche | Lab Analyst | Metals, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Inorganics, Burnaby, British Columbia |
| Monica Ko | Lab Assistant | Metals, Burnaby, British Columbia |
| Owen Cheng | | Metals, Burnaby, British Columbia |
| Ruby Pham | Lab Assistant | Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## *Laboratory Duplicate (DUP) Report*

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Physical Tests (QC Lot: 411071)** | | | | | | | | | | | |
| WR2200110-002 | Anonymous | pH | ---- | E108 | 0.10 | pH units | 8.10 | 8.12 | 0.247% | 4% | ---- |
| **Physical Tests (QC Lot: 411072)** | | | | | | | | | | | |
| WR2200110-002 | Anonymous | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 224 | 225 | 0.491% | 20% | ---- |
| **Physical Tests (QC Lot: 411073)** | | | | | | | | | | | |
| WR2200110-002 | Anonymous | conductivity | ---- | E100 | 2.0 | µS/cm | 457 | 458 | 0.218% | 10% | ---- |
| **Physical Tests (QC Lot: 411191)** | | | | | | | | | | | |
| VA22A3024-001 | Anonymous | solids, total dissolved [TDS] | ---- | E162 | 20 | mg/L | 324 | 326 | 0.770% | 20% | ---- |
| **Physical Tests (QC Lot: 413762)** | | | | | | | | | | | |
| VA22A3342-001 | Anonymous | pH | ---- | E108 | 0.10 | pH units | 7.32 | 7.31 | 0.137% | 4% | ---- |
| **Physical Tests (QC Lot: 413763)** | | | | | | | | | | | |
| VA22A3342-001 | Anonymous | conductivity | ---- | E100 | 2.0 | µS/cm | 94.8 | 94.8 | 0.00% | 10% | ---- |
| **Physical Tests (QC Lot: 413764)** | | | | | | | | | | | |
| VA22A3342-001 | Anonymous | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 13.3 | 12.8 | 3.83% | 20% | ---- |
| **Physical Tests (QC Lot: 414097)** | | | | | | | | | | | |
| WR2200111-010 | Trip Blank | solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | <10 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 411074)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | fluoride | 16984-48-8 | E235.F | 0.020 | mg/L | 0.058 | 0.058 | 0.0001 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 411075)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | chloride | 16887-00-6 | E235.Cl | 0.50 | mg/L | 1.09 | 1.06 | 0.02 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 411076)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 411077)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | <0.0050 | <0.0050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 411078)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 411079)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 10.0 | 10.2 | 1.77% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 411836)** | | | | | | | | | | | |
| VA22A2769-002 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 1.00 | mg/L | 61.7 | 61.9 | 0.346% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 413766)** | | | | | | | | | | | |
| WR2200111-010 | Trip Blank | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | <0.30 | <0.30 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients (QC Lot: 413767)** | | | | | | | | | | | |
| WR2200111-010 | Trip Blank | chloride | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 413768)** | | | | | | | | | | | |
| WR2200111-010 | Trip Blank | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | <0.0050 | <0.0050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 413769)** | | | | | | | | | | | |
| WR2200111-010 | Trip Blank | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 413770)** | | | | | | | | | | | |
| WR2200111-010 | Trip Blank | fluoride | 16984-48-8 | E235.F | 0.020 | mg/L | <0.020 | <0.020 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 413772)** | | | | | | | | | | | |
| WR2200111-010 | Trip Blank | bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 413832)** | | | | | | | | | | | |
| WR2200111-010 | Trip Blank | ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 413243)** | | | | | | | | | | | |
| WR2200109-001 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 413910)** | | | | | | | | | | | |
| VA22A3165-002 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | 0.0000060 | 0.0000010 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 414128)** | | | | | | | | | | | |
| CG2201589-001 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.0060 | mg/L | <0.0060 | <0.0060 | 0 | Diff <2x LOR | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.00020 | mg/L | 0.00307 | 0.00306 | 0.513% | 20% | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.00020 | mg/L | 0.00136 | 0.00136 | 0.000006 | Diff <2x LOR | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.00020 | mg/L | 0.0174 | 0.0167 | 4.16% | 20% | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.040 | mg/L | <0.040 µg/L | <0.000040 | 0 | Diff <2x LOR | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.000100 | mg/L | <0.000100 | <0.000100 | 0 | Diff <2x LOR | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.020 | mg/L | 0.119 | 0.117 | 0.002 | Diff <2x LOR | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.0100 | mg/L | 1.32 µg/L | 0.00130 | 1.33% | 20% | ---- |
| | | calcium, total | 7440-70-2 | E420 | 0.100 | mg/L | 628 | 618 | 1.59% | 20% | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.20 | mg/L | 82.9 µg/L | 0.0809 | 2.45% | 20% | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.00100 | mg/L | 0.00136 | 0.00137 | 0.000007 | Diff <2x LOR | ---- |
| | | iron, total | 7439-89-6 | E420 | 0.020 | mg/L | 0.054 | 0.050 | 0.004 | Diff <2x LOR | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.000100 | mg/L | <0.000100 | <0.000100 | 0 | Diff <2x LOR | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0020 | mg/L | 1.29 | 1.28 | 0.693% | 20% | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 0.0100 | mg/L | 290 | 279 | 3.90% | 20% | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.00020 | mg/L | 0.628 | 0.610 | 2.94% | 20% | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.000100 | mg/L | 0.00855 | 0.00861 | 0.648% | 20% | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.00100 | mg/L | 0.410 | 0.397 | 3.36% | 20% | ---- |

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QC Lot: 414128) - continued** | | | | | | | | | | | |
| CG2201589-001 | Anonymous | phosphorus, total | 7723-14-0 | E420 | 0.100 | mg/L | 2.34 | 2.20 | 6.29% | 20% | ---- |
| | | potassium, total | 7440-09-7 | E420 | 0.100 | mg/L | 21.5 | 21.1 | 1.70% | 20% | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.100 | mg/L | 21.7 µg/L | 0.0206 | 5.32% | 20% | ---- |
| | | silicon, total | 7440-21-3 | E420 | 0.20 | mg/L | 3.42 | 3.24 | 5.26% | 20% | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | sodium, total | 7440-23-5 | E420 | 0.100 | mg/L | 54.0 | 52.3 | 3.24% | 20% | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.00040 | mg/L | 1.72 | 1.71 | 0.606% | 20% | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 1.00 | mg/L | 514 | 491 | 4.48% | 20% | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.000020 | mg/L | 0.000401 | 0.000376 | 6.30% | 20% | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.00060 | mg/L | <0.00060 | <0.00060 | 0 | Diff <2x LOR | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.000020 | mg/L | 0.0424 | 0.0418 | 1.42% | 20% | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.00100 | mg/L | <0.00100 | <0.00100 | 0 | Diff <2x LOR | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.0060 | mg/L | 0.108 | 0.107 | 1.37% | 20% | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.00040 | mg/L | <0.00040 | <0.00040 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 413247)** | | | | | | | | | | | |
| WR2200111-001 | MH-12 | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 414928)** | | | | | | | | | | | |
| FJ2200419-001 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00040 | 0.00041 | 0.00001 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0176 | 0.0178 | 1.10% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | 0.072 | 0.072 | 0.0002 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 94.2 | 93.4 | 0.863% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00023 | 0.00023 | 0.000001 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.121 | 0.118 | 2.20% | 20% | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.0050 | mg/L | 143 | 143 | 0.0139% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00014 | 0.00012 | 0.00002 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

**Laboratory Duplicate (DUP) Report**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QC Lot: 414928) - continued** | | | | | | | | | | | |
| FJ2200419-001 | Anonymous | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00275 | 0.00289 | 5.05% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00565 | 0.00569 | 0.776% | 20% | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | 0.234 | 0.236 | 0.002 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.050 | mg/L | 2.54 | 2.54 | 0.123% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.050 | mg/L | 114 µg/L | 0.114 | 0.0821% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 0.942 | 0.968 | 2.73% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 23.3 | 23.6 | 1.22% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.637 | 0.644 | 1.20% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 198 | 203 | 2.39% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | 0.00119 | 0.00122 | 1.90% | 20% | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00805 | 0.00787 | 2.19% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0062 | 0.0063 | 0.00010 | Diff <2x LOR | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 414936)** | | | | | | | | | | | |
| FJ2200419-006 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0017 | 0.0019 | 0.0002 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00059 | 0.00059 | 0.000002 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00035 | 0.00031 | 0.00004 | Diff <2x LOR | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0878 | 0.0902 | 2.70% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | 0.066 | 0.068 | 0.002 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000212 | 0.0000249 | 0.0000037 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 96.2 | 98.0 | 1.85% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00050 | 0.00049 | 0.000008 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.121 | 0.122 | 0.714% | 20% | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.0050 | mg/L | 140 | 139 | 0.462% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00657 | 0.00679 | 3.35% | 20% | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Dissolved Metals (QC Lot: 414936) - continued** | | | | | | | | | | | |
| FJ2200419-006 | Anonymous | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00206 | 0.00207 | 0.199% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00167 | 0.00166 | 0.00001 | Diff <2x LOR | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.050 | mg/L | 4.22 | 4.35 | 3.14% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.050 | mg/L | 37.8 µg/L | 0.0386 | 2.05% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 1.57 | 1.64 | 4.67% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 23.3 | 23.4 | 0.533% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.601 | 0.599 | 0.300% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 200 | 203 | 1.79% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | 0.00075 | 0.00076 | 0.000007 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00639 | 0.00639 | 0.104% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| **Speciated Metals (QC Lot: 411779)** | | | | | | | | | | | |
| KS2200436-001 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Physical Tests (QCLot: 411072)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 411073)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | <1.0 | ---- |
| **Physical Tests (QCLot: 411191)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Physical Tests (QCLot: 411202)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 413763)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | <1.0 | ---- |
| **Physical Tests (QCLot: 413764)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 414096)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 414097)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Anions and Nutrients (QCLot: 411074)** | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | <0.020 | ---- |
| **Anions and Nutrients (QCLot: 411075)** | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | <0.50 | ---- |
| **Anions and Nutrients (QCLot: 411076)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 411077)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 411078)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 411079)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 411836)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 413766)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 413767)** | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | <0.50 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
| --- | --- | --- | --- | --- | --- | --- |
| **Anions and Nutrients (QCLot: 413768)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 413769)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 413770)** | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | <0.020 | ---- |
| **Anions and Nutrients (QCLot: 413772)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 413832)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Total Metals (QCLot: 413243)** | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Total Metals (QCLot: 413910)** | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Total Metals (QCLot: 414128)** | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | <0.050 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | <0.010 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | <0.050 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | <0.050 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | <0.000050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 414128) - continued** | | | | | | |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | <0.10 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | <0.050 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | <0.50 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 413247)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 414928)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 414928) - continued** | | | | | | |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 414936)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 414936) - continued** | | | | | | |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Speciated Metals (QCLot: 411779)** | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | <0.00050 | ---- |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 411071)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 99.8 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 411072)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 102 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 411073)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 100 | 90.0 | 110 | ---- |
| **Physical Tests (QCLot: 411191)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 102 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 411202)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 90.7 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 413762)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 100 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 413763)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 106 | 90.0 | 110 | ---- |
| **Physical Tests (QCLot: 413764)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 101 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 414096)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 89.7 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 414097)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 100 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 411074)** | | | | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | 1 mg/L | 101 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 411075)** | | | | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | 100 mg/L | 102 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 411076)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 100 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 411077)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 102 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 411078)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 98.5 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 411079)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 103 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 411836)** | | | | | | | | | |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 411836) - continued** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 95.8 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 413766)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 103 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 413767)** | | | | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | 100 mg/L | 102 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 413768)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 104 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 413769)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 100 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 413770)** | | | | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | 1 mg/L | 102 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 413772)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 104 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 413832)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 97.2 | 85.0 | 115 | ---- |
| **Total Metals (QCLot: 413243)** | | | | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | 0.0001 mg/L | 100 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 413910)** | | | | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | 0.0001 mg/L | 99.4 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 414128)** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | 2 mg/L | 98.1 | 80.0 | 120 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | 1 mg/L | 99.1 | 80.0 | 120 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | 1 mg/L | 96.3 | 80.0 | 120 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | 0.25 mg/L | 92.4 | 80.0 | 120 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | 0.1 mg/L | 96.4 | 80.0 | 120 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | 1 mg/L | 87.6 | 80.0 | 120 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | 1 mg/L | 94.5 | 80.0 | 120 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | 0.1 mg/L | 81.4 | 80.0 | 120 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | 50 mg/L | 94.4 | 80.0 | 120 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | 0.25 mg/L | 95.0 | 80.0 | 120 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | 0.25 mg/L | 94.2 | 80.0 | 120 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | 0.25 mg/L | 93.7 | 80.0 | 120 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | 1 mg/L | 93.5 | 80.0 | 120 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | 0.5 mg/L | 89.1 | 80.0 | 120 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | 0.25 mg/L | 97.2 | 80.0 | 120 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Laboratory Control Sample (LCS) Report: Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 414128) - continued** | | | | | | | | | |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | 0.25 mg/L | 95.3 | 80.0 | 120 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | 0.25 mg/L | 92.7 | 80.0 | 120 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | 0.5 mg/L | 94.8 | 80.0 | 120 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | 10 mg/L | 108 | 80.0 | 120 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | 50 mg/L | 95.3 | 80.0 | 120 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | 1 mg/L | 93.2 | 80.0 | 120 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | 10 mg/L | 103 | 80.0 | 120 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | 0.1 mg/L | 85.1 | 80.0 | 120 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | 0.25 mg/L | 104 | 80.0 | 120 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | 50 mg/L | 100 | 80.0 | 120 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | 1 mg/L | 91.7 | 80.0 | 120 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | 0.5 mg/L | 85.1 | 80.0 | 120 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | 0.25 mg/L | 95.1 | 80.0 | 120 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | 0.005 mg/L | 89.2 | 80.0 | 120 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | 0.5 mg/L | 96.6 | 80.0 | 120 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | 0.5 mg/L | 98.5 | 80.0 | 120 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | 0.1 mg/L | 92.9 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 98.4 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 414928)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 104 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 99.0 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 101 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 94.5 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 98.4 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 97.6 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 96.7 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 100 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 99.3 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 96.0 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 97.2 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 96.3 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 99.7 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 95.4 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 100 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 414928) - continued** | | | | | | | | | |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 103 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 98.8 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 101 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 98.5 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 102 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 88.9 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 99.2 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 101 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 100 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 100 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 95.0 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 100.0 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 97.8 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 94.9 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 414936)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 99.1 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 98.4 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 99.2 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 97.1 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 100 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 99.9 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 96.1 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 98.0 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 95.8 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 96.7 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 96.0 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 92.8 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 95.0 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 97.4 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 98.8 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 95.6 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 414936) - continued** | | | | | | | | | |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 108 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 97.2 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 97.8 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 97.4 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 88.6 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 98.6 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 96.8 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 96.2 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 97.6 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 99.1 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 104 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 98.8 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 96.4 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 94.3 | 80.0 | 120 | ---- |
| **Speciated Metals (QCLot: 411779)** | | | | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | 0.25 mg/L | 102 | 90.0 | 110 | ---- |

## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 411074)** | | | | | | | | | | |
| WR2200110-001 | Anonymous | fluoride | 16984-48-8 | E235.F | 0.968 mg/L | 1 mg/L | 96.8 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411075)** | | | | | | | | | | |
| WR2200110-001 | Anonymous | chloride | 16887-00-6 | E235.Cl | 94.0 mg/L | 100 mg/L | 94.0 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411076)** | | | | | | | | | | |
| WR2200110-001 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.460 mg/L | 0.5 mg/L | 92.0 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411077)** | | | | | | | | | | |
| WR2200110-001 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 2.33 mg/L | 2.5 mg/L | 93.4 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411078)** | | | | | | | | | | |
| WR2200110-001 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.438 mg/L | 0.5 mg/L | 87.5 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411079)** | | | | | | | | | | |
| WR2200110-001 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 93.3 mg/L | 100 mg/L | 93.3 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 411836)** | | | | | | | | | | |
| VA22A2773-001 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | ND mg/L | 0.1 mg/L | ND | 75.0 | 125 | MS-B |
| **Anions and Nutrients (QCLot: 413766)** | | | | | | | | | | |
| WR2200111-010 | Trip Blank | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 116 mg/L | 100 mg/L | 116 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 413767)** | | | | | | | | | | |
| WR2200111-010 | Trip Blank | chloride | 16887-00-6 | E235.Cl | 116 mg/L | 100 mg/L | 116 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 413768)** | | | | | | | | | | |
| WR2200111-010 | Trip Blank | nitrate (as N) | 14797-55-8 | E235.NO3-L | 2.92 mg/L | 2.5 mg/L | 117 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 413769)** | | | | | | | | | | |
| WR2200111-010 | Trip Blank | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.568 mg/L | 0.5 mg/L | 114 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 413770)** | | | | | | | | | | |
| WR2200111-010 | Trip Blank | fluoride | 16984-48-8 | E235.F | 1.14 mg/L | 1 mg/L | 114 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 413772)** | | | | | | | | | | |
| WR2200111-010 | Trip Blank | bromide | 24959-67-9 | E235.Br-L | 0.590 mg/L | 0.5 mg/L | 118 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 413832)** | | | | | | | | | | |
| WR2200116-001 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.0939 mg/L | 0.1 mg/L | 93.9 | 75.0 | 125 | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Matrix Spike (MS) Report: Spike Concentration | Spike Target | Recovery (%) MS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 413243)** | | | | | | | | | | |
| WR2200111-001 | MH-12 | mercury, total | 7439-97-6 | E508 | 0.0000957 mg/L | 0.0001 mg/L | 95.7 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 413910)** | | | | | | | | | | |
| VA22A3165-003 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000867 mg/L | 0.0001 mg/L | 86.7 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 414128)** | | | | | | | | | | |
| CG2201589-002 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.414 mg/L | 0.4 mg/L | 104 | 70.0 | 130 | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.0438 mg/L | 0.04 mg/L | 110 | 70.0 | 130 | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.0434 mg/L | 0.04 mg/L | 109 | 70.0 | 130 | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.0405 mg/L | 0.04 mg/L | 101 | 70.0 | 130 | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.0820 mg/L | 0.08 mg/L | 102 | 70.0 | 130 | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.0186 mg/L | 0.02 mg/L | 92.8 | 70.0 | 130 | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.224 mg/L | 0.2 mg/L | 112 | 70.0 | 130 | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.00816 mg/L | 0.008 mg/L | 102 | 70.0 | 130 | ---- |
| | | calcium, total | 7440-70-2 | E420 | ND mg/L | 8 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.0830 mg/L | 0.08 mg/L | 104 | 70.0 | 130 | ---- |
| | | cobalt, total | 7440-48-4 | E420 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.0367 mg/L | 0.04 mg/L | 91.7 | 70.0 | 130 | ---- |
| | | iron, total | 7439-89-6 | E420 | 4.01 mg/L | 4 mg/L | 100 | 70.0 | 130 | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.0389 mg/L | 0.04 mg/L | 97.3 | 70.0 | 130 | ---- |
| | | lithium, total | 7439-93-2 | E420 | ND mg/L | 0.2 mg/L | ND | 70.0 | 130 | ---- |
| | | magnesium, total | 7439-95-4 | E420 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, total | 7439-96-5 | E420 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.0458 mg/L | 0.04 mg/L | 115 | 70.0 | 130 | ---- |
| | | nickel, total | 7440-02-0 | E420 | ND mg/L | 0.08 mg/L | ND | 70.0 | 130 | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 23.0 mg/L | 20 mg/L | 115 | 70.0 | 130 | ---- |
| | | potassium, total | 7440-09-7 | E420 | ND mg/L | 8 mg/L | ND | 70.0 | 130 | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.0879 mg/L | 0.08 mg/L | 110 | 70.0 | 130 | ---- |
| | | silicon, total | 7440-21-3 | E420 | 20.6 mg/L | 20 mg/L | 103 | 70.0 | 130 | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.00836 mg/L | 0.008 mg/L | 104 | 70.0 | 130 | ---- |
| | | sodium, total | 7440-23-5 | E420 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, total | 7440-24-6 | E420 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, total | 7704-34-9 | E420 | ND mg/L | 40 mg/L | ND | 70.0 | 130 | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.00740 mg/L | 0.008 mg/L | 92.5 | 70.0 | 130 | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.0422 mg/L | 0.04 mg/L | 105 | 70.0 | 130 | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.0864 mg/L | 0.08 mg/L | 108 | 70.0 | 130 | ---- |
| | | uranium, total | 7440-61-1 | E420 | ND mg/L | 0.008 mg/L | ND | 70.0 | 130 | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.215 mg/L | 0.2 mg/L | 107 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *Concentration* | *Target* | *MS* | *Low* | *High* | *Qualifier* |
| **Total Metals (QCLot: 414128) - continued** | | | | | | | | | | |
| CG2201589-002 | Anonymous | zinc, total | 7440-66-6 | E420 | 0.778 mg/L | 0.8 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.0948 mg/L | 0.08 mg/L | 118 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 413247)** | | | | | | | | | | |
| WR2200111-002 | MH-04 | mercury, dissolved | 7439-97-6 | E509 | 0.000101 mg/L | 0.0001 mg/L | 101 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 414928)** | | | | | | | | | | |
| FJ2200419-002 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.195 mg/L | 0.2 mg/L | 97.6 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0203 mg/L | 0.02 mg/L | 101 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0205 mg/L | 0.02 mg/L | 102 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0371 mg/L | 0.04 mg/L | 92.7 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00781 mg/L | 0.01 mg/L | 78.1 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.099 mg/L | 0.1 mg/L | 99.0 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00373 mg/L | 0.004 mg/L | 93.3 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0381 mg/L | 0.04 mg/L | 95.3 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0179 mg/L | 0.02 mg/L | 89.7 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0176 mg/L | 0.02 mg/L | 87.8 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.87 mg/L | 2 mg/L | 93.5 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0179 mg/L | 0.02 mg/L | 89.7 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | ND mg/L | 0.1 mg/L | ND | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0213 mg/L | 0.02 mg/L | 107 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0352 mg/L | 0.04 mg/L | 87.9 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 9.95 mg/L | 10 mg/L | 99.5 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 3.81 mg/L | 4 mg/L | 95.4 | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0476 mg/L | 0.04 mg/L | 119 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 9.94 mg/L | 10 mg/L | 99.4 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00372 mg/L | 0.004 mg/L | 92.9 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | ND mg/L | 20 mg/L | ND | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00346 mg/L | 0.004 mg/L | 86.6 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0194 mg/L | 0.02 mg/L | 97.3 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0388 mg/L | 0.04 mg/L | 97.0 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | ND mg/L | 0.004 mg/L | ND | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *Concentration* | *Target* | *MS* | *Low* | *High* | *Qualifier* |
| **Dissolved Metals (QCLot: 414928) - continued** | | | | | | | | | | |
| FJ2200419-002 | Anonymous | vanadium, dissolved | 7440-62-2 | E421 | 0.0980 mg/L | 0.1 mg/L | 98.0 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.374 mg/L | 0.4 mg/L | 93.6 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0426 mg/L | 0.04 mg/L | 107 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 414936)** | | | | | | | | | | |
| VA22A2740-006 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.195 mg/L | 0.2 mg/L | 97.4 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0201 mg/L | 0.02 mg/L | 100 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0196 mg/L | 0.02 mg/L | 97.9 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.0205 mg/L | 0.02 mg/L | 102 | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0400 mg/L | 0.04 mg/L | 99.9 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00882 mg/L | 0.01 mg/L | 88.2 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.102 mg/L | 0.1 mg/L | 102 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00404 mg/L | 0.004 mg/L | 101 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 3.95 mg/L | 4 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0390 mg/L | 0.04 mg/L | 97.6 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0198 mg/L | 0.02 mg/L | 99.0 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0199 mg/L | 0.02 mg/L | 99.4 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 2.00 mg/L | 2 mg/L | 99.8 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0197 mg/L | 0.02 mg/L | 98.4 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0995 mg/L | 0.1 mg/L | 99.5 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.978 mg/L | 1 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0200 mg/L | 0.02 mg/L | 99.8 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0202 mg/L | 0.02 mg/L | 101 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0396 mg/L | 0.04 mg/L | 98.9 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 9.78 mg/L | 10 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 3.91 mg/L | 4 mg/L | 97.7 | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0418 mg/L | 0.04 mg/L | 104 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 9.62 mg/L | 10 mg/L | 96.2 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00389 mg/L | 0.004 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 2.00 mg/L | 2 mg/L | 99.8 | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.0202 mg/L | 0.02 mg/L | 101 | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 20.7 mg/L | 20 mg/L | 103 | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00379 mg/L | 0.004 mg/L | 94.8 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0197 mg/L | 0.02 mg/L | 98.7 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0396 mg/L | 0.04 mg/L | 98.9 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.00408 mg/L | 0.004 mg/L | 102 | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.0987 mg/L | 0.1 mg/L | 98.7 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 414936) - continued** | | | | | | | | | | |
| VA22A2740-006 | Anonymous | zinc, dissolved | 7440-66-6 | E421 | 0.423 mg/L | 0.4 mg/L | 106 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0416 mg/L | 0.04 mg/L | 104 | 70.0 | 130 | ---- |
| **Speciated Metals (QCLot: 411779)** | | | | | | | | | | |
| KS2200436-003 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.255 mg/L | 0.25 mg/L | 102 | 85.0 | 115 | ---- |

## *Qualifiers*

| *Qualifier* | *Description* |
|---|---|
| *MS-B* | *Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.* |

# Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number:



Environmental Division
Whitehorse
Work Order Reference
WR2200111

Telephone : +1 867 668 6689

| Report To | Contact and company name below will appear on the final report | Report Format / Distribution | |
|---|---|---|---|
| Company: | TECK Metals Ltd | Select Report Format: | |
| Contact: | Michelle Unger | Quality Control (QC) Report with Report | |
| Phone: | 250-4278422 | | |
| | Company address below will appear on the final report | Select Distribution: | |
| Street: | 601 Knighton Road | Email 1 or Fax | azheng@ensero.com, ebouchard@ensero.com |
| City/Province: | Kimberly, BC | Email 2 | michelle.unger@teck.com |
| Postal Code: | V1A 3E1 | Email 3 | chanson@ensero.com |
| Invoice To | Same as Report To | Invoice Distribution | |
| | Copy of Invoice with Report | Select Invoice Distribution: | |
| Company: | | Email 1 or Fax | Michelle.unger@teck.com |
| Contact: | | Email 2 | roxanne.menear@teck.com |

Select Service Level Below - Please confirm all E&P TATs with y…

| | |
|---|---|
| Regular [R] | |
| PRIORITY (Business Days) | 4 day [P4] |
| | 3 day [P3] |
| | 2 day [P2] |
| EMERGENCY | 1 |

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service lev…

Analysis R…

Indicate Filtered (F), Preserved (P) or Filtered an…

| Project Information | | Oil and Gas Required Fields (client use) | |
|---|---|---|---|
| ALS Account # / Quote #: | Q62635 | AFE/Cost Center: | PO# |
| Job #: | ECA21YT00086 | Major/Minor Code: | Routing Code: |
| PO / AFE: | Teck PO-9516 | Requisitioner: | |
| LSD: | | Location: | |
| ALS Lab Work Order # (lab use only) | | ALS Contact: Can Dang | Sampler: |

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | Total Metals (low level) + Hg (P) | Dissolved Metals (low level) +Hg (F/P) | pH, SPC, alkalinity, hardness | Anions( Nitrate, Nitrite, Sulphate, Cl, F, Br) (P) | Ammonia (P) | TDS, TSS(low) | Chromium Speciation (P) | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MH-12 (LP) | 2-Feb-22 | 16:30 | Water | R | R | R | R | R | R | R | 8 |
| 2 | MH-04 (LP) | 7-Feb-22 | 16:35 | Water | R | R | R | R | R | R | R | 8 |
| 3 | MH-11 (LP) | 9-Feb-22 | 16:30 | Water | R | R | R | R | R | R | R | 8 |
| 4 | MH-29 (LP) | 9-Feb-22 | 17:45 | Water | R | R | R | R | R | R | R | 8 |
| | | | | Water | R | R | R | R | R | R | R | 8 |
| 5 | MH-13 (LP) | 6-Feb-22 | 13:45 | Water | R | R | R | R | R | R | R | 8 |
| 6 | MH-30 (LP) | 6-Feb-22 | 11:45 | Water | R | R | R | R | R | R | R | 8 |
| 7 | MH-15 (LP) | 7-Feb-22 | 11:00 | Water | R | R | R | R | R | R | R | 8 |
| 8 | MH-SW (LQR) | 10-Feb-22 | | Water | R | R | R | R | R | R | R | 8 |
| 9 | MH-FB (LQFB) | 10-Feb-22 | | Water | R | R | R | R | R | R | R | 7 |
| | | | | Water | R | R | R | R | R | R | R | |
| 10 | Trip Blank (LQTB) | | | Water | R | R | R | R | R | R | | |

| Drinking Water (DW) Samples[1] (client use) | Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) |
|---|---|
| Are samples taken from a Regulated DW System? | |
| Are samples for human drinking water use? | |

SAMPLE CONDITION AS RECE…

Frozen ☐ SIF Observati…
Ice Packs ☐ Ice Cubes ☐ Custody seal i…
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C
2 / 1 / 1 / 4

1 1/4

| SHIPMENT RELEASE (client use) | | | INITIAL SHIPMENT RECEPTION (lab use only) | | | FINAL SHIPMENT REC… | |
|---|---|---|---|---|---|---|---|
| Released by: | Date: | Time: | Received by: (3) | Date: FEB 11/22. | Time: 14:50 | Received by: | Da… |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

# Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

**Affix ALS barcode label here**
(lab use only)

COC Number:



Environmental Division
Whitehorse
Work Order Reference
WR2200111

Telephone : +1 867 668 6689

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Phone: | 250-4278422 |
| | Company address below will appear on the final report |
| Street: | 601 Knightton Road |
| City/Province: | Kimberly, BC |
| Postal Code: | V1A 3E1 |
| Invoice To | Same as Report To |
| | Copy of Invoice with Report |
| Company: | |
| Contact: | |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | |
| Quality Control (QC) Report with Report | |
| Select Distribution: | |
| Email 1 or Fax | azheng@ensero.com, ebouchard@ensero.com |
| Email 2 | michelle.unger@teck.com |
| Email 3 | chanson@ensero.com |
| **Invoice Distribution** | |
| Select Invoice Distribution: | |
| Email 1 or Fax | Michelle.unger@teck.com |
| Email 2 | roxanne.menear@teck.com |

Select Service Level Below - Please confirm all E&P TATs with y...

Regular [R]

PRIORITY (Business Days): 4 day [P4], 3 day [P3], 2 day [P2]

EMERGENCY 1 ... S...

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service lev...

| Project Information | |
|---|---|
| ALS Account # / Quote #: | Q62635 |
| Job #: | ECA21YT00086 |
| PO / AFE: | Teck PO-9516 |
| LSD: | |

| Oil and Gas Required Fields (client use) | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |

ALS Lab Work Order # (lab use only)

ALS Contact: Can Dang | Sampler:

Analysis R... — Indicate Filtered (F), Preserved (P) or Filtered an...

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | Total Metals (low level) + Hg (P) | Dissolved Metals (low level) +Hg (F/P) | pH, SPC, alkalinity, hardness | Anions( Nitrate, Nitrite, Sulphate, Cl, F, Br) (P) | Ammonia (P) | TDS, TSS(low) | Chromium Speciation (P) | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MH-12 (LP) | 2-Feb-22 | 16:30 | Water | R | R | R | R | R | R | R | 8 |
| 2 | MH-04 (LP) | 7-Feb-22 | 16:35 | Water | R | R | R | R | R | R | R | 8 |
| 3 | MH-11 (LP) | 9-Feb-22 | 16:30 | Water | R | R | R | R | R | R | R | 8 |
| 4 | MH-29 (LP) | 9-Feb-22 | 17:45 | Water | R | R | R | R | R | R | R | 8 |
| | | | | Water | R | R | R | R | R | R | R | 8 |
| 5 | MH-13 (LP) | 6-Feb-22 | 13:45 | Water | R | R | R | R | R | R | R | 8 |
| 6 | MH-30 (LP) | 6-Feb-22 | 11:45 | Water | R | R | R | R | R | R | R | 8 |
| 7 | MH-15 (LP) | 7-Feb-22 | 11:00 | Water | R | R | R | R | R | R | R | 8 |
| 8 | MH-SW (LQR) | 10-Feb-22 | | Water | R | R | R | R | R | R | R | 8 |
| 9 | MH-FB (LQFB) | 10-Feb-22 | | Water | R | R | R | R | R | R | R | 7 |
| | | | | Water | R | R | R | R | R | R | R | |
| 10 | Trip Blank (LQTB) | | | Water | R | R | R | R | R | R | | |

~~Drinking Water (DW) Samples[1] (client use)~~

Are samples taken from a Regulated DW System?

Are samples for human drinking water use?

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below ~~(electronic COC only)~~

SAMPLE CONDITION AS RECE...

Frozen ☐ SIF Observati...
Ice Packs ☑ Ice Cubes ☐ Custody seal ...
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C: 2 / 1 / 1 / 4

SC 1/4

| SHIPMENT RELEASE (client use) | | | INITIAL SHIPMENT RECEPTION (lab use only) | | | FINAL SHIPMENT REC... | |
|---|---|---|---|---|---|---|---|
| Released by: | Date: | Time: | Received by: (3) | Date: FEB 11/22 | Time: 14:50 | Received by: JO | Da... FEB 15 2022 1130am |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200280** | Page | : 1 of 13 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 08-Apr-2022 10:10 |
| PO | : PO 10289 | Date Analysis Commenced | : 12-Apr-2022 |
| C-O-C number | : ---- | Issue Date | : 27-Apr-2022 12:15 |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 11 | | |
| No. of samples analysed | : 11 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Metals, Burnaby, British Columbia |
| Angelo Salandanan | Lab Assistant | Metals, Burnaby, British Columbia |
| Caleb Deroche | Lab Analyst | Metals, Burnaby, British Columbia |
| Dee Lee | Analyst | Metals, Burnaby, British Columbia |
| Delson Resende | Lab Assistant | Metals, Burnaby, British Columbia |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Inorganics, Burnaby, British Columbia |
| Parnian Sane | Analsyt | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| - | No Unit |
| µg/L | micrograms per litre |
| µS/cm | Microsiemens per centimetre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLDS* | *Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.* |
| *DTC* | *Dissolved concentration exceeds total. Results were confirmed by re-analysis.* |
| *DTMF* | *Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.* |
| *RRV* | *Reported result verified by repeat analysis.* |

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-02_2022-04-04 | SD_MH-04_2022-04-04 | SD_MH-11_2022-04-04 | SD_MH-12_2022-04-04 | SD_MH-13_2022-04-04 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 06-Apr-2022 17:50 | 06-Apr-2022 11:50 | 06-Apr-2022 15:15 | 05-Apr-2022 17:10 | 07-Apr-2022 11:30 |
| | | | | | WR2200280-001 | WR2200280-002 | WR2200280-003 | WR2200280-004 | WR2200280-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 290 | 165 | 217 | 181 | 213 |
| conductivity | ---- | E100 | 2.0 | µS/cm | 1100 | 323 | 414 | 346 | 392 |
| hardness (as CaCO3), dissolved | ---- | EC100 | 0.60 | mg/L | 598 | 168 | 218 | 175 | 204 |
| hardness (as CaCO3), from total Ca/Mg | ---- | EC100A | 0.60 | mg/L | 655 | 192 | 246 | 192 | 224 |
| pH | ---- | E108 | 0.10 | pH units | 8.10 | 8.35 | 8.36 | 8.42 | 8.41 |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 825 | 193 | 238 | 210 | 219 |
| solids, total suspended [TSS] | ---- | E160-L | 1.0 | mg/L | 2.9 | <1.0 | <1.0 | 2.8 | 2.0 |
| **Anions and Nutrients** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | 0.0087 | <0.0050 | 0.0067 |
| bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.250 DLDS | <0.050 | <0.050 | <0.050 | <0.050 |
| chloride | 16887-00-6 | E235.Cl | 0.50 | mg/L | 18.5 | <0.50 | <0.50 | <0.50 | <0.50 |
| fluoride | 16984-48-8 | E235.F | 0.020 | mg/L | <0.100 DLDS | 0.152 | 0.086 | 0.109 | 0.058 |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.0262 | 0.245 | 0.158 | 0.133 | 0.126 |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0050 DLDS | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 376 | 17.0 | 14.3 | 11.0 | 8.98 |
| **Total Metals** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | <0.0030 | <0.0030 | 0.0033 | 0.0085 | 0.0040 |
| antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | <0.00010 | 0.00014 | 0.00013 | 0.00021 | 0.00010 |
| arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00050 | 0.00040 | 0.00046 | 0.00066 | 0.00033 |
| barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.0548 | 0.0258 | 0.0720 | 0.0723 | 0.164 |
| beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000144 | 0.000273 | 0.0000430 | 0.0000392 | 0.0000163 |
| calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 231 | 71.1 | 83.0 | 65.7 | 63.6 |
| chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | 0.00058 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| iron, total | 7439-89-6 | E420 | 0.010 | mg/L | 0.099 | <0.010 | 0.023 | 0.014 | 0.215 |
| lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000099 | 0.000125 | <0.000050 | 0.000188 | <0.000050 |

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-02_2022-04-04 | SD_MH-04_2022-04-04 | SD_MH-11_2022-04-04 | SD_MH-12_2022-04-04 | SD_MH-13_2022-04-04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 06-Apr-2022 17:50 | 06-Apr-2022 11:50 | 06-Apr-2022 15:15 | 05-Apr-2022 17:10 | 07-Apr-2022 11:30 |
| | | | | | WR2200280-001 | WR2200280-002 | WR2200280-003 | WR2200280-004 | WR2200280-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0010 | 0.0018 | 0.0020 | 0.0014 | 0.0014 |
| magnesium, total | 7439-95-4 | E420 | 0.100 | mg/L | 19.0 | 3.58 | 9.32 | 6.89 | 15.9 |
| manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.189 | 0.00049 | 0.00797 | 0.00108 | 0.00873 |
| mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.000298 | 0.000784 | 0.00197 | 0.00622 | 0.00124 |
| nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| potassium, total | 7440-09-7 | E420 | 0.100 | mg/L | 1.80 | 0.438 | 0.446 | 0.428 | 0.383 |
| selenium, total | 7782-49-2 | E420 | 0.050 | µg/L | 0.129 | 1.05 | 0.754 | 0.737 | 0.703 |
| silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 5.07 | 3.81 | 4.44 | 4.25 | 3.74 |
| silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 10.2 | 0.948 | 1.28 | 1.05 | 0.978 |
| strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.749 | 0.265 | 0.350 | 0.261 | 0.241 |
| sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 140 | 6.35 | 5.31 | 4.01 | 3.30 |
| thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00183 | 0.00107 | 0.00142 | 0.00116 | 0.00178 |
| vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | 0.0218 | 0.0062 | 0.0043 | 0.0130 | <0.0030 |
| zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0386 DTC | 0.0035 | 0.0032 | 0.0021 | 0.0011 |
| antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | <0.00010 | 0.00012 | 0.00012 | 0.00018 | <0.00010 |
| arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00266 DTC | 0.00036 | 0.00045 | 0.00068 | 0.00024 |
| barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0611 | 0.0237 | 0.0712 | 0.0782 | 0.162 |
| beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000594 DTC | 0.000224 | 0.0000404 | 0.0000346 | 0.0000138 |
| calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 210 | 61.6 | 73.7 | 59.6 | 58.1 |

## *Analytical Results*

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| | | | | Client sample ID | SD_MH-02_2022-04-04 | SD_MH-04_2022-04-04 | SD_MH-11_2022-04-04 | SD_MH-12_2022-04-04 | SD_MH-13_2022-04-04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 06-Apr-2022 17:50 | 06-Apr-2022 11:50 | 06-Apr-2022 15:15 | 05-Apr-2022 17:10 | 07-Apr-2022 11:30 |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | WR2200280-001 | WR2200280-002 | WR2200280-003 | WR2200280-004 | WR2200280-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | 0.00076 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00033 | 0.00051 | 0.00027 | <0.00020 | 0.00028 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | 0.630 DTC | <0.010 | 0.036 | <0.010 | 0.018 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.00400 DTC | 0.000161 | 0.000077 | <0.000050 | <0.000050 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0011 | 0.0015 | 0.0018 | 0.0014 | 0.0013 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 17.8 | 3.38 | 8.36 | 6.37 | 14.4 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.422 DTC | 0.00075 DTMF | 0.00821 | <0.00010 | 0.00465 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000240 | 0.000756 | 0.00517 DTMF | 0.00126 | 0.00670 DTMF |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 1.69 | 0.445 | 0.427 | 0.433 | 0.386 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.078 | 0.950 | 0.721 | 0.807 | 0.660 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 5.01 | 3.31 | 3.94 | 4.05 | 3.44 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 9.55 | 0.988 | 1.25 | 1.09 | 1.03 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.673 | 0.215 | 0.285 | 0.229 | 0.208 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 130 | 5.42 | 4.69 | 3.64 | 3.09 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | 0.00069 DTC | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00170 | 0.000959 | 0.00131 | 0.00114 | 0.00171 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0305 DTC | 0.0088 | 0.0049 | 0.0020 | <0.0010 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Speciated Metals** | | | | | | | | | |
| **chromium, hexavalent [Cr VI], total** | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-04-04 | SD_MH-29_2022-04-04 | SD_MH-30_2022-04-04 | SD_MH-FB_2022-04-04 | SD_MH-FD_2022-04-04 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 07-Apr-2022 12:45 | 06-Apr-2022 16:00 | 07-Apr-2022 10:30 | 07-Apr-2022 11:30 | 06-Apr-2022 14:00 |
| | | | | | WR2200280-006 | WR2200280-007 | WR2200280-008 | WR2200280-009 | WR2200280-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 206 | 214 | 198 | <1.0 | 291 |
| conductivity | ---- | E100 | 2.0 | µS/cm | 371 | 385 | 361 | <2.0 | 1100 |
| hardness (as CaCO3), dissolved | ---- | EC100 | 0.60 | mg/L | 193 | 199 | 185 | 0.67 | 607 |
| hardness (as CaCO3), from total Ca/Mg | ---- | EC100A | 0.60 | mg/L | 209 | 222 | 207 | <0.60 | 695 |
| pH | ---- | E108 | 0.10 | pH units | 8.45 | 8.38 | 8.18 | 5.38 | 8.09 |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 200 | 210 | 177 | <10 | 750 |
| solids, total suspended [TSS] | ---- | E160-L | 1.0 | mg/L | 1.7 | <1.0 | 2.4 | <1.0 | 3.7 |
| **Anions and Nutrients** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0098 | <0.0050 | 0.0279 | <0.0050 | <0.0050 |
| bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.250 DLDS |
| chloride | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | <0.50 | <0.50 | 18.5 |
| fluoride | 16984-48-8 | E235.F | 0.020 | mg/L | 0.090 | 0.046 | 0.072 | <0.020 | <0.100 DLDS |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.0776 | 0.138 | 0.0929 | <0.0050 | 0.0317 |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0050 DLDS |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 3.85 | 4.53 | 5.58 | <0.30 | 378 |
| **Total Metals** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0073 | 0.0031 | 0.0065 | <0.0030 | 0.0298 |
| antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00012 | 0.00015 | <0.00010 | <0.00010 | 0.00011 |
| arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00036 | 0.00056 | 0.00030 | <0.00010 | 0.00243 |
| barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.217 | 0.0520 | 0.278 | <0.00010 | 0.0620 |
| beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000110 | 0.0000485 | 0.0000509 | <0.0000050 | 0.0000621 |
| calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 63.0 | 77.6 | 52.6 | <0.050 | 245 |
| chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00079 |
| copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0.00091 | <0.00050 | <0.00050 |
| iron, total | 7439-89-6 | E420 | 0.010 | mg/L | 0.222 | 0.016 | 0.555 | <0.010 | 0.631 |
| lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0.000165 | <0.000050 | 0.00449 |
| lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0013 | 0.0015 | <0.0010 | <0.0010 | 0.0012 |

## Analytical Results

Sub-Matrix: Surface Water

(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-04-04 | SD_MH-29_2022-04-04 | SD_MH-30_2022-04-04 | SD_MH-FB_2022-04-04 | SD_MH-FD_2022-04-04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 07-Apr-2022 12:45 | 06-Apr-2022 16:00 | 07-Apr-2022 10:30 | 07-Apr-2022 11:30 | 06-Apr-2022 14:00 |
| | | | | | WR2200280-006 | WR2200280-007 | WR2200280-008 | WR2200280-009 | WR2200280-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| **magnesium, total** | 7439-95-4 | E420 | 0.100 | mg/L | 12.6 | 6.79 | 18.3 | <0.100 | 20.2 |
| **manganese, total** | 7439-96-5 | E420 | 0.00010 | mg/L | 0.0140 | 0.00721 | 0.0287 | <0.00010 | 0.434 |
| **mercury, total** | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, total** | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00200 | 0.000640 | 0.00658 | 0.00464 RRV | 0.00284 |
| **nickel, total** | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, total** | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, total** | 7440-09-7 | E420 | 0.100 | mg/L | 0.412 | 0.270 | 0.579 | <0.100 | 1.70 |
| **selenium, total** | 7782-49-2 | E420 | 0.050 | µg/L | 0.755 | 0.565 | 0.633 | <0.050 | 0.098 |
| **silicon, total** | 7440-21-3 | E420 | 0.10 | mg/L | 4.24 | 4.36 | 3.82 | <0.10 | 5.49 |
| **silver, total** | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, total** | 7440-23-5 | E420 | 0.050 | mg/L | 1.01 | 0.956 | 0.908 | <0.050 | 10.1 |
| **strontium, total** | 7440-24-6 | E420 | 0.00020 | mg/L | 0.211 | 0.285 | 0.155 | <0.00020 | 0.798 |
| **sulfur, total** | 7704-34-9 | E420 | 0.50 | mg/L | 1.55 | 1.93 | 2.00 | <0.50 | 140 |
| **thallium, total** | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, total** | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, total** | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | 0.00052 |
| **uranium, total** | 7440-61-1 | E420 | 0.000010 | mg/L | 0.000997 | 0.000877 | 0.00189 | <0.000010 | 0.00194 |
| **vanadium, total** | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, total** | 7440-66-6 | E420 | 0.0030 | mg/L | <0.0030 | <0.0030 | 0.0197 | <0.0030 | 0.0272 |
| **zirconium, total** | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0018 | 0.0071 | 0.0069 | <0.0010 | 0.0015 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00011 | 0.00014 | 0.00012 | <0.00010 | <0.00010 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00026 | 0.00056 | 0.00020 | <0.00010 | 0.00046 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.198 | 0.0503 | 0.246 | 0.00028 RRV | 0.0539 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | <0.0000050 | 0.0000486 | 0.000161 DTC | <0.0000050 | 0.0000161 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 57.8 | 69.5 | 46.2 | 0.268 RRV | 215 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-04-04 | SD_MH-29_2022-04-04 | SD_MH-30_2022-04-04 | SD_MH-FB_2022-04-04 | SD_MH-FD_2022-04-04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 07-Apr-2022 12:45 | 06-Apr-2022 16:00 | 07-Apr-2022 10:30 | 07-Apr-2022 11:30 | 06-Apr-2022 14:00 |
| | | | | | WR2200280-006 | WR2200280-007 | WR2200280-008 | WR2200280-009 | WR2200280-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00049 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00020 | 0.00021 | 0.00313 DTC | <0.00020 | 0.00036 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | 0.045 | 0.012 | 0.095 | <0.010 | 0.090 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0.000584 DTC | <0.000050 | 0.000126 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0012 | 0.0014 | <0.0010 | <0.0010 | 0.0010 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 11.8 | 6.20 | 17.0 | <0.100 | 17.1 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00702 | 0.00591 | 0.0216 | <0.00010 | 0.179 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00194 | 0.000582 | 0.00613 | 0.000087 RRV | 0.000264 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0.00241 DTC | <0.00050 | <0.00050 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.415 | 0.272 | 0.937 DTC | <0.100 | 1.60 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.658 | 0.512 | 0.623 | <0.050 | 0.095 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 4.05 | 4.02 | 3.60 | <0.050 | 4.81 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 1.06 | 0.924 | 1.18 | <0.050 | 9.33 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.182 | 0.250 | 0.127 | 0.00099 RRV | 0.692 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 1.24 | 1.46 | 1.86 | <0.50 | 120 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000944 | 0.000845 | 0.00179 | <0.000010 | 0.00180 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | 0.0038 | 0.0200 | <0.0010 | 0.0186 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Speciated Metals** | | | | | | | | | |
| **chromium, hexavalent [Cr VI], total** | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-TB_2022-04-04 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 07-Apr-2022 11:50 | ---- | ---- | ---- | ---- |
| | | | | | WR2200280-011 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | <1.0 | ---- | ---- | ---- | ---- |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | <2.0 | ---- | ---- | ---- | ---- |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | <0.60 | ---- | ---- | ---- | ---- |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | <0.60 | ---- | ---- | ---- | ---- |
| **pH** | ---- | E108 | 0.10 | pH units | 5.37 | ---- | ---- | ---- | ---- |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | <10 | ---- | ---- | ---- | ---- |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | <1.0 | ---- | ---- | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | ---- | ---- | ---- | ---- |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | <0.020 | ---- | ---- | ---- | ---- |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | <0.30 | ---- | ---- | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | <0.0030 | ---- | ---- | ---- | ---- |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | ---- | ---- | ---- | ---- |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | <0.0000050 | ---- | ---- | ---- | ---- |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **lithium, total** | 7439-93-2 | E420 | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sample ID | SD_MH-TB_2022-04-04 | ---- | ---- | ---- | ---- |
| | | | | Client sampling date / time | 07-Apr-2022 11:50 | ---- | ---- | ---- | ---- |
| | | | | | WR2200280-011 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| magnesium, total | 7439-95-4 | E420 | 0.100 | mg/L | <0.100 | ---- | ---- | ---- | ---- |
| manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | ---- | ---- | ---- | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| potassium, total | 7440-09-7 | E420 | 0.100 | mg/L | <0.100 | ---- | ---- | ---- | ---- |
| selenium, total | 7782-49-2 | E420 | 0.050 | µg/L | <0.050 | ---- | ---- | ---- | ---- |
| silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | <0.10 | ---- | ---- | ---- | ---- |
| silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | <0.50 | ---- | ---- | ---- | ---- |
| thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | ---- | ---- | ---- | ---- |
| uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | <0.0030 | ---- | ---- | ---- | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | ---- | ---- | ---- | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | <0.0000050 | ---- | ---- | ---- | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-TB_2022-04-04 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 07-Apr-2022 11:50 | ---- | ---- | ---- | ---- |
| | | | | | WR2200280-011 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | <0.100 | ---- | ---- | ---- | ---- |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | ---- | ---- | ---- | ---- |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | <0.100 | ---- | ---- | ---- | ---- |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | <0.050 | ---- | ---- | ---- | ---- |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | <0.50 | ---- | ---- | ---- | ---- |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | ---- | ---- | ---- | ---- |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | ---- | ---- | ---- | ---- |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | ---- | ---- | ---- | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200280** | Page | : 1 of 28 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 08-Apr-2022 10:10 |
| PO | : PO 10289 | Issue Date | : 27-Apr-2022 12:15 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 11 | | |
| No. of samples analysed | : 11 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**
**CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.**
**DQO: Data Quality Objective.**
**LOR: Limit of Reporting (detection limit).**
**RPD: Relative Percent Difference.**

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### *Outliers : Frequency of Quality Control Samples*

- No Quality Control Sample Frequency Outliers occur.

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-13_2022-04-04 | E298 | 07-Apr-2022 | 18-Apr-2022 | ---- | ---- | | 19-Apr-2022 | 28 days | 12 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-15_2022-04-04 | E298 | 07-Apr-2022 | 18-Apr-2022 | ---- | ---- | | 19-Apr-2022 | 28 days | 12 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-30_2022-04-04 | E298 | 07-Apr-2022 | 18-Apr-2022 | ---- | ---- | | 19-Apr-2022 | 28 days | 12 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-FB_2022-04-04 | E298 | 07-Apr-2022 | 18-Apr-2022 | ---- | ---- | | 19-Apr-2022 | 28 days | 12 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-TB_2022-04-04 | E298 | 07-Apr-2022 | 18-Apr-2022 | ---- | ---- | | 19-Apr-2022 | 28 days | 12 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-02_2022-04-04 | E298 | 06-Apr-2022 | 18-Apr-2022 | ---- | ---- | | 19-Apr-2022 | 28 days | 13 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-04_2022-04-04 | E298 | 06-Apr-2022 | 18-Apr-2022 | ---- | ---- | | 19-Apr-2022 | 28 days | 13 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-11_2022-04-04 | E298 | 06-Apr-2022 | 18-Apr-2022 | ---- | ---- | | 19-Apr-2022 | 28 days | 13 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-29_2022-04-04 | E298 | 06-Apr-2022 | 18-Apr-2022 | ---- | ---- | | 19-Apr-2022 | 28 days | 13 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-FD_2022-04-04 | E298 | 06-Apr-2022 | 18-Apr-2022 | ---- | ---- | | 19-Apr-2022 | 28 days | 13 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-12_2022-04-04 | E298 | 05-Apr-2022 | 18-Apr-2022 | ---- | ---- | | 19-Apr-2022 | 28 days | 14 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-13_2022-04-04 | E235.Br-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-04-04 | E235.Br-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-30_2022-04-04 | E235.Br-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FB_2022-04-04 | E235.Br-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-TB_2022-04-04 | E235.Br-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-02_2022-04-04 | E235.Br-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-04-04 | E235.Br-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-11_2022-04-04 | E235.Br-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-04-04 | E235.Br-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD_2022-04-04 | E235.Br-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-12_2022-04-04 | E235.Br-L | 05-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-13_2022-04-04 | E235.Cl | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-04-04 | E235.Cl | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-30_2022-04-04 | E235.Cl | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-04-04 | E235.Cl | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-04-04 | E235.Cl | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-04-04 | E235.Cl | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-04-04 | E235.Cl | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-04-04 | E235.Cl | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-04-04 | E235.Cl | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-04-04 | E235.Cl | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-04-04 | E235.Cl | 05-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-04-04 | E235.F | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-04-04 | E235.F | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-30_2022-04-04 | E235.F | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FB_2022-04-04 | E235.F | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-TB_2022-04-04 | E235.F | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-02_2022-04-04 | E235.F | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-04-04 | E235.F | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-11_2022-04-04 | E235.F | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-04-04 | E235.F | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD_2022-04-04 | E235.F | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-04-04 | E235.F | 05-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-04-04 | E235.NO3-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-04-04 | E235.NO3-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-04-04 | E235.NO3-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-04-04 | E235.NO3-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-04-04 | E235.NO3-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-04-04 | E235.NO3-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 8 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-04-04 | E235.NO3-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 8 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-04-04 | E235.NO3-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 8 days | × EHT |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-04-04 | E235.NO3-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 8 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-04-04 | E235.NO3-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 8 days | × EHT |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-04-04 | E235.NO3-L | 05-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 9 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-04-04 | E235.NO2-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-04-04 | E235.NO2-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-04-04 | E235.NO2-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-04-04 | E235.NO2-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-04-04 | E235.NO2-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-04-04 | E235.NO2-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 8 days | × EHT |

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-04-04 | E235.NO2-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 8 days | ✘ EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-04-04 | E235.NO2-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 8 days | ✘ EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-04-04 | E235.NO2-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 8 days | ✘ EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-04-04 | E235.NO2-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 8 days | ✘ EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-04-04 | E235.NO2-L | 05-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 3 days | 9 days | ✘ EHT |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-04-04 | E235.SO4 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-04-04 | E235.SO4 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-04-04 | E235.SO4 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-04-04 | E235.SO4 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-04-04 | E235.SO4 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-04-04 | E235.SO4 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-04-04 | E235.SO4 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-04-04 | E235.SO4 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-04-04 | E235.SO4 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-04-04 | E235.SO4 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-04-04 | E235.SO4 | 05-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-13_2022-04-04 | E509 | 07-Apr-2022 | 14-Apr-2022 | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-15_2022-04-04 | E509 | 07-Apr-2022 | 14-Apr-2022 | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-30_2022-04-04 | E509 | 07-Apr-2022 | 14-Apr-2022 | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-FB_2022-04-04 | E509 | 07-Apr-2022 | 14-Apr-2022 | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-TB_2022-04-04 | E509 | 07-Apr-2022 | 14-Apr-2022 | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-02_2022-04-04 | E509 | 06-Apr-2022 | 14-Apr-2022 | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-04_2022-04-04 | E509 | 06-Apr-2022 | 14-Apr-2022 | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-11_2022-04-04 | E509 | 06-Apr-2022 | 14-Apr-2022 | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-29_2022-04-04 | E509 | 06-Apr-2022 | 14-Apr-2022 | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-FD_2022-04-04 | E509 | 06-Apr-2022 | 14-Apr-2022 | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-12_2022-04-04 | E509 | 05-Apr-2022 | 14-Apr-2022 | ---- | ---- | | 14-Apr-2022 | 28 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-13_2022-04-04 | E421 | 07-Apr-2022 | 20-Apr-2022 | ---- | ---- | | 20-Apr-2022 | 180 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-15_2022-04-04 | E421 | 07-Apr-2022 | 20-Apr-2022 | ---- | ---- | | 20-Apr-2022 | 180 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-30_2022-04-04 | E421 | 07-Apr-2022 | 20-Apr-2022 | ---- | ---- | | 20-Apr-2022 | 180 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-FB_2022-04-04 | E421 | 07-Apr-2022 | 20-Apr-2022 | ---- | ---- | | 20-Apr-2022 | 180 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-TB_2022-04-04 | E421 | 07-Apr-2022 | 20-Apr-2022 | ---- | ---- | | 20-Apr-2022 | 180 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-02_2022-04-04 | E421 | 06-Apr-2022 | 20-Apr-2022 | ---- | ---- | | 20-Apr-2022 | 180 days | 14 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-04_2022-04-04 | E421 | 06-Apr-2022 | 20-Apr-2022 | ---- | ---- | | 20-Apr-2022 | 180 days | 14 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-11_2022-04-04 | E421 | 06-Apr-2022 | 20-Apr-2022 | ---- | ---- | | 20-Apr-2022 | 180 days | 14 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-29_2022-04-04 | E421 | 06-Apr-2022 | 20-Apr-2022 | ---- | ---- | | 20-Apr-2022 | 180 days | 14 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-FD_2022-04-04 | E421 | 06-Apr-2022 | 20-Apr-2022 | ---- | ---- | | 20-Apr-2022 | 180 days | 14 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-12_2022-04-04 | E421 | 05-Apr-2022 | 20-Apr-2022 | ---- | ---- | | 20-Apr-2022 | 180 days | 15 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-04-04 | E290 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-04-04 | E290 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-04-04 | E290 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-04-04 | E290 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-04-04 | E290 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-04-04 | E290 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 14 days | 8 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-04-04 | E290 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 14 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-04-04 | E290 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 14 days | 8 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-04-04 | E290 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 14 days | 8 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-04-04 | E290 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 14 days | 8 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-04-04 | E290 | 05-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 14 days | 9 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-04-04 | E100 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-04-04 | E100 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-04-04 | E100 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-04-04 | E100 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-04-04 | E100 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-02_2022-04-04 | E100 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-04-04 | E100 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-11_2022-04-04 | E100 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-04-04 | E100 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD_2022-04-04 | E100 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 8 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-12_2022-04-04 | E100 | 05-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 28 days | 9 days | ✓ |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-04-04 | E108 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 0.25 hrs | 167 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-13_2022-04-04 | E108 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 0.25 hrs | 168 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FB_2022-04-04 | E108 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 0.25 hrs | 168 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-TB_2022-04-04 | E108 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 0.25 hrs | 168 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-30_2022-04-04 | E108 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 0.25 hrs | 169 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-02_2022-04-04 | E108 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 0.25 hrs | 186 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-04-04 | E108 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 0.25 hrs | 188 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-11_2022-04-04 | E108 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 0.25 hrs | 189 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD_2022-04-04 | E108 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 0.25 hrs | 190 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-04-04 | E108 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 0.25 hrs | 192 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-12_2022-04-04 | E108 | 05-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 0.25 hrs | 211 hrs | × EHTR-FM |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-13_2022-04-04 | E162 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-04-04 | E162 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-30_2022-04-04 | E162 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FB_2022-04-04 | E162 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-TB_2022-04-04 | E162 | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-04-04 | E162 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-11_2022-04-04 | E162 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-04-04 | E162 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD_2022-04-04 | E162 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-02_2022-04-04 | E162 | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 8 days | × |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-12_2022-04-04 | E162 | 05-Apr-2022 | ---- | ---- | ---- | | 13-Apr-2022 | 7 days | 8 days | × |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-13_2022-04-04 | E160-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-04-04 | E160-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-30_2022-04-04 | E160-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FB_2022-04-04 | E160-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-TB_2022-04-04 | E160-L | 07-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-04-04 | E160-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 8 days | ×<br>EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-11_2022-04-04 | E160-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 8 days | ×<br>EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-04-04 | E160-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 8 days | ×<br>EHT |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-04-04 | E160-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-04-04 | E160-L | 06-Apr-2022 | ---- | ---- | ---- | | 14-Apr-2022 | 7 days | 8 days | × |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-04-04 | E160-L | 05-Apr-2022 | ---- | ---- | ---- | | 13-Apr-2022 | 7 days | 8 days | × |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-13_2022-04-04 | E532 | 07-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 5 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-15_2022-04-04 | E532 | 07-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 5 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-30_2022-04-04 | E532 | 07-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 5 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-FB_2022-04-04 | E532 | 07-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 5 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-02_2022-04-04 | E532 | 06-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 6 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-04_2022-04-04 | E532 | 06-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-11_2022-04-04 | E532 | 06-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 6 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-29_2022-04-04 | E532 | 06-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 6 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-FD_2022-04-04 | E532 | 06-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 6 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-12_2022-04-04 | E532 | 05-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 7 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-13_2022-04-04 | E508 | 07-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 5 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-15_2022-04-04 | E508 | 07-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 5 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-30_2022-04-04 | E508 | 07-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 5 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-FB_2022-04-04 | E508 | 07-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 5 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-TB_2022-04-04 | E508 | 07-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 5 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-02_2022-04-04 | E508 | 06-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 6 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-04_2022-04-04 | E508 | 06-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 6 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-11_2022-04-04 | E508 | 06-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 6 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-29_2022-04-04 | E508 | 06-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 6 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-FD_2022-04-04 | E508 | 06-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 6 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-12_2022-04-04 | E508 | 05-Apr-2022 | ---- | ---- | ---- | | 12-Apr-2022 | 28 days | 7 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-13_2022-04-04 | E420 | 07-Apr-2022 | ---- | ---- | ---- | | 18-Apr-2022 | 180 days | 11 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-15_2022-04-04 | E420 | 07-Apr-2022 | ---- | ---- | ---- | | 18-Apr-2022 | 180 days | 11 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-30_2022-04-04 | E420 | 07-Apr-2022 | ---- | ---- | ---- | | 18-Apr-2022 | 180 days | 11 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-FB_2022-04-04 | E420 | 07-Apr-2022 | ---- | ---- | ---- | | 18-Apr-2022 | 180 days | 11 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-TB_2022-04-04 | E420 | 07-Apr-2022 | ---- | ---- | ---- | | 18-Apr-2022 | 180 days | 11 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-02_2022-04-04 | E420 | 06-Apr-2022 | ---- | ---- | ---- | | 18-Apr-2022 | 180 days | 12 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-04_2022-04-04 | E420 | 06-Apr-2022 | ---- | ---- | ---- | | 18-Apr-2022 | 180 days | 12 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-11_2022-04-04 | E420 | 06-Apr-2022 | ---- | ---- | ---- | | 18-Apr-2022 | 180 days | 12 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-29_2022-04-04 | E420 | 06-Apr-2022 | ---- | ---- | ---- | | 18-Apr-2022 | 180 days | 12 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-FD_2022-04-04 | E420 | 06-Apr-2022 | ---- | ---- | ---- | | 18-Apr-2022 | 180 days | 12 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-12_2022-04-04 | E420 | 05-Apr-2022 | ---- | ---- | ---- | | 18-Apr-2022 | 180 days | 13 days | ✓ |

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

## *Quality Control Parameter Frequency Compliance*

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 458536 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 460885 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 458529 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 458528 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Conductivity in Water | E100 | 458535 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 458653 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 462600 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 458527 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 458530 | 1 | 14 | 7.1 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 458531 | 1 | 14 | 7.1 | 5.0 | ✓ |
| pH by Meter | E108 | 458534 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 458532 | 1 | 13 | 7.6 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 457392 | 3 | 41 | 7.3 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 456059 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 456402 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 459579 | 1 | 16 | 6.2 | 5.0 | ✓ |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 458536 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 460885 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 458529 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 458528 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Conductivity in Water | E100 | 458535 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 458653 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 462600 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 458527 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 458530 | 1 | 14 | 7.1 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 458531 | 1 | 14 | 7.1 | 5.0 | ✓ |
| pH by Meter | E108 | 458534 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 458532 | 1 | 13 | 7.6 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 457392 | 3 | 41 | 7.3 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 456059 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 456402 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 459579 | 1 | 16 | 6.2 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 457410 | 4 | 44 | 9.0 | 5.0 | ✓ |
| **Method Blanks (MB)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 458536 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 460885 | 1 | 15 | 6.6 | 5.0 | ✓ |

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Method Blanks (MB) - Continued** | | | | | | | |
| Bromide in Water by IC (Low Level) | E235.Br-L | 458529 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 458528 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Conductivity in Water | E100 | 458535 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 458653 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 462600 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 458527 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 458530 | 1 | 14 | 7.1 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 458531 | 1 | 14 | 7.1 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 458532 | 1 | 13 | 7.6 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 457392 | 3 | 41 | 7.3 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 456059 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 456402 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 459579 | 1 | 16 | 6.2 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 457410 | 4 | 44 | 9.0 | 5.0 | ✓ |
| **Matrix Spikes (MS)** | | | | | | | |
| Ammonia by Fluorescence | E298 | 460885 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 458529 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 458528 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 458653 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 462600 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 458527 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 458530 | 1 | 14 | 7.1 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 458531 | 1 | 14 | 7.1 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 458532 | 1 | 13 | 7.6 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 456059 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 456402 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 459579 | 1 | 16 | 6.2 | 5.0 | ✓ |

## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Conductivity in Water | E100<br><br>Vancouver - Environmental | Water | APHA 2510 (mod) | Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C. |
| pH by Meter | E108<br><br>Vancouver - Environmental | Water | APHA 4500-H (mod) | pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time. |
| TSS by Gravimetry (Low Level) | E160-L<br><br>Vancouver - Environmental | Water | APHA 2540 D (mod) | Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples. |
| TDS by Gravimetry | E162<br><br>Vancouver - Environmental | Water | APHA 2540 C (mod) | Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue. |
| Bromide in Water by IC (Low Level) | E235.Br-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Chloride in Water by IC | E235.Cl<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Fluoride in Water by IC | E235.F<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrite in Water by IC (Low Level) | E235.NO2-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrate in Water by IC (Low Level) | E235.NO3-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Sulfate in Water by IC | E235.SO4<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Alkalinity Species by Titration | E290<br><br>Vancouver - Environmental | Water | APHA 2320 B (mod) | Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. |
| Ammonia by Fluorescence | E298<br><br>Vancouver - Environmental | Water | J. Environ. Monit., 2005, 7, 37-42 (mod) | Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA). |
| Total Metals in Water by CRC ICPMS | E420<br><br>Vancouver - Environmental | Water | EPA 200.2/6020B (mod) | Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Dissolved Metals in Water by CRC ICPMS | E421<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 6020B (mod) | Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Total Mercury in Water by CVAAS | E508<br><br>Vancouver - Environmental | Water | EPA 1631E (mod) | Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS |
| Dissolved Mercury in Water by CVAAS | E509<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 1631E (mod) | Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS. |
| Total Hexavalent Chromium (Cr VI) by IC | E532<br><br>Vancouver - Environmental | Water | APHA 3500-Cr C (Ion Chromatography) | Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.<br><br>Results are based on an un-filtered, field-preserved sample. |
| Dissolved Hardness (Calculated) | EC100<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. |
| Hardness (Calculated) from Total Ca/Mg | EC100A<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters. |
| Total Trivalent Chromium (Cr III) by Calculation | EC535<br><br>Vancouver - Environmental | Water | APHA 3030B/6020A/EPA 7196A (mod) | Chromium (III)-Total is calculated as the difference between the total chromium and the total hexavalent chromium (Cr(VI)) results.The Limit of Reporting for Chromium (III) varies as a function of the test results. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
| --- | --- | --- | --- | --- |
| Preparation for Ammonia | EP298<br><br>Vancouver - Environmental | Water | | Sample preparation for Preserved Nutrients Water Quality Analysis. |
| Dissolved Metals Water Filtration | EP421<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with $HNO_3$. |
| Dissolved Mercury Water Filtration | EP509<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HCl. |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200280** | Page | : 1 of 17 |
| Client | : Teck Metals Ltd | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 08-Apr-2022 10:10 |
| PO | : PO 10289 | Date Analysis Commenced | : 12-Apr-2022 |
| C-O-C number | : ---- | Issue Date | : 27-Apr-2022 12:15 |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 11 | | |
| No. of samples analysed | : 11 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Metals, Burnaby, British Columbia |
| Angelo Salandanan | Lab Assistant | Metals, Burnaby, British Columbia |
| Caleb Deroche | Lab Analyst | Metals, Burnaby, British Columbia |
| Dee Lee | Analyst | Metals, Burnaby, British Columbia |
| Delson Resende | Lab Assistant | Metals, Burnaby, British Columbia |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Inorganics, Burnaby, British Columbia |
| Parnian Sane | Analsyt | Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## *Laboratory Duplicate (DUP) Report*

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests (QC Lot: 457392)** | | | | | | | | | | | |
| VA22A7315-012 | Anonymous | solids, total dissolved [TDS] | ---- | E162 | 20 | mg/L | 307 | 267 | 14.0% | 20% | ---- |
| **Physical Tests (QC Lot: 458416)** | | | | | | | | | | | |
| VA22A7422-006 | Anonymous | solids, total dissolved [TDS] | ---- | E162 | 13 | mg/L | 126 | 136 | 8.15% | 20% | ---- |
| **Physical Tests (QC Lot: 458534)** | | | | | | | | | | | |
| WR2200280-001 | SD_MH-02_2022-04-04 | pH | ---- | E108 | 0.10 | pH units | 8.10 | 8.09 | 0.111% | 4% | ---- |
| **Physical Tests (QC Lot: 458535)** | | | | | | | | | | | |
| WR2200280-001 | SD_MH-02_2022-04-04 | conductivity | ---- | E100 | 2.0 | µS/cm | 1100 | 1100 | 0.00% | 10% | ---- |
| **Physical Tests (QC Lot: 458536)** | | | | | | | | | | | |
| WR2200280-001 | SD_MH-02_2022-04-04 | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 290 | 290 | 0.0689% | 20% | ---- |
| **Physical Tests (QC Lot: 459291)** | | | | | | | | | | | |
| VA22A7367-001 | Anonymous | solids, total dissolved [TDS] | ---- | E162 | 13 | mg/L | 89 | 88 | 1 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 458527)** | | | | | | | | | | | |
| VA22A7559-001 | Anonymous | fluoride | 16984-48-8 | E235.F | 0.200 | mg/L | 0.301 | 0.304 | 0.004 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 458528)** | | | | | | | | | | | |
| VA22A7559-001 | Anonymous | chloride | 16887-00-6 | E235.Cl | 5.00 | mg/L | 42.5 | 42.4 | 0.11 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 458529)** | | | | | | | | | | | |
| VA22A7559-001 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.500 | mg/L | <0.500 | <0.500 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 458530)** | | | | | | | | | | | |
| VA22A7559-001 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0500 | mg/L | 1.13 | 1.14 | 0.481% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 458531)** | | | | | | | | | | | |
| VA22A7559-001 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0100 | mg/L | 0.0389 | 0.0373 | 0.0016 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 458532)** | | | | | | | | | | | |
| VA22A7559-001 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 3.00 | mg/L | 914 | 912 | 0.153% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 460885)** | | | | | | | | | | | |
| VA22A6983-001 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | 0.724 | 0.758 | 4.63% | 20% | ---- |
| **Total Metals (QC Lot: 456402)** | | | | | | | | | | | |
| WR2200278-013 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 456403)** | | | | | | | | | | | |
| WR2200280-009 | SD_MH-FB_2022-04-04 | mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 459579)** | | | | | | | | | | | |
| WR2200278-020 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0038 | 0.0036 | 0.0002 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Total Metals (QC Lot: 459579) - continued** | | | | | | | | | | | |
| WR2200278-020 | Anonymous | antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00050 | 0.00048 | 0.00002 | Diff <2x LOR | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.0434 | 0.0427 | 1.53% | 20% | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000500 | 0.0000414 | 0.0000086 | Diff <2x LOR | ---- |
| | | calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 74.4 | 73.2 | 1.62% | 20% | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | 0.00063 | 0.00056 | 0.00008 | Diff <2x LOR | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | iron, total | 7439-89-6 | E420 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0039 | 0.0037 | 0.0001 | Diff <2x LOR | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 0.0050 | mg/L | 33.2 | 32.3 | 2.70% | 20% | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.00034 | 0.00039 | 0.00005 | Diff <2x LOR | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.000791 | 0.000786 | 0.698% | 20% | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | 0.00054 | <0.00050 | 0.00004 | Diff <2x LOR | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, total | 7440-09-7 | E420 | 0.050 | mg/L | 0.930 | 0.900 | 3.29% | 20% | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.000050 | mg/L | 0.000488 | 0.000530 | 8.27% | 20% | ---- |
| | | silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 5.15 | 5.01 | 2.60% | 20% | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 3.77 | 3.65 | 3.28% | 20% | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.278 | 0.276 | 0.700% | 20% | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 68.8 | 66.3 | 3.57% | 20% | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00575 | 0.00562 | 2.24% | 20% | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | 0.0220 | 0.0227 | 0.0007 | Diff <2x LOR | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 458653)** | | | | | | | | | | | |
| VA22A7479-001 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

**Laboratory Duplicate (DUP) Report**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QC Lot: 462600)** | | | | | | | | | | | |
| KS2201170-001 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | <0.0010 | 0.0010 | 0.000002 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00028 | 0.00027 | 0.000008 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00164 | 0.00166 | 1.53% | 20% | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0520 | 0.0521 | 0.212% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | 0.019 | 0.018 | 0.0007 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.000130 | mg/L | <0.000130 | <0.000130 | 0 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 306 | 300 | 1.96% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.129 | 0.131 | 1.71% | 20% | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0066 | 0.0063 | 0.0002 | Diff <2x LOR | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.0050 | mg/L | 83.5 | 84.1 | 0.782% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00177 | 0.00183 | 3.47% | 20% | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.341 | 0.341 | 0.0469% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00094 | 0.00095 | 0.00001 | Diff <2x LOR | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.050 | mg/L | 7.18 | 7.37 | 2.50% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | 0.00135 | 0.00139 | 2.97% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 9.85 | 9.78 | 0.699% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | 0.000010 | <0.000010 | 0.0000001 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 83.9 | 85.0 | 1.34% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 5.01 | 4.97 | 0.725% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 244 | 231 | 5.75% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00060 | mg/L | <0.00060 | <0.00060 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.0186 | 0.0183 | 1.58% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | 0.00096 | 0.00095 | 0.00001 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0141 | 0.0139 | 1.18% | 20% | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| **Speciated Metals (QC Lot: 456059)** | | | | | | | | | | | |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Speciated Metals (QC Lot: 456059) - continued** | | | | | | | | | | | |
| VA22A7236-003 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.00050 | mg/L | 0.00100 | 0.00090 | 0.00010 | Diff <2x LOR | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Physical Tests (QCLot: 457392)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Physical Tests (QCLot: 457410)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 458416)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Physical Tests (QCLot: 458422)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 458423)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 458535)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | <1.0 | ---- |
| **Physical Tests (QCLot: 458536)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 459288)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 459291)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Anions and Nutrients (QCLot: 458527)** | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | <0.020 | ---- |
| **Anions and Nutrients (QCLot: 458528)** | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | <0.50 | ---- |
| **Anions and Nutrients (QCLot: 458529)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 458530)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 458531)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 458532)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 460885)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Total Metals (QCLot: 456402)** | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | <0.0000050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 456403)** | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Total Metals (QCLot: 459579)** | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | <0.050 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | <0.010 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | <0.050 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | <0.050 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | <0.10 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | <0.000010 | MBRR |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | <0.050 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | <0.50 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | <0.00020 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 458653)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 462600)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | MBRR |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Speciated Metals (QCLot: 456059)** | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | <0.00050 | ---- |

## Qualifiers

| Qualifier | Description |
|---|---|
| MBRR | Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 457392)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 96.4 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 457410)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 98.5 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 458416)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 96.5 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 458422)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 103 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 458423)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 97.3 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 458534)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 100 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 458535)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 99.9 | 90.0 | 110 | ---- |
| **Physical Tests (QCLot: 458536)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 102 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 459288)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 90.3 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 459291)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 98.2 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 458527)** | | | | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | 1 mg/L | 107 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 458528)** | | | | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | 100 mg/L | 104 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 458529)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 102 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 458530)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 105 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 458531)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 106 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 458532)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 106 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 460885)** | | | | | | | | | |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 460885) - continued** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 105 | 85.0 | 115 | ---- |
| **Total Metals (QCLot: 456402)** | | | | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | 0.0001 mg/L | 92.6 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 456403)** | | | | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | 0.0001 mg/L | 94.6 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 459579)** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | 2 mg/L | 102 | 80.0 | 120 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | 1 mg/L | 114 | 80.0 | 120 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | 1 mg/L | 97.5 | 80.0 | 120 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | 0.25 mg/L | 104 | 80.0 | 120 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | 0.1 mg/L | 102 | 80.0 | 120 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | 1 mg/L | 116 | 80.0 | 120 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | 1 mg/L | 99.7 | 80.0 | 120 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | 0.1 mg/L | 101 | 80.0 | 120 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | 50 mg/L | 106 | 80.0 | 120 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | 0.25 mg/L | 96.6 | 80.0 | 120 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | 0.25 mg/L | 99.4 | 80.0 | 120 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | 0.25 mg/L | 100 | 80.0 | 120 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | 1 mg/L | 110 | 80.0 | 120 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | 0.25 mg/L | 103 | 80.0 | 120 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | 50 mg/L | 99.9 | 80.0 | 120 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | 0.25 mg/L | 106 | 80.0 | 120 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | 0.25 mg/L | 107 | 80.0 | 120 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | 0.5 mg/L | 102 | 80.0 | 120 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | 10 mg/L | 107 | 80.0 | 120 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | 10 mg/L | 104 | 80.0 | 120 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | 0.1 mg/L | 99.8 | 80.0 | 120 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | 0.25 mg/L | 108 | 80.0 | 120 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | 1 mg/L | 117 | 80.0 | 120 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | 0.25 mg/L | 95.5 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 459579) - continued** | | | | | | | | | |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | 0.005 mg/L | 105 | 80.0 | 120 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | 0.5 mg/L | 102 | 80.0 | 120 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | 0.5 mg/L | 99.7 | 80.0 | 120 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | 0.1 mg/L | 106 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 94.4 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 462600)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 96.9 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 97.2 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 101 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 103 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 93.9 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 97.2 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 94.2 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 98.4 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 96.6 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 101 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 96.6 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 97.9 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 97.4 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 96.5 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 93.9 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 96.1 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 96.9 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 99.9 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 99.0 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 100 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 97.2 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 99.9 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 95.7 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 89.8 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 99.4 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 98.2 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 84.9 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 93.6 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 98.3 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 106 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Laboratory Control Sample (LCS) Report: Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 462600) - continued** | | | | | | | | | |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 97.3 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 97.3 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 95.5 | 80.0 | 120 | ---- |
| **Speciated Metals (QCLot: 456059)** | | | | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | 0.25 mg/L | 104 | 90.0 | 110 | ---- |

## *Matrix Spike (MS) Report*

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 458527)** | | | | | | | | | | |
| VA22A7559-002 | Anonymous | fluoride | 16984-48-8 | E235.F | 10.4 mg/L | 10 mg/L | 104 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 458528)** | | | | | | | | | | |
| VA22A7559-002 | Anonymous | chloride | 16887-00-6 | E235.Cl | 1030 mg/L | 1000 mg/L | 103 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 458529)** | | | | | | | | | | |
| VA22A7559-002 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 5.22 mg/L | 5 mg/L | 104 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 458530)** | | | | | | | | | | |
| VA22A7559-002 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 25.8 mg/L | 25 mg/L | 103 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 458531)** | | | | | | | | | | |
| VA22A7559-002 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 5.19 mg/L | 5 mg/L | 104 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 458532)** | | | | | | | | | | |
| VA22A7559-002 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 1010 mg/L | 1000 mg/L | 101 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 460885)** | | | | | | | | | | |
| VA22A6983-010 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | ND mg/L | 0.1 mg/L | ND | 75.0 | 125 | MS-B |
| **Total Metals (QCLot: 456402)** | | | | | | | | | | |
| WR2200278-014 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000858 mg/L | 0.0001 mg/L | 85.8 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 456403)** | | | | | | | | | | |
| WR2200280-010 | SD_MH-FD_2022-04-04 | mercury, total | 7439-97-6 | E508 | 0.0000910 mg/L | 0.0001 mg/L | 91.0 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 459579)** | | | | | | | | | | |
| WR2200278-021 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.189 mg/L | 0.2 mg/L | 94.7 | 70.0 | 130 | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.0216 mg/L | 0.02 mg/L | 108 | 70.0 | 130 | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.0180 mg/L | 0.02 mg/L | 90.2 | 70.0 | 130 | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.0190 mg/L | 0.02 mg/L | 95.0 | 70.0 | 130 | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.0411 mg/L | 0.04 mg/L | 103 | 70.0 | 130 | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.0101 mg/L | 0.01 mg/L | 101 | 70.0 | 130 | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.102 mg/L | 0.1 mg/L | 102 | 70.0 | 130 | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.00386 mg/L | 0.004 mg/L | 96.4 | 70.0 | 130 | ---- |
| | | calcium, total | 7440-70-2 | E420 | 3.88 mg/L | 4 mg/L | 97.0 | 70.0 | 130 | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.0368 mg/L | 0.04 mg/L | 92.1 | 70.0 | 130 | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.0189 mg/L | 0.02 mg/L | 94.6 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Matrix Spike (MS) Report: Spike Concentration | Spike Target | Recovery (%) MS | Recovery Limits (%) Low | High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 459579) - continued** | | | | | | | | | | |
| WR2200278-021 | Anonymous | copper, total | 7440-50-8 | E420 | 0.0190 mg/L | 0.02 mg/L | 94.8 | 70.0 | 130 | ---- |
| | | iron, total | 7439-89-6 | E420 | 1.90 mg/L | 2 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.0193 mg/L | 0.02 mg/L | 96.7 | 70.0 | 130 | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.103 mg/L | 0.1 mg/L | 103 | 70.0 | 130 | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 1.01 mg/L | 1 mg/L | 101 | 70.0 | 130 | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.0184 mg/L | 0.02 mg/L | 91.8 | 70.0 | 130 | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.0206 mg/L | 0.02 mg/L | 103 | 70.0 | 130 | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.0390 mg/L | 0.04 mg/L | 97.6 | 70.0 | 130 | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 8.73 mg/L | 10 mg/L | 87.3 | 70.0 | 130 | ---- |
| | | potassium, total | 7440-09-7 | E420 | 3.72 mg/L | 4 mg/L | 92.9 | 70.0 | 130 | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.0382 mg/L | 0.04 mg/L | 95.5 | 70.0 | 130 | ---- |
| | | silicon, total | 7440-21-3 | E420 | 9.78 mg/L | 10 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.00427 mg/L | 0.004 mg/L | 107 | 70.0 | 130 | ---- |
| | | sodium, total | 7440-23-5 | E420 | 1.89 mg/L | 2 mg/L | 94.3 | 70.0 | 130 | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.0200 mg/L | 0.02 mg/L | 99.8 | 70.0 | 130 | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 18.7 mg/L | 20 mg/L | 93.6 | 70.0 | 130 | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.00384 mg/L | 0.004 mg/L | 96.0 | 70.0 | 130 | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.0192 mg/L | 0.02 mg/L | 96.0 | 70.0 | 130 | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.0373 mg/L | 0.04 mg/L | 93.2 | 70.0 | 130 | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.00396 mg/L | 0.004 mg/L | 99.1 | 70.0 | 130 | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.0961 mg/L | 0.1 mg/L | 96.1 | 70.0 | 130 | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.381 mg/L | 0.4 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.0432 mg/L | 0.04 mg/L | 108 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 458653)** | | | | | | | | | | |
| VA22A7532-001 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000894 mg/L | 0.0001 mg/L | 89.4 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 462600)** | | | | | | | | | | |
| KS2201170-002 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.201 mg/L | 0.2 mg/L | 101 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0204 mg/L | 0.02 mg/L | 102 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0212 mg/L | 0.02 mg/L | 106 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0379 mg/L | 0.04 mg/L | 94.9 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00872 mg/L | 0.01 mg/L | 87.2 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.103 mg/L | 0.1 mg/L | 103 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00383 mg/L | 0.004 mg/L | 95.8 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0404 mg/L | 0.04 mg/L | 101 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| | | | | | Concentration | Target | MS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 462600) - continued** | | | | | | | | | | |
| KS2201170-002 | Anonymous | cobalt, dissolved | 7440-48-4 | E421 | 0.0191 mg/L | 0.02 mg/L | 95.6 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.96 mg/L | 2 mg/L | 98.1 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0186 mg/L | 0.02 mg/L | 93.2 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0973 mg/L | 0.1 mg/L | 97.3 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0201 mg/L | 0.02 mg/L | 100 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0376 mg/L | 0.04 mg/L | 94.0 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 11.0 mg/L | 10 mg/L | 110 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0428 mg/L | 0.04 mg/L | 107 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | ND mg/L | 10 mg/L | ND | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00391 mg/L | 0.004 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | ND mg/L | 20 mg/L | ND | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00361 mg/L | 0.004 mg/L | 90.2 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0205 mg/L | 0.02 mg/L | 102 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0422 mg/L | 0.04 mg/L | 106 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | ND mg/L | 0.004 mg/L | ND | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.106 mg/L | 0.1 mg/L | 106 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.375 mg/L | 0.4 mg/L | 93.7 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0397 mg/L | 0.04 mg/L | 99.2 | 70.0 | 130 | ---- |
| **Speciated Metals (QCLot: 456059)** | | | | | | | | | | |
| VA22A7369-001 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.264 mg/L | 0.25 mg/L | 106 | 85.0 | 115 | ---- |

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *MS-B* | *Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.* |

# Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number:

Environmental Division
Whitehorse
Work Order Reference
WR2200280

Telephone : +1 867 668 6689

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Phone: | 250-4278422 |
| | Company address below will appear on the final report |
| Street: | 601 Knighton Road |
| City/Province: | Kimberly, BC |
| Postal Code: | V1A 3E1 |
| Invoice To | Same as Report To |
| | Copy of Invoice with Report |
| Company: | |
| Contact: | |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | |
| Quality Control (QC) Report with Report | |
| Select Distribution: | |
| Email 1 or Fax | azheng@ensero.com, ebouchard@ensero.com |
| Email 2 | michelle.unger@teck.com, wendy.mcbain@teck.co |
| Email 3 | chanson@ensero.com,teckkimb@equisonline.com |
| **Invoice Distribution** | |
| Select Invoice Distribution: | |
| Email 1 or Fax | Michelle.unger@teck.com |
| Email 2 | legacy.ap@teck.com |

Select Service Level Below - Please confirm all E&P TATs with yo

| PRIORITY (Business Days) | Regular [R] | EMERGENCY | |
|---|---|---|---|
| | 4 day [P4] | | 1 E |
| | 3 day [P3] | | Sa |
| | 2 day [P2] | | S |

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level

| Project Information | |
|---|---|
| ALS Account # / Quote #: | Q62635 |
| Job #: | ECA22YT00199 |
| PO / AFE: | Teck PO-9516 |
| LSD: | |

| Oil and Gas Required Fields (client use) | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |

ALS Lab Work Order # (lab use only)

ALS Contact: Can Dang | Sampler:

Analysis Re

Indicate Filtered (F), Preserved (P) or Filtered and

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Sample Location (SYS_LOC_CODE) | Date (dd-mmm-yy) | Time (hh:mm) | Field Matrix | Total Metals (low level) + Hg | Dissolved Metals (low level) +Hg | pH, SPC, alkalinity, hardness | Anions( Nitrate, Nitrite, Sulphate, Cl, F, Br) | Ammonia | TDS, TSS(low) | Chromium Speciation | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | P | F/P | | P | P | | P | |
| | SD_MH-02_2022-04-04 | SD_MH-02 | 6-Apr-22 | 17:50 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-04_2022-04-04 | SD_MH-04 | 6-Apr-22 | 11:50 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-11_2022-04-04 | SD_MH-11 | 6-Apr-22 | 15:15 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-12_2022-04-04 | SD_MH-12 | 5-Apr-22 | 17:10 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-13_2022-04-04 | SD_MH-13 | 7-Apr-22 | 11:30 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-15_2022-04-04 | SD_MH-15 | 7-Apr-22 | 12:45 | WS | R | R | R | R | R | R | R | 8 |
| | | | | | | | | | | | | | |
| | SD_MH-29_2022-04-04 | SD_MH-29 | 6-Apr-22 | 16:00 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-30_2022-04-04 | SD_MH-30 | 7-Apr-22 | 10:30 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-FB_2022-04-04 | SD_MH-FB | 7-Apr-22 | 11:30 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-FD_2022-04-04 | SD_MH-FD | 6-Apr-22 | 14:00 | WS | R | R | R | R | R | R | R | |
| | SD_MH-TB_2022-04-04 | SD_MH-TB | 7-Apr-22 | 11:50 | WS | R | R | R | R | R | R | | |

**Drinking Water (DW) Samples[1] (client use)**

**Are samples taken from a Regulated DW System?**

**Are samples for human drinking water use?**

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

**SAMPLE CONDITION AS RE**

Frozen ☐ SIF Obser
Ice Packs ☐ Ice Cubes ☐ Custody s
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C

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| SHIPMENT RELEASE (client use) | | | INITIAL SHIPMENT RECEPTION (lab use only) | | | FINAL SHIPMENT |
|---|---|---|---|---|---|---|
| Released by: | Date: | Time: | Received by: (?) | Date: APR 8/22 | Time: 10:10 | Received by: |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Environmental

www.alsglobal.com

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

**Affix ALS barcode label here** (lab use only)

COC Number:

Environmental Division
Whitehorse
Work Order Reference
WR2200280

Telephone : +1 867 668 6689

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Phone: | 250-4278422 |
| | Company address below will appear on the final report |
| Street: | 601 Knightton Road |
| City/Province: | Kimberly, BC |
| Postal Code: | V1A 3E1 |
| Invoice To | Same as Report To |
| | Copy of Invoice with Report |
| Company: | |
| Contact: | |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | |
| Quality Control (QC) Report with Report | |
| Select Distribution: | |
| Email 1 or Fax | azheng@ensero.com, ebouchard@ensero.com |
| Email 2 | michelle.unger@teck.com, wendy.mcbain@teck.co |
| Email 3 | chanson@ensero.com,teckkimb@equisonline.com |
| **Invoice Distribution** | |
| Select Invoice Distribution: | |
| Email 1 or Fax | Michelle.unger@teck.com |
| Email 2 | legacy.ap@teck.com |

Select Service Level Below - Please confirm all E&P TATs with yo

Regular [R]

| PRIORITY (Business Days) | | EMERGENCY | |
|---|---|---|---|
| 4 day [P4] | | 1 E | |
| 3 day [P3] | | S | |
| 2 day [P2] | | S | |

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service leve

| Project Information | |
|---|---|
| ALS Account # / Quote #: | Q62635 |
| Job #: | ECA22YT00199 |
| PO / AFE: | Teck PO-9516 |
| LSD: | |
| ALS Lab Work Order # (lab use only) | |

| Oil and Gas Required Fields (client use) | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |
| ALS Contact: Can Dang | Sampler: |

Analysis Re

Indicate Filtered (F), Preserved (P) or Filtered and

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Sample Location (SYS_LOC_CODE) | Date (dd-mmm-yy) | Time (hh:mm) | Field Matrix | Total Metals (low level) + Hg (P) | Dissolved Metals (low level) +Hg (F/P) | pH, SPC, alkalinity, hardness | Anions( Nitrate, Nitrite, Sulphate, Cl, F, Br) (P) | Ammonia (P) | TDS, TSS(low) | Chromium Speciation (P) | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SD_MH-02_2022-04-04 | SD_MH-02 | 6-Apr-22 | 17:50 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-04_2022-04-04 | SD_MH-04 | 6-Apr-22 | 11:50 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-11_2022-04-04 | SD_MH-11 | 6-Apr-22 | 15:15 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-12_2022-04-04 | SD_MH-12 | 5-Apr-22 | 17:10 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-13_2022-04-04 | SD_MH-13 | 7-Apr-22 | 11:30 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-15_2022-04-04 | SD_MH-15 | 7-Apr-22 | 12:45 | WS | R | R | R | R | R | R | R | 8 |
| | | | | | | | | | | | | | |
| | SD_MH-29_2022-04-04 | SD_MH-29 | 6-Apr-22 | 16:00 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-30_2022-04-04 | SD_MH-30 | 7-Apr-22 | 10:30 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-FB_2022-04-04 | SD_MH-FB | 7-Apr-22 | 11:30 | WS | R | R | R | R | R | R | R | 8 |
| | SD_MH-FD_2022-04-04 | SD_MH-FD | 6-Apr-22 | 14:00 | WS | R | R | R | R | R | R | R | |
| | SD_MH-TB_2022-04-04 | SD_MH-TB | 7-Apr-22 | 11:50 | WS | R | R | R | R | R | R | | |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System?

Are samples for human drinking water use?

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

SAMPLE CONDITION AS RE

Frozen ☐ SIF Obser

Ice Packs ☐ Ice Cubes ☐ Custody s

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C

8 | 4 | 11.8

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1 1/4

| SHIPMENT RELEASE (client use) | | | INITIAL SHIPMENT RECEPTION (lab use only) | | | FINAL SHIPMENT |
|---|---|---|---|---|---|---|
| Released by: | Date: | Time: | Received by: | Date: APR 8/22 | Time: 10:10 | Received by: April 9/22 12:30 pm |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200593** | Page | : 1 of 6 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 22-Jun-2022 11:50 |
| PO | : PO# 10289 | Date Analysis Commenced | : 23-Jun-2022 |
| C-O-C number | : ---- | Issue Date | : 24-Jun-2022 21:05 |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Metals, Burnaby, British Columbia |
| Ann Joby | Lab Assistant | Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Inorganics, Burnaby, British Columbia |
| Owen Cheng | | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| - | No Unit |
| µg/L | micrograms per litre |
| µS/cm | Microsiemens per centimetre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

Sample #3- nutrient container marked as dissolved. a cut will be taken.

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLDS* | *Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.* |
| *DTMF* | *Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.* |

## Analytical Results

Sub-Matrix: Water

(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_SDH-MH02-17 | SD_SDH_MH02-18 | SD_SDH_MH02-19 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 17-Jun-2022 20:20 | 18-Jun-2022 13:38 | 18-Jun-2022 18:55 | ---- | ---- |
| | | | | | WR2200593-001 | WR2200593-002 | WR2200593-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 232 | 248 | 249 | ---- | ---- |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 643 | 657 | 669 | ---- | ---- |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 311 | 336 | 335 | ---- | ---- |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | 317 | 319 | 337 | ---- | ---- |
| **pH** | ---- | E108 | 0.10 | pH units | 8.26 | 8.26 | 8.28 | ---- | ---- |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 390 | 412 | 409 | ---- | ---- |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 1.0 | <1.0 | <1.0 | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | <0.0050 | ---- | ---- |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.250 DLDS | <0.250 DLDS | <0.250 DLDS | ---- | ---- |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <2.50 DLDS | <2.50 DLDS | <2.50 DLDS | ---- | ---- |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | <0.100 DLDS | <0.100 DLDS | <0.100 DLDS | ---- | ---- |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | <0.0250 DLDS | <0.0250 DLDS | <0.0250 DLDS | ---- | ---- |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0050 DLDS | <0.0050 DLDS | <0.0050 DLDS | ---- | ---- |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 130 | 129 | 138 | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0040 | 0.0039 | 0.0040 | ---- | ---- |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00016 | 0.00017 | 0.00018 | ---- | ---- |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00038 | 0.00036 | 0.00039 | ---- | ---- |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | 0.115 | 0.122 | 0.129 | ---- | ---- |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | ---- | ---- |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | ---- | ---- |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.000215 | 0.000214 | 0.000206 | ---- | ---- |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | 115 | 116 | 122 | ---- | ---- |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | 0.00021 | 0.00022 | 0.00022 | ---- | ---- |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | 0.018 | 0.019 | 0.019 | ---- | ---- |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000254 | 0.000239 | 0.000232 | ---- | ---- |

## Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_SDH-MH02-17 | SD_SDH_MH02-18 | SD_SDH_MH02-19 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 17-Jun-2022 20:20 | 18-Jun-2022 13:38 | 18-Jun-2022 18:55 | ---- | ---- |
| | | | | | WR2200593-001 | WR2200593-002 | WR2200593-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **lithium, total** | 7439-93-2 | E420 | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | ---- | ---- |
| **magnesium, total** | 7439-95-4 | E420 | 0.100 | mg/L | 7.23 | 7.13 | 7.81 | ---- | ---- |
| **manganese, total** | 7439-96-5 | E420 | 0.00010 | mg/L | 0.155 | 0.182 | 0.172 | ---- | ---- |
| **mercury, total** | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | ---- | ---- |
| **molybdenum, total** | 7439-98-7 | E420 | 0.000050 | mg/L | 0.000624 | 0.000652 | 0.000729 | ---- | ---- |
| **nickel, total** | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| **phosphorus, total** | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | ---- | ---- |
| **potassium, total** | 7440-09-7 | E420 | 0.100 | mg/L | 0.988 | 1.02 | 1.14 | ---- | ---- |
| **selenium, total** | 7782-49-2 | E420 | 0.050 | µg/L | 1.03 | 0.863 | 0.771 | ---- | ---- |
| **silicon, total** | 7440-21-3 | E420 | 0.10 | mg/L | 3.35 | 3.33 | 3.51 | ---- | ---- |
| **silver, total** | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | ---- | ---- |
| **sodium, total** | 7440-23-5 | E420 | 0.050 | mg/L | 8.39 | 8.77 | 9.10 | ---- | ---- |
| **strontium, total** | 7440-24-6 | E420 | 0.00020 | mg/L | 0.397 | 0.413 | 0.423 | ---- | ---- |
| **sulfur, total** | 7704-34-9 | E420 | 0.50 | mg/L | 42.2 | 43.0 | 45.0 | ---- | ---- |
| **thallium, total** | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | ---- | ---- |
| **tin, total** | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | ---- | ---- |
| **titanium, total** | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | ---- | ---- |
| **uranium, total** | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00114 | 0.00117 | 0.00117 | ---- | ---- |
| **vanadium, total** | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| **zinc, total** | 7440-66-6 | E420 | 0.0030 | mg/L | 0.0266 | 0.0200 | 0.0240 | ---- | ---- |
| **zirconium, total** | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0054 | 0.0079 | 0.0062 | ---- | ---- |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00013 | 0.00014 | 0.00016 | ---- | ---- |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00035 | 0.00036 | 0.00041 | ---- | ---- |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.115 | 0.121 | 0.124 | ---- | ---- |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | ---- | ---- |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | ---- | ---- |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.000212 | 0.000232 | 0.000198 | ---- | ---- |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 112 | 122 | 122 | ---- | ---- |

## Analytical Results

| Sub-Matrix: Water (Matrix: Water) | | | | Client sample ID | SD_SDH-MH02-17 | SD_SDH_MH02-18 | SD_SDH_MH02-19 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 17-Jun-2022 20:20 | 18-Jun-2022 13:38 | 18-Jun-2022 18:55 | ---- | ---- |
| Analyte | CAS Number | Method | LOR | Unit | WR2200593-001 | WR2200593-002 | WR2200593-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | 0.00017 | 0.00023 | 0.00021 | ---- | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00030 | 0.00038 | 0.00034 | ---- | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | 0.013 | 0.027 | 0.024 | ---- | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000170 | 0.000380 DTMF | 0.000353 DTMF | ---- | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | ---- | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 7.54 | 7.57 | 7.32 | ---- | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.124 | 0.182 | 0.167 | ---- | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | ---- | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000612 | 0.000650 | 0.000691 | ---- | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | ---- | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 1.01 | 1.08 | 1.09 | ---- | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.050 | µg/L | 1.16 | 0.997 | 0.884 | ---- | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 3.22 | 3.31 | 3.39 | ---- | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | ---- | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 8.41 | 9.06 | 8.80 | ---- | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.393 | 0.399 | 0.417 | ---- | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 44.6 | 44.8 | 46.2 | ---- | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | ---- | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | ---- | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | ---- | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00116 | 0.00118 | 0.00121 | ---- | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0271 | 0.0211 | 0.0232 | ---- | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | ---- | ---- |
| dissolved mercury filtration location | ---- | EP509 | - | - | Field | Field | Field | ---- | ---- |
| dissolved metals filtration location | ---- | EP421 | - | - | Field | Field | Field | ---- | ---- |
| **Speciated Metals** | | | | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| chromium, trivalent [Cr III], total | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| Work Order | : **WR2200593** | Page | : 1 of 14 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 22-Jun-2022 11:50 |
| PO | : PO# 10289 | Issue Date | : 24-Jun-2022 21:05 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**
**CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.**
**DQO: Data Quality Objective.**
**LOR: Limit of Reporting (detection limit).**
**RPD: Relative Percent Difference.**

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

| Analyte Group | Laboratory sample ID | Client/Ref Sample ID | Analyte | CAS Number | Method | Result | Limits | Comment |
|---|---|---|---|---|---|---|---|---|
| **Method Blank (MB) Values** | | | | | | | | |
| Anions and Nutrients | QC-MRG11-536585 001 | ---- | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0083 B mg/L | 0.005 mg/L | Blank result exceeds permitted value |

## Result Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *B* | *Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.* |

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_SDH_MH02-18 | E298 | 18-Jun-2022 | 23-Jun-2022 | ---- | ---- | | 23-Jun-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_SDH-MH02-17 | E298 | 17-Jun-2022 | 23-Jun-2022 | ---- | ---- | | 23-Jun-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (lab preserved)** SD_SDH_MH02-19 | E298 | 18-Jun-2022 | 23-Jun-2022 | 3 days | 5 days | ✘ EHTL | 23-Jun-2022 | 28 days | 0 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-18 | E235.Br-L | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-19 | E235.Br-L | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_SDH-MH02-17 | E235.Br-L | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-18 | E235.Cl | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 5 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times | | Eval | Analysis Date | Holding Times | | Eval |
| | | | | Rec | Actual | | | Rec | Actual | |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_SDH_MH02-19 | E235.Cl | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_SDH-MH02-17 | E235.Cl | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_SDH_MH02-18 | E235.F | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_SDH_MH02-19 | E235.F | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_SDH-MH02-17 | E235.F | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_SDH_MH02-19 | E235.NO3-L | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 3 days | 5 days | × EHTL |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_SDH_MH02-18 | E235.NO3-L | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 3 days | 5 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_SDH-MH02-17 | E235.NO3-L | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 3 days | 6 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_SDH_MH02-19 | E235.NO2-L | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 3 days | 5 days | × EHTL |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_SDH_MH02-18 | E235.NO2-L | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 3 days | 5 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_SDH-MH02-17 | E235.NO2-L | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 3 days | 6 days | × EHTR |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_SDH_MH02-18 | E235.SO4 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_SDH_MH02-19 | E235.SO4 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_SDH-MH02-17 | E235.SO4 | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_SDH_MH02-19 | E509 | 18-Jun-2022 | 24-Jun-2022 | ---- | ---- | | 24-Jun-2022 | 28 days | 5 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_SDH_MH02-18 | E509 | 18-Jun-2022 | 24-Jun-2022 | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_SDH-MH02-17 | E509 | 17-Jun-2022 | 24-Jun-2022 | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_SDH_MH02-18 | E421 | 18-Jun-2022 | 23-Jun-2022 | ---- | ---- | | 23-Jun-2022 | 180 days | 5 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_SDH_MH02-19 | E421 | 18-Jun-2022 | 23-Jun-2022 | ---- | ---- | | 23-Jun-2022 | 180 days | 5 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_SDH-MH02-17 | E421 | 17-Jun-2022 | 23-Jun-2022 | ---- | ---- | | 23-Jun-2022 | 180 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-19 | E290 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-18 | E290 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_SDH-MH02-17 | E290 | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-19 | E100 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 5 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-18 | E100 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_SDH-MH02-17 | E100 | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-19 | E108 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 0.25 hrs | 130 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-18 | E108 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 0.25 hrs | 135 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_SDH-MH02-17 | E108 | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 0.25 hrs | 153 hrs | × EHTR-FM |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-18 | E162 | 18-Jun-2022 | ---- | ---- | ---- | | 23-Jun-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-19 | E162 | 18-Jun-2022 | ---- | ---- | ---- | | 23-Jun-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_SDH-MH02-17 | E162 | 17-Jun-2022 | ---- | ---- | ---- | | 23-Jun-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-18 | E160-L | 18-Jun-2022 | ---- | ---- | ---- | | 23-Jun-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_SDH_MH02-19 | E160-L | 18-Jun-2022 | ---- | ---- | ---- | | 23-Jun-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_SDH-MH02-17 | E160-L | 17-Jun-2022 | ---- | ---- | ---- | | 23-Jun-2022 | 7 days | 6 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_SDH_MH02-18 | E532 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_SDH_MH02-19 | E532 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_SDH-MH02-17 | E532 | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_SDH_MH02-19 | E508 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 5 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_SDH_MH02-18 | E508 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_SDH-MH02-17 | E508 | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 28 days | 6 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE - total (lab preserved)** SD_SDH_MH02-18 | E420 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 180 days | 6 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_SDH_MH02-19 | E420 | 18-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 180 days | 6 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_SDH-MH02-17 | E420 | 17-Jun-2022 | ---- | ---- | ---- | | 24-Jun-2022 | 180 days | 7 days | ✓ |

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

Rec. HT: ALS recommended hold time (see units).

## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC Lot # | QC | Regular | Actual | Expected | Evaluation |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 536583 | 1 | 5 | 20.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 536455 | 1 | 3 | 33.3 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 536590 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 536589 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Conductivity in Water | E100 | 536581 | 1 | 6 | 16.6 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 536752 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 536516 | 1 | 12 | 8.3 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 536588 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 536586 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 536587 | 1 | 5 | 20.0 | 5.0 | ✓ |
| pH by Meter | E108 | 536582 | 1 | 7 | 14.2 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 536585 | 1 | 4 | 25.0 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 536514 | 1 | 8 | 12.5 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 536854 | 1 | 14 | 7.1 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 536712 | 1 | 8 | 12.5 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 536639 | 1 | 10 | 10.0 | 5.0 | ✓ |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 536583 | 1 | 5 | 20.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 536455 | 1 | 3 | 33.3 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 536590 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 536589 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Conductivity in Water | E100 | 536581 | 1 | 6 | 16.6 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 536752 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 536516 | 1 | 12 | 8.3 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 536588 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 536586 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 536587 | 1 | 5 | 20.0 | 5.0 | ✓ |
| pH by Meter | E108 | 536582 | 1 | 7 | 14.2 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 536585 | 1 | 4 | 25.0 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 536514 | 1 | 8 | 12.5 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 536854 | 1 | 14 | 7.1 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 536712 | 1 | 8 | 12.5 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 536639 | 1 | 10 | 10.0 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 536513 | 1 | 8 | 12.5 | 5.0 | ✓ |
| **Method Blanks (MB)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 536583 | 1 | 5 | 20.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 536455 | 1 | 3 | 33.3 | 5.0 | ✓ |

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Method Blanks (MB) - Continued** | | | | | | | |
| Bromide in Water by IC (Low Level) | E235.Br-L | 536590 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 536589 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Conductivity in Water | E100 | 536581 | 1 | 6 | 16.6 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 536752 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 536516 | 1 | 12 | 8.3 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 536588 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 536586 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 536587 | 1 | 5 | 20.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 536585 | 1 | 4 | 25.0 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 536514 | 1 | 8 | 12.5 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 536854 | 1 | 14 | 7.1 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 536712 | 1 | 8 | 12.5 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 536639 | 1 | 10 | 10.0 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 536513 | 1 | 8 | 12.5 | 5.0 | ✓ |
| **Matrix Spikes (MS)** | | | | | | | |
| Ammonia by Fluorescence | E298 | 536455 | 1 | 3 | 33.3 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 536590 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 536589 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 536752 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 536516 | 1 | 12 | 8.3 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 536588 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 536586 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 536587 | 1 | 5 | 20.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 536585 | 1 | 4 | 25.0 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 536854 | 1 | 14 | 7.1 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 536712 | 1 | 8 | 12.5 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 536639 | 1 | 10 | 10.0 | 5.0 | ✓ |

## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Conductivity in Water | E100<br><br>Vancouver - Environmental | Water | APHA 2510 (mod) | Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C. |
| pH by Meter | E108<br><br>Vancouver - Environmental | Water | APHA 4500-H (mod) | pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time. |
| TSS by Gravimetry (Low Level) | E160-L<br><br>Vancouver - Environmental | Water | APHA 2540 D (mod) | Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples. |
| TDS by Gravimetry | E162<br><br>Vancouver - Environmental | Water | APHA 2540 C (mod) | Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue. |
| Bromide in Water by IC (Low Level) | E235.Br-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Chloride in Water by IC | E235.Cl<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Fluoride in Water by IC | E235.F<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrite in Water by IC (Low Level) | E235.NO2-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrate in Water by IC (Low Level) | E235.NO3-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Sulfate in Water by IC | E235.SO4<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Alkalinity Species by Titration | E290<br><br>Vancouver - Environmental | Water | APHA 2320 B (mod) | Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. |
| Ammonia by Fluorescence | E298<br><br>Vancouver - Environmental | Water | J. Environ. Monit., 2005, 7, 37-42 (mod) | Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA). |
| Total Metals in Water by CRC ICPMS | E420<br><br>Vancouver - Environmental | Water | EPA 200.2/6020B (mod) | Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Dissolved Metals in Water by CRC ICPMS | E421<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 6020B (mod) | Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Total Mercury in Water by CVAAS | E508<br><br>Vancouver - Environmental | Water | EPA 1631E (mod) | Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS |
| Dissolved Mercury in Water by CVAAS | E509<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 1631E (mod) | Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS. |
| Total Hexavalent Chromium (Cr VI) by IC | E532<br><br>Vancouver - Environmental | Water | APHA 3500-Cr C (Ion Chromatography) | Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.<br><br>Results are based on an un-filtered, field-preserved sample. |
| Dissolved Hardness (Calculated) | EC100<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. |
| Hardness (Calculated) from Total Ca/Mg | EC100A<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters. |
| Total Trivalent Chromium (Cr III) by Calculation | EC535<br><br>Vancouver - Environmental | Water | APHA 3030B/6020A/EPA 7196A (mod) | Chromium (III)-Total is calculated as the difference between the total chromium and the total hexavalent chromium (Cr(VI)) results.The Limit of Reporting for Chromium (III) varies as a function of the test results. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Preparation for Ammonia | EP298<br><br>Vancouver - Environmental | Water | | Sample preparation for Preserved Nutrients Water Quality Analysis. |
| Dissolved Metals Water Filtration | EP421<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with $HNO_3$. |
| Dissolved Mercury Water Filtration | EP509<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HCl. |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200593** | Page | : 1 of 14 |
| Client | : Teck Metals Ltd | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 22-Jun-2022 11:50 |
| PO | : PO# 10289 | Date Analysis Commenced | : 23-Jun-2022 |
| C-O-C number | : ---- | Issue Date | : 24-Jun-2022 21:05 |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |



This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Vancouver Metals, Burnaby, British Columbia |
| Ann Joby | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Vancouver Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Vancouver Inorganics, Burnaby, British Columbia |
| Owen Cheng | | Vancouver Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## *Laboratory Duplicate (DUP) Report*

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Physical Tests (QC Lot: 536514)** | | | | | | | | | | | |
| VA22B3691-009 | Anonymous | solids, total dissolved [TDS] | ---- | E162 | 20 | mg/L | 992 | 939 | 5.49% | 20% | ---- |
| **Physical Tests (QC Lot: 536581)** | | | | | | | | | | | |
| WR2200593-002 | SD_SDH_MH02-18 | conductivity | ---- | E100 | 2.0 | µS/cm | 657 | 656 | 0.152% | 10% | ---- |
| **Physical Tests (QC Lot: 536582)** | | | | | | | | | | | |
| WR2200593-002 | SD_SDH_MH02-18 | pH | ---- | E108 | 0.10 | pH units | 8.26 | 8.26 | 0.0121% | 4% | ---- |
| **Physical Tests (QC Lot: 536583)** | | | | | | | | | | | |
| WR2200593-002 | SD_SDH_MH02-18 | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 248 | 254 | 2.35% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 536455)** | | | | | | | | | | | |
| WR2200593-001 | SD_SDH-MH02-17 | ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 536585)** | | | | | | | | | | | |
| VA22B4206-001 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 1.50 | mg/L | 62800 µg/L | 62.7 | 0.0677% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 536586)** | | | | | | | | | | | |
| VA22B4206-001 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0250 | mg/L | 36600 µg/L | 36.6 | 0.131% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 536587)** | | | | | | | | | | | |
| VA22B4206-001 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0050 | mg/L | 344 µg/L | 0.343 | 0.281% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 536588)** | | | | | | | | | | | |
| VA22B4206-001 | Anonymous | fluoride | 16984-48-8 | E235.F | 0.100 | mg/L | <100 µg/L | <0.100 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 536589)** | | | | | | | | | | | |
| VA22B4206-001 | Anonymous | chloride | 16887-00-6 | E235.Cl | 2.50 | mg/L | 81000 µg/L | 80.9 | 0.100% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 536590)** | | | | | | | | | | | |
| VA22B4206-001 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.250 | mg/L | <250 µg/L | <0.250 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 536639)** | | | | | | | | | | | |
| CG2207851-001 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0230 | 0.0230 | 0.000004 | Diff <2x LOR | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00068 | 0.00067 | 0.000006 | Diff <2x LOR | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00014 | 0.00013 | 0.00001 | Diff <2x LOR | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.0311 | 0.0322 | 3.38% | 20% | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.020 µg/L | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.010 | mg/L | 0.024 | 0.023 | 0.0002 | Diff <2x LOR | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.423 µg/L | 0.000451 | 6.41% | 20% | ---- |
| | | calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 178 | 178 | 0.583% | 20% | ---- |

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QC Lot: 536639) - continued** | | | | | | | | | | | |
| CG2207851-001 | Anonymous | chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | 0.22 µg/L | 0.00023 | 0.000005 | Diff <2x LOR | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | iron, total | 7439-89-6 | E420 | 0.010 | mg/L | 0.018 | 0.018 | 0.0004 | Diff <2x LOR | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.242 | 0.232 | 3.78% | 20% | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 0.0050 | mg/L | 97.3 | 98.8 | 1.53% | 20% | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.00183 | 0.00189 | 3.60% | 20% | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00454 | 0.00450 | 0.671% | 20% | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | 0.0281 | 0.0283 | 0.691% | 20% | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, total | 7440-09-7 | E420 | 0.050 | mg/L | 4.86 | 4.91 | 1.07% | 20% | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.000050 | mg/L | 117 µg/L | 0.119 | 1.66% | 20% | ---- |
| | | silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 1.51 | 1.55 | 2.25% | 20% | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 7.61 | 7.61 | 0.0228% | 20% | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.282 | 0.284 | 0.607% | 20% | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 171 | 174 | 1.50% | 20% | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | 0.000033 | 0.000033 | 0.00000008 | Diff <2x LOR | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | 0.00072 | 0.00078 | 0.00006 | Diff <2x LOR | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00913 | 0.00906 | 0.752% | 20% | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | 0.0225 | 0.0227 | 0.0002 | Diff <2x LOR | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 536712)** | | | | | | | | | | | |
| VA22B3766-005 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0050 µg/L | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 536516)** | | | | | | | | | | | |
| CG2207851-001 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0011 | <0.0010 | 0.0001 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00061 | 0.00062 | 0.000009 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0283 | 0.0293 | 3.72% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.020 µg/L | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | 0.025 | 0.025 | 0.0003 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Dissolved Metals (QC Lot: 536516) - continued** | | | | | | | | | | | |
| CG2207851-001 | Anonymous | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.416 µg/L | 0.000437 | 4.97% | 20% | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 181 | 180 | 0.560% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | 0.19 µg/L | 0.00019 | 0.0000004 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00031 | 0.00030 | 0.000010 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.256 | 0.242 | 5.27% | 20% | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.0050 | mg/L | 96.7 | 95.6 | 1.19% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00073 | 0.00069 | 0.00004 | Diff <2x LOR | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00307 | 0.00308 | 0.373% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | 0.0272 | 0.0269 | 0.921% | 20% | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.050 | mg/L | 5.04 | 5.02 | 0.488% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | 132 µg/L | 0.135 | 2.48% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 1.35 | 1.35 | 0.0160% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 7.48 | 7.28 | 2.75% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.277 | 0.282 | 1.93% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 171 | 170 | 0.305% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | 0.000032 | 0.000034 | 0.000002 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00922 | 0.00923 | 0.102% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0228 | 0.0229 | 0.324% | 20% | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 536752)** | | | | | | | | | | | |
| CG2207918-001 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Speciated Metals (QC Lot: 536854)** | | | | | | | | | | | |
| VA22B3168-002 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.00050 | mg/L | 0.00110 | 0.00110 | 0 | Diff <2x LOR | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Physical Tests (QCLot: 536513)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 536514)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Physical Tests (QCLot: 536581)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | <1.0 | ---- |
| **Physical Tests (QCLot: 536583)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Anions and Nutrients (QCLot: 536455)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 536585)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 536586)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | # 0.0083 | B |
| **Anions and Nutrients (QCLot: 536587)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 536588)** | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | <0.020 | ---- |
| **Anions and Nutrients (QCLot: 536589)** | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | <0.50 | ---- |
| **Anions and Nutrients (QCLot: 536590)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Total Metals (QCLot: 536639)** | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | <0.050 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | <0.00010 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 536639) - continued** | | | | | | |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | <0.010 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | <0.050 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | <0.050 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | <0.10 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | <0.050 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | <0.50 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| **Total Metals (QCLot: 536712)** | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 536516)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 536516) - continued** | | | | | | |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 536752)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Speciated Metals (QCLot: 536854)** | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | <0.00050 | ---- |

## *Qualifiers*

| *Qualifier* | *Description* |
|---|---|
| *B* | *Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.* |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 536513)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 89.2 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 536514)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 98.3 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 536581)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 100 | 90.0 | 110 | ---- |
| **Physical Tests (QCLot: 536582)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 99.6 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 536583)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 101 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 536455)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 107 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 536585)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 104 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 536586)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 104 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 536587)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 102 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 536588)** | | | | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | 1 mg/L | 102 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 536589)** | | | | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | 100 mg/L | 102 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 536590)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 105 | 85.0 | 115 | ---- |
| **Total Metals (QCLot: 536639)** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | 2 mg/L | 101 | 80.0 | 120 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | 1 mg/L | 101 | 80.0 | 120 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | 0.25 mg/L | 104 | 80.0 | 120 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | 0.1 mg/L | 102 | 80.0 | 120 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | 1 mg/L | 92.6 | 80.0 | 120 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | 0.1 mg/L | 98.7 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 536639) - continued** | | | | | | | | | |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | 50 mg/L | 99.8 | 80.0 | 120 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | 0.25 mg/L | 97.8 | 80.0 | 120 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | 0.25 mg/L | 99.5 | 80.0 | 120 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | 0.25 mg/L | 98.6 | 80.0 | 120 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | 1 mg/L | 107 | 80.0 | 120 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | 0.5 mg/L | 99.8 | 80.0 | 120 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | 0.25 mg/L | 99.6 | 80.0 | 120 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | 50 mg/L | 99.2 | 80.0 | 120 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | 0.25 mg/L | 98.5 | 80.0 | 120 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | 0.25 mg/L | 99.8 | 80.0 | 120 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | 0.5 mg/L | 99.5 | 80.0 | 120 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | 10 mg/L | 105 | 80.0 | 120 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | 50 mg/L | 100 | 80.0 | 120 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | 10 mg/L | 101 | 80.0 | 120 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | 0.1 mg/L | 96.1 | 80.0 | 120 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | 0.25 mg/L | 106 | 80.0 | 120 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | 50 mg/L | 99.9 | 80.0 | 120 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | 0.5 mg/L | 98.2 | 80.0 | 120 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | 0.25 mg/L | 96.4 | 80.0 | 120 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | 0.005 mg/L | 98.3 | 80.0 | 120 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | 0.5 mg/L | 102 | 80.0 | 120 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | 0.5 mg/L | 98.2 | 80.0 | 120 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | 0.1 mg/L | 98.9 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 536712)** | | | | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | 0.0001 mg/L | 97.7 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 536516)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 105 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 98.3 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 101 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 105 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 98.1 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 94.4 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 536516) - continued** | | | | | | | | | |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 97.5 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 101 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 97.6 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 97.9 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 109 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 105 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 98.0 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 100.0 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 104 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 98.9 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 100 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 108 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 100 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 99.6 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 98.2 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 96.5 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 103 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 95.9 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 99.4 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 105 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 100 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 104 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 99.5 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 95.8 | 80.0 | 120 | ---- |
| **Speciated Metals (QCLot: 536854)** | | | | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | 0.25 mg/L | 99.0 | 90.0 | 110 | ---- |

## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 536455)** | | | | | | | | | | |
| WR2200593-002 | SD_SDH_MH02-18 | ammonia, total (as N) | 7664-41-7 | E298 | 0.107 mg/L | 0.1 mg/L | 107 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 536585)** | | | | | | | | | | |
| WR2200593-001 | SD_SDH-MH02-17 | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 483 mg/L | 500 mg/L | 96.6 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 536586)** | | | | | | | | | | |
| WR2200593-001 | SD_SDH-MH02-17 | nitrate (as N) | 14797-55-8 | E235.NO3-L | 12.2 mg/L | 12.5 mg/L | 97.7 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 536587)** | | | | | | | | | | |
| WR2200593-001 | SD_SDH-MH02-17 | nitrite (as N) | 14797-65-0 | E235.NO2-L | 2.38 mg/L | 2.5 mg/L | 95.1 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 536588)** | | | | | | | | | | |
| WR2200593-001 | SD_SDH-MH02-17 | fluoride | 16984-48-8 | E235.F | 4.84 mg/L | 5 mg/L | 96.9 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 536589)** | | | | | | | | | | |
| WR2200593-001 | SD_SDH-MH02-17 | chloride | 16887-00-6 | E235.Cl | 483 mg/L | 500 mg/L | 96.5 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 536590)** | | | | | | | | | | |
| WR2200593-001 | SD_SDH-MH02-17 | bromide | 24959-67-9 | E235.Br-L | 2.49 mg/L | 2.5 mg/L | 99.6 | 75.0 | 125 | ---- |
| **Total Metals (QCLot: 536639)** | | | | | | | | | | |
| CG2207851-002 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.186 mg/L | 0.2 mg/L | 93.0 | 70.0 | 130 | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.0192 mg/L | 0.02 mg/L | 96.2 | 70.0 | 130 | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.0200 mg/L | 0.02 mg/L | 100 | 70.0 | 130 | ---- |
| | | barium, total | 7440-39-3 | E420 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.0376 mg/L | 0.04 mg/L | 94.0 | 70.0 | 130 | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.00924 mg/L | 0.01 mg/L | 92.4 | 70.0 | 130 | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.088 mg/L | 0.1 mg/L | 87.7 | 70.0 | 130 | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.00386 mg/L | 0.004 mg/L | 96.4 | 70.0 | 130 | ---- |
| | | calcium, total | 7440-70-2 | E420 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.0388 mg/L | 0.04 mg/L | 97.0 | 70.0 | 130 | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.0188 mg/L | 0.02 mg/L | 94.1 | 70.0 | 130 | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.0180 mg/L | 0.02 mg/L | 90.1 | 70.0 | 130 | ---- |
| | | iron, total | 7439-89-6 | E420 | 1.90 mg/L | 2 mg/L | 94.9 | 70.0 | 130 | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.0181 mg/L | 0.02 mg/L | 90.7 | 70.0 | 130 | ---- |
| | | lithium, total | 7439-93-2 | E420 | ND mg/L | 0.1 mg/L | ND | 70.0 | 130 | ---- |
| | | magnesium, total | 7439-95-4 | E420 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *Concentration* | *Target* | *MS* | *Low* | *High* | *Qualifier* |
| **Total Metals (QCLot: 536639) - continued** | | | | | | | | | | |
| CG2207851-002 | Anonymous | manganese, total | 7439-96-5 | E420 | 0.0191 mg/L | 0.02 mg/L | 95.3 | 70.0 | 130 | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.0192 mg/L | 0.02 mg/L | 96.0 | 70.0 | 130 | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.0357 mg/L | 0.04 mg/L | 89.3 | 70.0 | 130 | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 9.97 mg/L | 10 mg/L | 99.7 | 70.0 | 130 | ---- |
| | | potassium, total | 7440-09-7 | E420 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | selenium, total | 7782-49-2 | E420 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | silicon, total | 7440-21-3 | E420 | 8.96 mg/L | 10 mg/L | 89.6 | 70.0 | 130 | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.00369 mg/L | 0.004 mg/L | 92.3 | 70.0 | 130 | ---- |
| | | sodium, total | 7440-23-5 | E420 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, total | 7440-24-6 | E420 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, total | 7704-34-9 | E420 | ND mg/L | 20 mg/L | ND | 70.0 | 130 | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.00365 mg/L | 0.004 mg/L | 91.3 | 70.0 | 130 | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.0186 mg/L | 0.02 mg/L | 93.2 | 70.0 | 130 | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.0376 mg/L | 0.04 mg/L | 93.9 | 70.0 | 130 | ---- |
| | | uranium, total | 7440-61-1 | E420 | ND mg/L | 0.004 mg/L | ND | 70.0 | 130 | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.101 mg/L | 0.1 mg/L | 101 | 70.0 | 130 | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.365 mg/L | 0.4 mg/L | 91.2 | 70.0 | 130 | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.0387 mg/L | 0.04 mg/L | 96.8 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 536712)** | | | | | | | | | | |
| VA22B4243-001 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000929 mg/L | 0.0001 mg/L | 92.9 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 536516)** | | | | | | | | | | |
| CG2207851-002 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.209 mg/L | 0.2 mg/L | 104 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0194 mg/L | 0.02 mg/L | 97.1 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0216 mg/L | 0.02 mg/L | 108 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0361 mg/L | 0.04 mg/L | 90.4 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00875 mg/L | 0.01 mg/L | 87.5 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.088 mg/L | 0.1 mg/L | 88.0 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00384 mg/L | 0.004 mg/L | 96.0 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0382 mg/L | 0.04 mg/L | 95.5 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0181 mg/L | 0.02 mg/L | 90.5 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0178 mg/L | 0.02 mg/L | 89.2 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.79 mg/L | 2 mg/L | 89.6 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0192 mg/L | 0.02 mg/L | 96.0 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | ND mg/L | 0.1 mg/L | ND | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 536516) - continued** | | | | | | | | | | |
| CG2207851-002 | Anonymous | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0200 mg/L | 0.02 mg/L | 100 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0193 mg/L | 0.02 mg/L | 96.7 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0349 mg/L | 0.04 mg/L | 87.3 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 11.1 mg/L | 10 mg/L | 111 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 8.81 mg/L | 10 mg/L | 88.1 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00371 mg/L | 0.004 mg/L | 92.8 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | ND mg/L | 20 mg/L | ND | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00370 mg/L | 0.004 mg/L | 92.4 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0185 mg/L | 0.02 mg/L | 92.4 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0408 mg/L | 0.04 mg/L | 102 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | ND mg/L | 0.004 mg/L | ND | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.100 mg/L | 0.1 mg/L | 100 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.389 mg/L | 0.4 mg/L | 97.3 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0404 mg/L | 0.04 mg/L | 101 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 536752)** | | | | | | | | | | |
| CG2207918-002 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000975 mg/L | 0.0001 mg/L | 97.5 | 70.0 | 130 | ---- |
| **Speciated Metals (QCLot: 536854)** | | | | | | | | | | |
| VA22B4276-001 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.254 mg/L | 0.25 mg/L | 102 | 85.0 | 115 | ---- |

ALS Environmental
www.alsglobal.com

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

**Affix ALS barcode label here**
(lab use only)

COC Number: 15 -



| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Phone: | 250-4278422 |
| | Company address below will appear on the final report |
| Street: | 601 Knightton Road |
| City/Province: | Kimberly, BC |
| Postal Code: | V1A 3E1 |
| Invoice To | Same as Report To |
| | Copy of Invoice with Report |
| Company: | teck metals ltd. |
| Contact: | Wendy Mcbain |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | |
| Quality Control (QC) Report with Report | |
| Select Distribution: | |
| Email 1 or Fax | azheng@ensero.com, slyons@ensero.com |
| Email 2 | wendy.mcbain@teck.com, colin.lynch@teck.com |
| Email 3 | chanson@ensero.com,teckkimb@equisonline.com |
| **Invoice Distribution** | |
| Select Invoice Distribution: | |
| Email 1 or Fax | Michelle.unger@teck.com |
| Email 2 | legacy.ap@teck.com |

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R]

PRIORITY (Business Days): 4 day [P4] / 3 day [P3] / 2 day [P2]

EMERGENCY: 1 Business day [E1] / Same Day, Weekend or Statutory holiday [E0]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Re[quest]

Indicate Filtered (F), Preserved (P) or Filtered and [Preserved (F/P) below]

Environmental Division
Whitehorse
Work Order Reference
WR2200593

Telephone : + 1 867 668 6689

| Project Information | | | Oil and Gas Required Fields (client use) | |
|---|---|---|---|---|
| ALS Account # / Quote #: | Q62635 | | AFE/Cost Center: | PO# |
| Job #: | ECA22YT00199 | Sa dena hes | Major/Minor Code: | Routing Code: |
| PO / AFE: | Teck PO-10289 | | Requisitioner: | |
| LSD: | | | Location: | |
| ALS Lab Work Order # (lab use only) | | | ALS Contact: Can Dang | Sampler: |

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Sample Location (SYS_LOC_CODE) | Date (dd-mmm-yy) | Time (hh:mm) | Field Matrix | Total Metals (low level) + Hg (R) | Dissolved Metals (low level) +Hg (F/P) | pH, SPC, alkalinity, hardness | Anions( Nitrate, Nitrite, Sulphate, Cl, F, Br) (P) | Ammonia (P) | TDS, TSS(low) | Chromium Speciation (P) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SD_SDH-S2_YYYY-MM-DD | SD_SDH-S2 | ~~20-june-22~~ | ~~17:55~~ | WS | R | R | R | R | R | R | R | | | | | 8 |
| | SD_SDH-MH02_2022-06-~~17~~ | SD_SDH-MH02 | ~~17~~-june-22 | 20:20 | WS | | | | | | | | emergency for all | | | | 8 bottles |
| | " "18 | " ~~SD_[illegible]~~ " | 18-june-22 | 13:38 | WS | " | | | | | | | " | | | " | 7 bottles |
| | " "19 | " " | 19-june-22 | 18:55 | WS | " | | | | | | | | | | " | 7 bottles |

E1 - RUSH

| Drinking Water (DW) Samples[1] (client use) | Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) |
|---|---|
| Are samples taken from a Regulated DW System? NO | Rush Analysis - 1 day |
| Are samples for human drinking water use? NO | |

SAMPLE CONDITI[ON]

Frozen ☐
Ice Packs ☑ Ice Cubes ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES: 14

3/8 10L
6/23/2022 1pm

| SHIPMENT RELEASE (client use) | | | INITIAL SHIPMENT RECEPTION (lab use only) | | | FINAL SH[IPMENT RECEPTION] |
|---|---|---|---|---|---|---|
| Released by: Jeff Basarich | Date: June 21, 2022 | Time: 12:10pm | Received by: | Date: June 22, 2022 | Time: 11:50 | Received by: |

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200650** | Page | : 1 of 15 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 04-Jul-2022 13:15 |
| PO | : PO# 10289 | Date Analysis Commenced | : 07-Jul-2022 |
| C-O-C number | : ---- | Issue Date | : 21-Jul-2022 15:34 |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 15 | | |
| No. of samples analysed | : 15 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Anshim Anshim | Lab Assistant | Metals, Burnaby, British Columbia |
| Chau Tran | Analsyt | Inorganics, Burnaby, British Columbia |
| Erin Sanchez | | Metals, Burnaby, British Columbia |
| Hamideh Moradi | Analyst | Metals, Burnaby, British Columbia |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Inorganics, Burnaby, British Columbia |
| Owen Cheng | | Metals, Burnaby, British Columbia |
| Paul Cushing | Team Leader - Organics | Organics, Burnaby, British Columbia |
| Ruby Pham | Lab Assistant | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| - | No Unit |
| µg/L | micrograms per litre |
| µS/cm | Microsiemens per centimetre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

***Sample SD_ MW13-04 D-METAL Insufficient Sample. Sub sample taken for the analysis.***

## Sample Comments

| *Sample* | *Client Id* | *Comment* |
|---|---|---|
| WR2200650-009 | SD_MW14-01_2022-06-26 | ***Samples WR2200650-9,10,12,14: Water sample for VOC analysis contained > 5% headspace. Results may be biased low.*** |
| WR2200650-010 | SD_MW14-02_2022-06-26 | ***Samples WR2200650-9,10,12,14: Water sample for VOC analysis contained > 5% headspace. Results may be biased low.*** |
| WR2200650-012 | SD_MW14-04-_2022-06-26 | ***Samples WR2200650-9,10,12,14: Water sample for VOC analysis contained > 5% headspace. Results may be biased low.*** |
| WR2200650-014 | SD_MW-FD_2022-06-26 | ***Samples WR2200650-9,10,12,14: Water sample for VOC analysis contained > 5% headspace. Results may be biased low.*** |

## Qualifiers

| *Qualifier* | *Description* |
|---|---|

| | |
|---|---|
| *DLDS* | *Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.* |
| *RRV* | *Reported result verified by repeat analysis.* |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-01_ 2022-06-26 | SD_MW13-04_ 2022-06-26 | SD_MW13-05_ 2022-06-26 | SD_MW13-06_ 2022-06-26 | SD_MW13-07_ 2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 29-Jun-2022 10:00 | 28-Jun-2022 15:00 | 29-Jun-2022 09:15 | 29-Jun-2022 13:30 | 28-Jun-2022 16:00 |
| | | | | | WR2200650-001 | WR2200650-002 | WR2200650-003 | WR2200650-004 | WR2200650-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 154 | 121 | 125 | 187 | 226 |
| conductivity | ---- | E100 | 2.0 | µS/cm | 312 | 235 | 358 | 794 | 451 |
| hardness (as CaCO3), dissolved | ---- | EC100 | 0.60 | mg/L | 158 | 124 | 171 | 406 | 231 |
| pH | ---- | E108 | 0.10 | pH units | 8.33 | 8.27 | 8.25 | 8.20 | 8.30 |
| **Anions and Nutrients** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | 0.0112 | 0.0106 | 0.0172 | 0.152 |
| bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.250 DLDS | <0.050 |
| chloride | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | <0.50 | <2.50 DLDS | <0.50 |
| fluoride | 16984-48-8 | E235.F | 0.020 | mg/L | 0.440 | 0.059 | 0.061 | 0.486 | 0.293 |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.290 | 0.217 | 1.63 | <0.0250 DLDS | <0.0050 |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0050 DLDS | 0.0015 |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 13.1 | 4.00 | 55.4 | 253 | 30.9 |
| **Dissolved Metals** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0036 | 0.0046 | 0.0034 | 0.0022 | 0.0040 |
| antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00021 | 0.00027 | 0.00032 | 0.00015 | <0.00010 |
| arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00071 | 0.00099 | 0.00064 | 0.0447 | 0.00156 |
| barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0180 | 0.0300 | 0.0578 | 0.0234 | 0.0394 |
| beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | 0.012 | 0.022 |
| cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.000273 | 0.000411 | 0.0000596 | 0.0000590 | <0.0000050 |
| calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 55.8 | 45.4 | 62.4 | 144 | 66.2 |
| chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00238 | 0.00010 |
| copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00025 | 0.00032 | 0.00067 | <0.00020 | 0.00023 |
| iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | 0.507 | 0.675 |
| lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000928 | 0.000860 | 0.000271 | 0.000399 | 0.000096 |
| lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0027 | 0.0024 | 0.0017 | 0.0084 | 0.0097 |
| magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 4.50 | 2.64 | 3.73 | 11.3 | 16.0 |
| manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00034 | 0.00021 | 0.00054 | 0.311 | 0.174 |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-01_ 2022-06-26 | SD_MW13-04_ 2022-06-26 | SD_MW13-05_ 2022-06-26 | SD_MW13-06_ 2022-06-26 | SD_MW13-07_ 2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 29-Jun-2022 10:00 | 28-Jun-2022 15:00 | 29-Jun-2022 09:15 | 29-Jun-2022 13:30 | 28-Jun-2022 16:00 |
| | | | | | WR2200650-001 | WR2200650-002 | WR2200650-003 | WR2200650-004 | WR2200650-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00157 | 0.000649 | 0.000774 | 0.0340 | 0.00302 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.0290 | <0.00050 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | 0.146 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.627 | 0.408 | 0.626 | 2.18 | 3.00 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 1.21 | 1.28 | 2.56 | 0.066 | <0.050 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 4.31 | 3.95 | 4.89 | 16.4 | 8.32 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 0.962 | 0.573 | 0.888 | 5.24 | 4.72 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.230 | 0.109 | 0.191 | 0.518 | 0.526 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 5.01 | 1.59 | 19.8 | 93.5 | 11.7 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | 0.000013 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00186 | 0.000570 | 0.000856 | 0.0123 | 0.00682 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0094 | 0.0068 | 0.0023 | 0.107 | 0.0015 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Laboratory | Field | Field | Field |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| **benzene** | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | ---- | <0.50 |
| **ethylbenzene** | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | ---- | <0.50 |
| **methyl-tert-butyl ether [MTBE]** | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | ---- | <0.50 |
| **styrene** | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | ---- | <0.50 |
| **toluene** | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | ---- | <0.50 |
| **xylene, m+p-** | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | <0.40 | ---- | <0.40 |
| **xylene, o-** | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | <0.30 | ---- | <0.30 |
| **xylenes, total** | 1330-20-7 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | ---- | <0.50 |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| **bromofluorobenzene, 4-** | 460-00-4 | E611A | 1.0 | % | 88.2 | 86.9 | 84.8 | ---- | 86.4 |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-01_ 2022-06-26 | SD_MW13-04_ 2022-06-26 | SD_MW13-05_ 2022-06-26 | SD_MW13-06_ 2022-06-26 | SD_MW13-07_ 2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Jun-2022 10:00 | 28-Jun-2022 15:00 | 29-Jun-2022 09:15 | 29-Jun-2022 13:30 | 28-Jun-2022 16:00 |
| | | | | | WR2200650-001 | WR2200650-002 | WR2200650-003 | WR2200650-004 | WR2200650-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| **difluorobenzene, 1,4-** | 540-36-3 | E611A | 1.0 | % | 99.5 | 98.0 | 98.4 | ---- | 99.5 |
| **Hydrocarbons** | | | | | | | | | |
| **EPH (C10-C19)** | ---- | E601A | 250 | µg/L | <250 | <250 | <250 | ---- | <250 |
| **EPH (C19-C32)** | ---- | E601A | 250 | µg/L | <250 | <250 | <250 | ---- | 1180 |
| **VHw (C6-C10)** | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | <100 | ---- | <100 |
| **HEPHw** | ---- | EC600A | 250 | µg/L | <250 | <250 | <250 | ---- | 1180 |
| **LEPHw** | ---- | EC600A | 250 | µg/L | <250 | <250 | <250 | ---- | <250 |
| **VPHw** | ---- | EC580A | 100 | µg/L | <100 | <100 | <100 | ---- | <100 |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| **bromobenzotrifluoride, 2- (EPH surr)** | 392-83-6 | E601A | 1.0 | % | 84.0 | 82.0 | 90.1 | ---- | 91.1 |
| **dichlorotoluene, 3,4-** | 97-75-0 | E581.VH+F1 | 1.0 | % | 108 | 96.5 | 104 | ---- | 90.1 |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **acenaphthene** | 83-32-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **acenaphthylene** | 208-96-8 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **acridine** | 260-94-6 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **anthracene** | 120-12-7 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **benz(a)anthracene** | 56-55-3 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **benzo(a)pyrene** | 50-32-8 | E641A | 0.0050 | µg/L | <0.0050 | <0.0050 | <0.0050 | ---- | <0.0050 |
| **benzo(b+j)fluoranthene** | n/a | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **benzo(b+j+k)fluoranthene** | n/a | E641A | 0.015 | µg/L | <0.015 | <0.015 | <0.015 | ---- | <0.015 |
| **benzo(g,h,i)perylene** | 191-24-2 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **benzo(k)fluoranthene** | 207-08-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **chrysene** | 218-01-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **dibenz(a,h)anthracene** | 53-70-3 | E641A | 0.0050 | µg/L | <0.0050 | <0.0050 | <0.0050 | ---- | <0.0050 |
| **fluoranthene** | 206-44-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **fluorene** | 86-73-7 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **indeno(1,2,3-c,d)pyrene** | 193-39-5 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **methylnaphthalene, 1-** | 90-12-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **methylnaphthalene, 2-** | 91-57-6 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **naphthalene** | 91-20-3 | E641A | 0.050 | µg/L | <0.050 | <0.050 | <0.050 | ---- | <0.050 |
| **phenanthrene** | 85-01-8 | E641A | 0.020 | µg/L | <0.020 | <0.020 | <0.020 | ---- | <0.020 |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| | | | | Client sample ID | SD_MW13-01_ 2022-06-26 | SD_MW13-04_ 2022-06-26 | SD_MW13-05_ 2022-06-26 | SD_MW13-06_ 2022-06-26 | SD_MW13-07_ 2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Jun-2022 10:00 | 28-Jun-2022 15:00 | 29-Jun-2022 09:15 | 29-Jun-2022 13:30 | 28-Jun-2022 16:00 |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | **WR2200650-001** | **WR2200650-002** | **WR2200650-003** | **WR2200650-004** | **WR2200650-005** |
| | | | | | Result | Result | Result | Result | Result |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **pyrene** | 129-00-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **quinoline** | 91-22-5 | E641A | 0.050 | µg/L | <0.050 | <0.050 | <0.050 | ---- | <0.050 |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| **chrysene-d12** | 1719-03-5 | E641A | 0.1 | % | 92.6 | 110 | 121 | ---- | 106 |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | 103 | 94.1 | 107 | ---- | 96.4 |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | 113 | 103 | 117 | ---- | 104 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-08_ 2022-06-26 | SD_MW13-10_ 2022-06-26 | SD_MW13-13_ 2022-06-26 | SD_MW14-01_ 2022-06-26 | SD_MW14-02_ 2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Jun-2022 14:45 | 29-Jun-2022 16:00 | 29-Jun-2022 11:00 | 30-Jun-2022 11:00 | 30-Jun-2022 10:30 |
| | | | | | WR2200650-006 | WR2200650-007 | WR2200650-008 | WR2200650-009 | WR2200650-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 212 | 206 | 80.1 | 240 | 200 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 393 | 429 | 199 | 447 | 375 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 206 | 229 | 94.2 | 264 | 165 |
| **pH** | ---- | E108 | 0.10 | pH units | 8.09 | 8.10 | 8.09 | 8.10 | 8.28 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0207 | 0.0151 | 0.0058 | 0.0138 | 0.0342 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | 0.063 | 0.049 | 0.105 | 0.066 | 0.077 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.387 | 0.516 | 0.137 | 0.300 | 0.173 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 7.76 | 28.6 | 20.1 | 6.75 | 5.62 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0070 | 0.0029 | 0.0110 | 0.150 | 0.0076 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00017 | 0.00012 | 0.00012 | 0.00018 | 0.00032 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00048 | 0.00109 | 0.00071 | 0.00062 | 0.00078 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.100 | 0.0118 | 0.0129 | 0.255 | 0.177 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000655 | 0.0000220 | 0.00207 | 0.0000709 | 0.0000183 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 71.3 | 77.8 | 35.4 | 84.2 | 52.9 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.00093 | 0.00107 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00022 | <0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00083 | 0.00035 | 0.00157 | 0.00066 | 0.00626 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | 0.013 | <0.010 | 0.023 | 0.238 | <0.010 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000502 | 0.000266 | 0.00278 | 0.000846 | 0.000293 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0011 | 0.0015 | <0.0010 | 0.0016 | 0.0012 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 6.86 | 8.44 | 1.41 | 13.0 | 7.96 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00264 | 0.00041 | 0.00231 | 0.0146 | 0.00053 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-08_ 2022-06-26 | SD_MW13-10_ 2022-06-26 | SD_MW13-13_ 2022-06-26 | SD_MW14-01_ 2022-06-26 | SD_MW14-02_ 2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Jun-2022 14:45 | 29-Jun-2022 16:00 | 29-Jun-2022 11:00 | 30-Jun-2022 11:00 | 30-Jun-2022 10:30 |
| | | | | | WR2200650-006 | WR2200650-007 | WR2200650-008 | WR2200650-009 | WR2200650-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00144 | 0.00168 | 0.000210 | 0.00166 | 0.00331 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00058 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.710 | 1.07 | 0.580 | 0.793 | 1.01 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.573 | 1.50 | 0.626 | 0.735 | 0.293 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 3.87 | 4.50 | 2.02 | 5.95 | 4.81 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 1.90 | 1.96 | 0.521 | 2.36 | 19.8 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.235 | 0.356 | 0.0659 | 0.287 | 0.168 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 3.02 | 11.3 | 7.98 | 2.95 | 2.54 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0.00030 | 0.00497 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00126 | 0.00265 | 0.000233 | 0.00138 | 0.00104 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.00065 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0068 | 0.0019 | 0.0617 | 0.0042 | 0.0020 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| **benzene** | 71-43-2 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| **ethylbenzene** | 100-41-4 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| **methyl-tert-butyl ether [MTBE]** | 1634-04-4 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| **styrene** | 100-42-5 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| **toluene** | 108-88-3 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| **xylene, m+p-** | 179601-23-1 | E611A | 0.40 | µg/L | ---- | <0.40 | ---- | <0.40 | <0.40 |
| **xylene, o-** | 95-47-6 | E611A | 0.30 | µg/L | ---- | <0.30 | ---- | <0.30 | <0.30 |
| **xylenes, total** | 1330-20-7 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | <0.50 |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| **bromofluorobenzene, 4-** | 460-00-4 | E611A | 1.0 | % | ---- | 85.8 | ---- | 87.3 | 89.5 |
| **difluorobenzene, 1,4-** | 540-36-3 | E611A | 1.0 | % | ---- | 98.0 | ---- | 99.0 | 96.6 |

## Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-08_ 2022-06-26 | SD_MW13-10_ 2022-06-26 | SD_MW13-13_ 2022-06-26 | SD_MW14-01_ 2022-06-26 | SD_MW14-02_ 2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Jun-2022 14:45 | 29-Jun-2022 16:00 | 29-Jun-2022 11:00 | 30-Jun-2022 11:00 | 30-Jun-2022 10:30 |
| | | | | | WR2200650-006 | WR2200650-007 | WR2200650-008 | WR2200650-009 | WR2200650-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Hydrocarbons** | | | | | | | | | |
| **EPH (C10-C19)** | ---- | E601A | 250 | µg/L | ---- | <250 | ---- | <250 | <250 |
| **EPH (C19-C32)** | ---- | E601A | 250 | µg/L | ---- | <250 | ---- | <250 | <250 |
| **VHw (C6-C10)** | ---- | E581.VH+F1 | 100 | µg/L | ---- | <100 | ---- | <100 | <100 |
| **HEPHw** | ---- | EC600A | 250 | µg/L | ---- | <250 | ---- | <250 | <250 |
| **LEPHw** | ---- | EC600A | 250 | µg/L | ---- | <250 | ---- | <250 | <250 |
| **VPHw** | ---- | EC580A | 100 | µg/L | ---- | <100 | ---- | <100 | <100 |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| **bromobenzotrifluoride, 2- (EPH surr)** | 392-83-6 | E601A | 1.0 | % | ---- | 89.8 | ---- | 84.8 | 89.1 |
| **dichlorotoluene, 3,4-** | 97-75-0 | E581.VH+F1 | 1.0 | % | ---- | 102 | ---- | 111 | 112 |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **acenaphthene** | 83-32-9 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **acenaphthylene** | 208-96-8 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **acridine** | 260-94-6 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **anthracene** | 120-12-7 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **benz(a)anthracene** | 56-55-3 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **benzo(a)pyrene** | 50-32-8 | E641A | 0.0050 | µg/L | ---- | <0.0050 | ---- | <0.0050 | <0.0050 |
| **benzo(b+j)fluoranthene** | n/a | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **benzo(b+j+k)fluoranthene** | n/a | E641A | 0.015 | µg/L | ---- | <0.015 | ---- | <0.015 | <0.015 |
| **benzo(g,h,i)perylene** | 191-24-2 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **benzo(k)fluoranthene** | 207-08-9 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **chrysene** | 218-01-9 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **dibenz(a,h)anthracene** | 53-70-3 | E641A | 0.0050 | µg/L | ---- | <0.0050 | ---- | <0.0050 | <0.0050 |
| **fluoranthene** | 206-44-0 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **fluorene** | 86-73-7 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **indeno(1,2,3-c,d)pyrene** | 193-39-5 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **methylnaphthalene, 1-** | 90-12-0 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **methylnaphthalene, 2-** | 91-57-6 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **naphthalene** | 91-20-3 | E641A | 0.050 | µg/L | ---- | <0.050 | ---- | <0.050 | <0.050 |
| **phenanthrene** | 85-01-8 | E641A | 0.020 | µg/L | ---- | <0.020 | ---- | <0.020 | <0.020 |
| **pyrene** | 129-00-0 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | <0.010 |
| **quinoline** | 91-22-5 | E641A | 0.050 | µg/L | ---- | <0.050 | ---- | <0.050 | <0.050 |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| | | | | Client sample ID | SD_MW13-08_ 2022-06-26 | SD_MW13-10_ 2022-06-26 | SD_MW13-13_ 2022-06-26 | SD_MW14-01_ 2022-06-26 | SD_MW14-02_ 2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Jun-2022 14:45 | 29-Jun-2022 16:00 | 29-Jun-2022 11:00 | 30-Jun-2022 11:00 | 30-Jun-2022 10:30 |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | **WR2200650-006** | **WR2200650-007** | **WR2200650-008** | **WR2200650-009** | **WR2200650-010** |
| | | | | | Result | Result | Result | Result | Result |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| **chrysene-d12** | 1719-03-5 | E641A | 0.1 | % | ---- | 96.1 | ---- | 78.6 | 91.2 |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | ---- | 109 | ---- | 97.0 | 105 |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | ---- | 113 | ---- | 106 | 102 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW14-04-_2022-06-26 | SD_MW-FB_2022-06-26 | SD_MW-FD_2022-06-26 | SD_MW-FD3_2022-06-26 | SD_MW-FD2_2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 30-Jun-2022 09:50 | 28-Jun-2022 | 30-Jun-2022 | 29-Jun-2022 | 29-Jun-2022 |
| | | | | | WR2200650-012 | WR2200650-013 | WR2200650-014 | WR2200650-015 | WR2200650-016 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 174 | <1.0 | 160 | 79.5 | 186 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 312 | <2.0 | 303 | 203 | 804 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 145 | <0.60 | 141 | 96.9 | 403 |
| **pH** | ---- | E108 | 0.10 | pH units | 8.33 | 5.06 | 8.34 | 8.11 | 8.32 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0162 | 0.0123 RRV | 0.0154 | 0.0056 | 0.0142 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.250 DLDS |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | <0.50 | <0.50 | <2.50 DLDS |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | 0.038 | <0.020 | 0.045 | 0.111 | 0.494 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.161 | <0.0050 | 0.156 | 0.142 | <0.0250 DLDS |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0050 DLDS |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 3.32 | <0.30 | 2.91 | 21.2 | 258 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0084 | <0.0010 | 0.0070 | 0.0116 | 0.0022 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00021 | <0.00010 | 0.00019 | 0.00011 | 0.00015 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00045 | <0.00010 | 0.00046 | 0.00049 | 0.0441 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0827 | 0.00013 RRV | 0.0914 | 0.0128 | 0.0240 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | 0.012 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000320 | <0.0000050 | 0.0000219 | 0.00208 | 0.0000636 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 49.1 | 0.062 RRV | 47.7 | 36.4 | 143 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | 0.00147 | <0.00050 | 0.00140 | <0.00050 | <0.00050 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00242 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00131 | <0.00020 | 0.00131 | 0.00086 | 0.00026 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | 0.016 | 0.498 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.00124 | 0.000196 RRV | 0.000093 | 0.00285 | 0.000821 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0013 | <0.0010 | 0.0012 | <0.0010 | 0.0083 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 5.37 | <0.100 | 5.37 | 1.45 | 11.2 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00076 | 0.00013 RRV | 0.00055 | 0.00077 | 0.309 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW14-04-_2022-06-26 | SD_MW-FB_2022-06-26 | SD_MW-FD_2022-06-26 | SD_MW-FD3_2022-06-26 | SD_MW-FD2_2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 30-Jun-2022 09:50 | 28-Jun-2022 | 30-Jun-2022 | 29-Jun-2022 | 29-Jun-2022 |
| | | | | | WR2200650-012 | WR2200650-013 | WR2200650-014 | WR2200650-015 | WR2200650-016 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00149 | 0.000088 RRV | 0.00147 | 0.000200 | 0.0346 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.0297 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | 0.175 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.895 | <0.100 | 0.704 | 0.528 | 2.25 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.402 | <0.050 | 0.426 | 0.552 | 0.052 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 4.18 | <0.050 | 4.12 | 2.00 | 16.1 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 3.93 | 0.114 RRV | 3.79 | 0.498 | 5.28 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.203 | <0.00020 | 0.194 | 0.0679 | 0.521 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 1.14 | <0.50 | 1.37 | 7.67 | 93.3 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000013 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | 0.00035 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000463 | <0.000010 | 0.000461 | 0.000226 | 0.0122 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0031 | <0.0010 | 0.0024 | 0.0614 | 0.108 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| **benzene** | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | ---- | ---- |
| **ethylbenzene** | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | ---- | ---- |
| **methyl-tert-butyl ether [MTBE]** | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | ---- | ---- |
| **styrene** | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | ---- | ---- |
| **toluene** | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | 0.72 | <0.50 | ---- | ---- |
| **xylene, m+p-** | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | <0.40 | ---- | ---- |
| **xylene, o-** | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | <0.30 | ---- | ---- |
| **xylenes, total** | 1330-20-7 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | ---- | ---- |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| **bromofluorobenzene, 4-** | 460-00-4 | E611A | 1.0 | % | 86.3 | 87.3 | 81.8 | ---- | ---- |
| **difluorobenzene, 1,4-** | 540-36-3 | E611A | 1.0 | % | 96.3 | 98.3 | 97.3 | ---- | ---- |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| | | | | Client sample ID | SD_MW14-04-_2022-06-26 | SD_MW-FB_2022-06-26 | SD_MW-FD_2022-06-26 | SD_MW-FD3_2022-06-26 | SD_MW-FD2_2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 30-Jun-2022 09:50 | 28-Jun-2022 | 30-Jun-2022 | 29-Jun-2022 | 29-Jun-2022 |
| Analyte | CAS Number | Method | LOR | Unit | WR2200650-012 | WR2200650-013 | WR2200650-014 | WR2200650-015 | WR2200650-016 |
| | | | | | Result | Result | Result | Result | Result |
| **Hydrocarbons** | | | | | | | | | |
| **EPH (C10-C19)** | ---- | E601A | 250 | µg/L | <250 | <250 | <250 | ---- | ---- |
| **EPH (C19-C32)** | ---- | E601A | 250 | µg/L | <250 | <250 | <250 | ---- | ---- |
| **VHw (C6-C10)** | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | <100 | ---- | ---- |
| **HEPHw** | ---- | EC600A | 250 | µg/L | <250 | <250 | <250 | ---- | ---- |
| **LEPHw** | ---- | EC600A | 250 | µg/L | <250 | <250 | <250 | ---- | ---- |
| **VPHw** | ---- | EC580A | 100 | µg/L | <100 | <100 | <100 | ---- | ---- |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| **bromobenzotrifluoride, 2- (EPH surr)** | 392-83-6 | E601A | 1.0 | % | 80.6 | 87.3 | 83.5 | ---- | ---- |
| **dichlorotoluene, 3,4-** | 97-75-0 | E581.VH+F1 | 1.0 | % | 79.1 | 104 | 98.2 | ---- | ---- |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **acenaphthene** | 83-32-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **acenaphthylene** | 208-96-8 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **acridine** | 260-94-6 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **anthracene** | 120-12-7 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **benz(a)anthracene** | 56-55-3 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **benzo(a)pyrene** | 50-32-8 | E641A | 0.0050 | µg/L | <0.0050 | <0.0050 | <0.0050 | ---- | ---- |
| **benzo(b+j)fluoranthene** | n/a | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **benzo(b+j+k)fluoranthene** | n/a | E641A | 0.015 | µg/L | <0.015 | <0.015 | <0.015 | ---- | ---- |
| **benzo(g,h,i)perylene** | 191-24-2 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **benzo(k)fluoranthene** | 207-08-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **chrysene** | 218-01-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **dibenz(a,h)anthracene** | 53-70-3 | E641A | 0.0050 | µg/L | <0.0050 | <0.0050 | <0.0050 | ---- | ---- |
| **fluoranthene** | 206-44-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **fluorene** | 86-73-7 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **indeno(1,2,3-c,d)pyrene** | 193-39-5 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **methylnaphthalene, 1-** | 90-12-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **methylnaphthalene, 2-** | 91-57-6 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **naphthalene** | 91-20-3 | E641A | 0.050 | µg/L | <0.050 | <0.050 | <0.050 | ---- | ---- |
| **phenanthrene** | 85-01-8 | E641A | 0.020 | µg/L | <0.020 | <0.020 | <0.020 | ---- | ---- |
| **pyrene** | 129-00-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **quinoline** | 91-22-5 | E641A | 0.050 | µg/L | <0.050 | <0.050 | <0.050 | ---- | ---- |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| | | | | | Client sample ID | SD_MW14-04-_2022-06-26 | SD_MW-FB_2022-06-26 | SD_MW-FD_2022-06-26 | SD_MW-FD3_2022-06-26 | SD_MW-FD2_2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 30-Jun-2022 09:50 | 28-Jun-2022 | 30-Jun-2022 | 29-Jun-2022 | 29-Jun-2022 |
| Analyte | CAS Number | Method | LOR | Unit | | WR2200650-012 | WR2200650-013 | WR2200650-014 | WR2200650-015 | WR2200650-016 |
| | | | | | | Result | Result | Result | Result | Result |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | | |
| **chrysene-d12** | 1719-03-5 | E641A | 0.1 | % | | 90.5 | 109 | 86.1 | ---- | ---- |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | | 105 | 90.8 | 102 | ---- | ---- |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | | 104 | 103 | 110 | ---- | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| Work Order | : **WR2200650** | Page | : 1 of 32 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 04-Jul-2022 13:15 |
| PO | : PO# 10289 | Issue Date | : 21-Jul-2022 15:35 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 15 | | |
| No. of samples analysed | : 15 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**
**CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.**
**DQO: Data Quality Objective.**
**LOR: Limit of Reporting (detection limit).**
**RPD: Relative Percent Difference.**

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW14-01_2022-06-26 | E298 | 30-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 14-Jul-2022 | 28 days | 14 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW14-02_2022-06-26 | E298 | 30-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 14-Jul-2022 | 28 days | 14 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW14-04-_2022-06-26 | E298 | 30-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 14-Jul-2022 | 28 days | 14 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-01_2022-06-26 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 14-Jul-2022 | 28 days | 15 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-05_2022-06-26 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 14-Jul-2022 | 28 days | 15 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-06_2022-06-26 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 14-Jul-2022 | 28 days | 15 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-08_2022-06-26 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 14-Jul-2022 | 28 days | 15 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* Container / Client Sample ID(s) | *Method* | *Sampling Date* | *Extraction / Preparation* Preparation Date | Holding Times Rec | Holding Times Actual | Eval | *Analysis* Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-10_2022-06-26 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 14-Jul-2022 | 28 days | 15 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-13_2022-06-26 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 14-Jul-2022 | 28 days | 15 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-04_2022-06-26 | E298 | 28-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 14-Jul-2022 | 28 days | 16 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-07_2022-06-26 | E298 | 28-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 14-Jul-2022 | 28 days | 16 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-FD_2022-06-26 | E298 | 30-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 20 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-FD2_2022-06-26 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 21 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-FD3_2022-06-26 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 21 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-FB_2022-06-26 | E298 | 28-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 22 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-06-26 | E235.Br-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-06-26 | E235.Br-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-04-_2022-06-26 | E235.Br-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD_2022-06-26 | E235.Br-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-06-26 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-05_2022-06-26 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-06-26 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-06-26 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-06-26 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-13_2022-06-26 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-06-26 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD3_2022-06-26 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-06-26 | E235.Br-L | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-06-26 | E235.Br-L | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-06-26 | E235.Br-L | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-06-26 | E235.Cl | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-06-26 | E235.Cl | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW14-04-_2022-06-26 | E235.Cl | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW-FD_2022-06-26 | E235.Cl | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-01_2022-06-26 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-05_2022-06-26 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-06_2022-06-26 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-08_2022-06-26 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-10_2022-06-26 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-13_2022-06-26 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD2_2022-06-26 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD3_2022-06-26 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-04_2022-06-26 | E235.Cl | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-07_2022-06-26 | E235.Cl | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FB_2022-06-26 | E235.Cl | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-01_2022-06-26 | E235.F | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-02_2022-06-26 | E235.F | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-04-_2022-06-26 | E235.F | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD_2022-06-26 | E235.F | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-01_2022-06-26 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-05_2022-06-26 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-06_2022-06-26 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-08_2022-06-26 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-10_2022-06-26 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-13_2022-06-26 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD2_2022-06-26 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD3_2022-06-26 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-04_2022-06-26 | E235.F | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-07_2022-06-26 | E235.F | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FB_2022-06-26 | E235.F | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-01_2022-06-26 | E235.NO3-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 7 days | ×<br>EHTR |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-06-26 | E235.NO3-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 7 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-04-_2022-06-26 | E235.NO3-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 7 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD_2022-06-26 | E235.NO3-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 7 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-06-26 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-05_2022-06-26 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-06-26 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-06-26 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-06-26 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-13_2022-06-26 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-06-26 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD3_2022-06-26 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-06-26 | E235.NO3-L | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-06-26 | E235.NO3-L | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-06-26 | E235.NO3-L | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-06-26 | E235.NO2-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 7 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-06-26 | E235.NO2-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 7 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-04-_2022-06-26 | E235.NO2-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 7 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD_2022-06-26 | E235.NO2-L | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 7 days | × EHTR |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-01_2022-06-26 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-05_2022-06-26 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-06_2022-06-26 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-08_2022-06-26 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-10_2022-06-26 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-13_2022-06-26 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD2_2022-06-26 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD3_2022-06-26 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-04_2022-06-26 | E235.NO2-L | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 9 days | × EHTR |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-06-26 | E235.NO2-L | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-06-26 | E235.NO2-L | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-06-26 | E235.SO4 | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-06-26 | E235.SO4 | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW14-04-_2022-06-26 | E235.SO4 | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW-FD_2022-06-26 | E235.SO4 | 30-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-06-26 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW13-05_2022-06-26 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-06-26 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-08_2022-06-26 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-10_2022-06-26 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-13_2022-06-26 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD2_2022-06-26 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD3_2022-06-26 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-04_2022-06-26 | E235.SO4 | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-07_2022-06-26 | E235.SO4 | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FB_2022-06-26 | E235.SO4 | 28-Jun-2022 | ---- | ---- | ---- | | 07-Jul-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW13-01_2022-06-26 | E509 | 29-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-05_2022-06-26 | E509 | 29-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-06_2022-06-26 | E509 | 29-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-08_2022-06-26 | E509 | 29-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-10_2022-06-26 | E509 | 29-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-13_2022-06-26 | E509 | 29-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW-FD2_2022-06-26 | E509 | 29-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW-FD3_2022-06-26 | E509 | 29-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-04_2022-06-26 | E509 | 28-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 11 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-07_2022-06-26 | E509 | 28-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 11 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* | *Method* | *Sampling Date* | *Extraction / Preparation* | | | | *Analysis* | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Container / Client Sample ID(s)** | | | *Preparation Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* | *Analysis Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW-FB_2022-06-26 | E509 | 28-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 11 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW14-01_2022-06-26 | E509 | 30-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW14-02_2022-06-26 | E509 | 30-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW14-04-_2022-06-26 | E509 | 30-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW-FD_2022-06-26 | E509 | 30-Jun-2022 | 09-Jul-2022 | ---- | ---- | | 09-Jul-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW13-01_2022-06-26 | E421 | 29-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW13-05_2022-06-26 | E421 | 29-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW13-06_2022-06-26 | E421 | 29-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW13-08_2022-06-26 | E421 | 29-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 10 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW13-10_2022-06-26 | E421 | 29-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW13-13_2022-06-26 | E421 | 29-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW-FD2_2022-06-26 | E421 | 29-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW-FD3_2022-06-26 | E421 | 29-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW13-07_2022-06-26 | E421 | 28-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 11 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW-FB_2022-06-26 | E421 | 28-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 11 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW13-04_2022-06-26 | E421 | 28-Jun-2022 | 10-Jul-2022 | ---- | ---- | | 11-Jul-2022 | 180 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW14-01_2022-06-26 | E421 | 30-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW14-02_2022-06-26 | E421 | 30-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW14-04-_2022-06-26 | E421 | 30-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW-FD_2022-06-26 | E421 | 30-Jun-2022 | 08-Jul-2022 | ---- | ---- | | 08-Jul-2022 | 180 days | 9 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW13-05_2022-06-26 | E601A | 29-Jun-2022 | 10-Jul-2022 | 14 days | 11 days | ✓ | 13-Jul-2022 | 40 days | 3 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW14-01_2022-06-26 | E601A | 30-Jun-2022 | 12-Jul-2022 | 14 days | 12 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW14-02_2022-06-26 | E601A | 30-Jun-2022 | 12-Jul-2022 | 14 days | 12 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW14-04-_2022-06-26 | E601A | 30-Jun-2022 | 12-Jul-2022 | 14 days | 12 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW-FD_2022-06-26 | E601A | 30-Jun-2022 | 12-Jul-2022 | 14 days | 12 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW13-04_2022-06-26 | E601A | 28-Jun-2022 | 10-Jul-2022 | 14 days | 12 days | ✓ | 13-Jul-2022 | 40 days | 3 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW13-07_2022-06-26 | E601A | 28-Jun-2022 | 10-Jul-2022 | 14 days | 12 days | ✓ | 13-Jul-2022 | 40 days | 3 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FB_2022-06-26 | E601A | 28-Jun-2022 | 10-Jul-2022 | 14 days | 12 days | ✓ | 13-Jul-2022 | 40 days | 3 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-01_2022-06-26 | E601A | 29-Jun-2022 | 12-Jul-2022 | 14 days | 13 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-10_2022-06-26 | E601A | 29-Jun-2022 | 12-Jul-2022 | 14 days | 13 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-04_2022-06-26 | E581.VH+F1 | 28-Jun-2022 | 11-Jul-2022 | ---- | ---- | | 12-Jul-2022 | 14 days | 13 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-07_2022-06-26 | E581.VH+F1 | 28-Jun-2022 | 11-Jul-2022 | ---- | ---- | | 12-Jul-2022 | 14 days | 13 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-10_2022-06-26 | E581.VH+F1 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 13 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-01_2022-06-26 | E581.VH+F1 | 30-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 13 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-02_2022-06-26 | E581.VH+F1 | 30-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 13 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-04-_2022-06-26 | E581.VH+F1 | 30-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 13 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FB_2022-06-26 | E581.VH+F1 | 28-Jun-2022 | 11-Jul-2022 | ---- | ---- | | 12-Jul-2022 | 14 days | 13 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FD_2022-06-26 | E581.VH+F1 | 30-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 13 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-01_2022-06-26 | E581.VH+F1 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 14 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-05_2022-06-26 | E581.VH+F1 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 14 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-06-26 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 10 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-05_2022-06-26 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 10 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-06-26 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 10 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-06-26 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 10 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-06-26 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 10 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-13_2022-06-26 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 10 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-06-26 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 10 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-FD3_2022-06-26 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 10 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-06-26 | E290 | 28-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 11 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-06-26 | E290 | 28-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 11 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-06-26 | E290 | 28-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 11 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-06-26 | E290 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 9 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-06-26 | E290 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 9 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW14-04-_2022-06-26 | E290 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW-FD_2022-06-26 | E290 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 14 days | 9 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW13-01_2022-06-26 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW13-05_2022-06-26 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW13-06_2022-06-26 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW13-08_2022-06-26 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW13-10_2022-06-26 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW13-13_2022-06-26 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW-FD2_2022-06-26 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW-FD3_2022-06-26 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 10 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-06-26 | E100 | 28-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 11 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-06-26 | E100 | 28-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 11 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-06-26 | E100 | 28-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 11 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-06-26 | E100 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 9 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-06-26 | E100 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 9 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW14-04-_2022-06-26 | E100 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 9 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW-FD_2022-06-26 | E100 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 28 days | 9 days | ✓ |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW-FD_2022-06-26 | E108 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 211 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-06-26 | E108 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 215 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-06-26 | E108 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 215 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW14-04-_2022-06-26 | E108 | 30-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 216 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-06-26 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 234 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-06-26 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 235 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-06-26 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 235 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW-FD3_2022-06-26 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 235 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-06-26 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 236 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-13_2022-06-26 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 239 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-06-26 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 240 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-05_2022-06-26 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 240 hrs | ✗ EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-06-26 | E108 | 28-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 258 hrs | ✗ EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-06-26 | E108 | 28-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 259 hrs | ✗ EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-06-26 | E108 | 28-Jun-2022 | ---- | ---- | ---- | | 09-Jul-2022 | 0.25 hrs | 259 hrs | ✗ EHTR-FM |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-05_2022-06-26 | E641A | 29-Jun-2022 | 10-Jul-2022 | 14 days | 11 days | ✓ | 13-Jul-2022 | 40 days | 3 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-01_2022-06-26 | E641A | 30-Jun-2022 | 12-Jul-2022 | 14 days | 12 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-02_2022-06-26 | E641A | 30-Jun-2022 | 12-Jul-2022 | 14 days | 12 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-04-_2022-06-26 | E641A | 30-Jun-2022 | 12-Jul-2022 | 14 days | 12 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FD_2022-06-26 | E641A | 30-Jun-2022 | 12-Jul-2022 | 14 days | 12 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-04_2022-06-26 | E641A | 28-Jun-2022 | 10-Jul-2022 | 14 days | 12 days | ✓ | 13-Jul-2022 | 40 days | 3 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-07_2022-06-26 | E641A | 28-Jun-2022 | 10-Jul-2022 | 14 days | 12 days | ✓ | 13-Jul-2022 | 40 days | 3 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FB_2022-06-26 | E641A | 28-Jun-2022 | 10-Jul-2022 | 14 days | 12 days | ✓ | 13-Jul-2022 | 40 days | 3 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-01_2022-06-26 | E641A | 29-Jun-2022 | 12-Jul-2022 | 14 days | 13 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-10_2022-06-26 | E641A | 29-Jun-2022 | 12-Jul-2022 | 14 days | 13 days | ✓ | 12-Jul-2022 | 40 days | 0 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-04_2022-06-26 | E611A | 28-Jun-2022 | 11-Jul-2022 | ---- | ---- | | 12-Jul-2022 | 14 days | 13 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-07_2022-06-26 | E611A | 28-Jun-2022 | 11-Jul-2022 | ---- | ---- | | 12-Jul-2022 | 14 days | 13 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-10_2022-06-26 | E611A | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 13 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-01_2022-06-26 | E611A | 30-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 13 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-02_2022-06-26 | E611A | 30-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 13 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-04-_2022-06-26 | E611A | 30-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 13 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FB_2022-06-26 | E611A | 28-Jun-2022 | 11-Jul-2022 | ---- | ---- | | 12-Jul-2022 | 14 days | 13 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FD_2022-06-26 | E611A | 30-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 13 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-01_2022-06-26 | E611A | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 14 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-05_2022-06-26 | E611A | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 14 days | 14 days | ✓ |

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

Rec. HT: ALS recommended hold time (see units).

# Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 552311 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 558919 | 2 | 39 | 5.1 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 552315 | 1 | 15 | 6.6 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 558176 | 3 | 37 | 8.1 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 552314 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Conductivity in Water | E100 | 552312 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 555516 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 554026 | 2 | 24 | 8.3 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 552313 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 552316 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 552317 | 1 | 20 | 5.0 | 5.0 | ✓ |
| pH by Meter | E108 | 552310 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 552318 | 1 | 15 | 6.6 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 558175 | 3 | 31 | 9.6 | 5.0 | ✓ |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 552311 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 558919 | 2 | 39 | 5.1 | 5.0 | ✓ |
| BC PHCs - EPH by GC-FID | E601A | 556480 | 2 | 22 | 9.0 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 552315 | 1 | 15 | 6.6 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 558176 | 3 | 37 | 8.1 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 552314 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Conductivity in Water | E100 | 552312 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 555516 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 554026 | 2 | 24 | 8.3 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 552313 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 552316 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 552317 | 1 | 20 | 5.0 | 5.0 | ✓ |
| PAHs by Hexane LVI GC-MS | E641A | 556479 | 2 | 28 | 7.1 | 5.0 | ✓ |
| pH by Meter | E108 | 552310 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 552318 | 1 | 15 | 6.6 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 558175 | 3 | 31 | 9.6 | 5.0 | ✓ |
| **Method Blanks (MB)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 552311 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 558919 | 2 | 39 | 5.1 | 5.0 | ✓ |
| BC PHCs - EPH by GC-FID | E601A | 556480 | 2 | 22 | 9.0 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 552315 | 1 | 15 | 6.6 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 558176 | 3 | 37 | 8.1 | 5.0 | ✓ |

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | QC | Regular | Actual | Expected | Evaluation |
| **Method Blanks (MB) - Continued** | | | | | | | |
| Chloride in Water by IC | E235.Cl | 552314 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Conductivity in Water | E100 | 552312 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 555516 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 554026 | 2 | 24 | 8.3 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 552313 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 552316 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 552317 | 1 | 20 | 5.0 | 5.0 | ✓ |
| PAHs by Hexane LVI GC-MS | E641A | 556479 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 552318 | 1 | 15 | 6.6 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 558175 | 3 | 31 | 9.6 | 5.0 | ✓ |
| **Matrix Spikes (MS)** | | | | | | | |
| Ammonia by Fluorescence | E298 | 558919 | 2 | 39 | 5.1 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 552315 | 1 | 15 | 6.6 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 558176 | 3 | 37 | 8.1 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 552314 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 555516 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 554026 | 2 | 24 | 8.3 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 552313 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 552316 | 1 | 15 | 6.6 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 552317 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 552318 | 1 | 15 | 6.6 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 558175 | 3 | 31 | 9.6 | 5.0 | ✓ |

## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Conductivity in Water | E100<br><br>Vancouver - Environmental | Water | APHA 2510 (mod) | Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C. |
| pH by Meter | E108<br><br>Vancouver - Environmental | Water | APHA 4500-H (mod) | pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time. |
| Bromide in Water by IC (Low Level) | E235.Br-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Chloride in Water by IC | E235.Cl<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Fluoride in Water by IC | E235.F<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrite in Water by IC (Low Level) | E235.NO2-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrate in Water by IC (Low Level) | E235.NO3-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Sulfate in Water by IC | E235.SO4<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Alkalinity Species by Titration | E290<br><br>Vancouver - Environmental | Water | APHA 2320 B (mod) | Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. |
| Ammonia by Fluorescence | E298<br><br>Vancouver - Environmental | Water | Method Fialab 100, 2018 | Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021) |

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Dissolved Metals in Water by CRC ICPMS | E421<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 6020B (mod) | Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Dissolved Mercury in Water by CVAAS | E509<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 1631E (mod) | Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS. |
| VH and F1 by Headspace GC-FID | E581.VH+F1<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod) | Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. |
| BC PHCs - EPH by GC-FID | E601A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual | Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions. |
| BTEX by Headspace GC-MS | E611A<br><br>Vancouver - Environmental | Water | EPA 8260D (mod) | Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. |
| PAHs by Hexane LVI GC-MS | E641A<br><br>Vancouver - Environmental | Water | EPA 8270E (mod) | Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS. |
| Dissolved Hardness (Calculated) | EC100<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. |
| VPH: VH-BTEX-Styrene | EC580A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual (VPH in Water and Solids) (mod) | Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VPHw = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene. |
| LEPH and HEPH: EPH-PAH | EC600A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual (LEPH and HEPH) (mod) | Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Acenaphthene, Acridine, Anthracene, Fluorene, Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(a)pyrene, Fluoranthene, and Pyrene. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Preparation for Ammonia | EP298<br><br>Vancouver - Environmental | Water | | Sample preparation for Preserved Nutrients Water Quality Analysis. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Dissolved Metals Water Filtration | EP421<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HNO3. |
| Dissolved Mercury Water Filtration | EP509<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HCl. |
| VOCs Preparation for Headspace Analysis | EP581<br><br>Vancouver - Environmental | Water | EPA 5021A (mod) | Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system. |
| PHCs and PAHs Hexane Extraction | EP601<br><br>Vancouver - Environmental | Water | EPA 3511 (mod) | Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction. |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200650** | Page | : 1 of 20 |
| Client | : Teck Metals Ltd | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 04-Jul-2022 13:15 |
| PO | : PO# 10289 | Date Analysis Commenced | : 07-Jul-2022 |
| C-O-C number | : ---- | Issue Date | : 21-Jul-2022 15:35 |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 15 | | |
| No. of samples analysed | : 15 | | |



This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Anshim Anshim | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |
| Chau Tran | Analsyt | Vancouver Inorganics, Burnaby, British Columbia |
| Erin Sanchez | | Vancouver Metals, Burnaby, British Columbia |
| Hamideh Moradi | Analyst | Vancouver Metals, Burnaby, British Columbia |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Vancouver Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Vancouver Inorganics, Burnaby, British Columbia |
| Owen Cheng | | Vancouver Metals, Burnaby, British Columbia |
| Paul Cushing | Team Leader - Organics | Vancouver Organics, Burnaby, British Columbia |
| Ruby Pham | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Physical Tests (QC Lot: 552310)** | | | | | | | | | | | |
| WR2200650-003 | SD_MW13-05_2022-06-26 | pH | ---- | E108 | 0.10 | pH units | 8.25 | 8.25 | 0.0485% | 4% | ---- |
| **Physical Tests (QC Lot: 552311)** | | | | | | | | | | | |
| WR2200650-003 | SD_MW13-05_2022-06-26 | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 125 | 124 | 0.964% | 20% | ---- |
| **Physical Tests (QC Lot: 552312)** | | | | | | | | | | | |
| WR2200650-003 | SD_MW13-05_2022-06-26 | conductivity | ---- | E100 | 2.0 | µS/cm | 358 | 361 | 0.834% | 10% | ---- |
| **Anions and Nutrients (QC Lot: 552313)** | | | | | | | | | | | |
| WR2200650-001 | SD_MW13-01_2022-06-26 | fluoride | 16984-48-8 | E235.F | 0.020 | mg/L | 0.440 | 0.436 | 0.904% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 552314)** | | | | | | | | | | | |
| WR2200650-001 | SD_MW13-01_2022-06-26 | chloride | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 552315)** | | | | | | | | | | | |
| WR2200650-001 | SD_MW13-01_2022-06-26 | bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 552316)** | | | | | | | | | | | |
| WR2200650-001 | SD_MW13-01_2022-06-26 | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.290 | 0.291 | 0.296% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 552317)** | | | | | | | | | | | |
| WR2200650-001 | SD_MW13-01_2022-06-26 | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 552318)** | | | | | | | | | | | |
| WR2200650-001 | SD_MW13-01_2022-06-26 | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 13.1 | 13.1 | 0.158% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 558919)** | | | | | | | | | | | |
| FJ2201752-001 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | 0.456 | 0.456 | 0.0704% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 558923)** | | | | | | | | | | | |
| WR2200645-001 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | 0.0051 | 0.0001 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 554026)** | | | | | | | | | | | |
| WR2200650-001 | SD_MW13-01_2022-06-26 | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0036 | 0.0039 | 0.0003 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00021 | 0.00020 | 0.000008 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00071 | 0.00069 | 0.00001 | Diff <2x LOR | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0180 | 0.0188 | 4.40% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.000273 | 0.000282 | 3.19% | 20% | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 55.8 | 56.7 | 1.54% | 20% | ---- |

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QC Lot: 554026) - continued** | | | | | | | | | | | |
| WR2200650-001 | SD_MW13-01_2022-06-26 | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00025 | 0.00025 | 0.000006 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000928 | 0.000812 | 13.3% | 20% | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0027 | 0.0027 | 0.00002 | Diff <2x LOR | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 4.50 | 4.71 | 4.63% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00034 | 0.00037 | 0.00003 | Diff <2x LOR | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00157 | 0.00153 | 2.13% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 0.627 | 0.642 | 0.015 | Diff <2x LOR | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | 1.21 µg/L | 0.00114 | 6.21% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 4.31 | 4.21 | 2.23% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 0.962 | 0.991 | 2.98% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.230 | 0.225 | 2.25% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 5.01 | 4.89 | 0.12 | Diff <2x LOR | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00186 | 0.00193 | 3.65% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0094 | 0.0095 | 0.0001 | Diff <2x LOR | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 555516)** | | | | | | | | | | | |
| VA22B4424-016 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 555517)** | | | | | | | | | | | |
| WR2200650-008 | SD_MW13-13_2022-06-26 | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 556466)** | | | | | | | | | | | |
| VA22B5186-001 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0127 | 0.0123 | 3.18% | 20% | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00016 | 0.00016 | 0.000006 | Diff <2x LOR | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.00472 | 0.00476 | 0.850% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Dissolved Metals (QC Lot: 556466) - continued** | | | | | | | | | | | |
| VA22B5186-001 | Anonymous | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 7.98 | 8.01 | 0.370% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00057 | 0.00054 | 0.00003 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | 0.031 | 0.031 | 0.0005 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0017 | 0.0017 | 0.000008 | Diff <2x LOR | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 0.983 | 0.958 | 0.0255 | Diff <2x LOR | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00094 | 0.00091 | 0.00004 | Diff <2x LOR | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000064 | 0.000052 | 0.000012 | Diff <2x LOR | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 2.00 | mg/L | <2.00 | <2.00 | 0 | Diff <2x LOR | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | <0.000050 | 0.000054 | 0.000004 | Diff <2x LOR | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 2.30 | 2.25 | 2.13% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 2.00 | mg/L | 3.42 | 3.40 | 0.017 | Diff <2x LOR | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.0329 | 0.0314 | 4.83% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| **Volatile Organic Compounds (QC Lot: 558176)** | | | | | | | | | | | |
| KS2202375-003 | Anonymous | benzene | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | styrene | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | toluene | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Volatile Organic Compounds (QC Lot: 558176) - continued** | | | | | | | | | | | |
| KS2202375-003 | Anonymous | xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | 0 | Diff <2x LOR | ---- |
| | | xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | 0 | Diff <2x LOR | ---- |
| **Volatile Organic Compounds (QC Lot: 559795)** | | | | | | | | | | | |
| KS2202375-008 | Anonymous | benzene | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | styrene | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | toluene | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | 0 | Diff <2x LOR | ---- |
| | | xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | 0 | Diff <2x LOR | ---- |
| **Volatile Organic Compounds (QC Lot: 560640)** | | | | | | | | | | | |
| FJ2201741-020 | Anonymous | benzene | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | styrene | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | toluene | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | 0 | Diff <2x LOR | ---- |
| | | xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | 0 | Diff <2x LOR | ---- |
| **Hydrocarbons (QC Lot: 558175)** | | | | | | | | | | | |
| KS2202375-003 | Anonymous | VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | 0.0% | 30% | ---- |
| **Hydrocarbons (QC Lot: 559794)** | | | | | | | | | | | |
| KS2202375-008 | Anonymous | VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | 0.0% | 30% | ---- |
| **Hydrocarbons (QC Lot: 560639)** | | | | | | | | | | | |
| FJ2201741-020 | Anonymous | VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | 0.0% | 30% | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Physical Tests (QCLot: 552311)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 552312)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | <1.0 | ---- |
| **Anions and Nutrients (QCLot: 552313)** | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | <0.020 | ---- |
| **Anions and Nutrients (QCLot: 552314)** | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | <0.50 | ---- |
| **Anions and Nutrients (QCLot: 552315)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 552316)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 552317)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 552318)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 558919)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 558923)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Dissolved Metals (QCLot: 554026)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 554026) - continued** | | | | | | |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 555516)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 555517)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 556466)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 556466) - continued** | | | | | | |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Volatile Organic Compounds (QCLot: 558176)** | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | <0.50 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | <0.50 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | <0.50 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | <0.40 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | <0.30 | ---- |
| **Volatile Organic Compounds (QCLot: 559795)** | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | <0.50 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | <0.50 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (QCLot: 559795) - continued** | | | | | | |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | <0.50 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | <0.50 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | <0.40 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | <0.30 | ---- |
| **Volatile Organic Compounds (QCLot: 560640)** | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | <0.50 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | <0.50 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | <0.50 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | <0.40 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | <0.30 | ---- |
| **Hydrocarbons (QCLot: 556480)** | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | <250 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | <250 | ---- |
| **Hydrocarbons (QCLot: 558175)** | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | ---- |
| **Hydrocarbons (QCLot: 558449)** | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | <250 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | <250 | ---- |
| **Hydrocarbons (QCLot: 559794)** | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | ---- |
| **Hydrocarbons (QCLot: 560639)** | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | ---- |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 556479)** | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.01 | µg/L | <0.010 | ---- |
| acridine | 260-94-6 | E641A | 0.01 | µg/L | <0.010 | ---- |
| anthracene | 120-12-7 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.005 | µg/L | <0.0050 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| chrysene | 218-01-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.005 | µg/L | <0.0050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Polycyclic Aromatic Hydrocarbons (QCLot: 556479) - continued** | | | | | | |
| fluoranthene | 206-44-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| fluorene | 86-73-7 | E641A | 0.01 | µg/L | <0.010 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.01 | µg/L | <0.010 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.01 | µg/L | <0.010 | ---- |
| naphthalene | 91-20-3 | E641A | 0.05 | µg/L | <0.050 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.02 | µg/L | <0.020 | ---- |
| pyrene | 129-00-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| quinoline | 91-22-5 | E641A | 0.05 | µg/L | <0.050 | ---- |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 558448)** | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.01 | µg/L | <0.010 | ---- |
| acridine | 260-94-6 | E641A | 0.01 | µg/L | <0.010 | ---- |
| anthracene | 120-12-7 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.005 | µg/L | <0.0050 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| chrysene | 218-01-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.005 | µg/L | <0.0050 | ---- |
| fluoranthene | 206-44-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| fluorene | 86-73-7 | E641A | 0.01 | µg/L | <0.010 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.01 | µg/L | <0.010 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.01 | µg/L | <0.010 | ---- |
| naphthalene | 91-20-3 | E641A | 0.05 | µg/L | <0.050 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.02 | µg/L | <0.020 | ---- |
| pyrene | 129-00-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| quinoline | 91-22-5 | E641A | 0.05 | µg/L | <0.050 | ---- |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 552310)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 99.9 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 552311)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 101 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 552312)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 99.6 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 552313)** | | | | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | 1 mg/L | 99.0 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 552314)** | | | | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | 100 mg/L | 101 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 552315)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 97.7 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 552316)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 103 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 552317)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 98.6 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 552318)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 104 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 558919)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 92.8 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 558923)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 99.6 | 85.0 | 115 | ---- |
| **Dissolved Metals (QCLot: 554026)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 103 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 98.3 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 97.8 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 98.6 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 101 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 96.2 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 96.0 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 100.0 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 98.1 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 97.3 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 554026) - continued** | | | | | | | | | |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 99.1 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 96.1 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 97.4 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 97.5 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 99.6 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 99.6 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 96.8 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 91.5 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 106 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 100.0 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 102 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 95.2 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 100 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 99.2 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 106 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 97.8 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 98.1 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 96.2 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 102 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 100 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 97.6 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 97.2 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 94.3 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 94.8 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 556466)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 100 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 101 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 104 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 96.5 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 106 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 97.5 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 103 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 99.7 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

| Analyte | CAS Number | Method | LOR | Unit | Spike | Recovery (%) | Recovery Limits (%) | | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Concentration | LCS | Low | High | |
| **Dissolved Metals (QCLot: 556466) - continued** | | | | | | | | | |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 99.4 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 100 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 111 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 107 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 92.8 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 100 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 102 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 103 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 108 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 106 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 97.2 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 109 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 94.9 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 106 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 95.4 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 105 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 103 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 98.9 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 96.7 | 80.0 | 120 | ---- |
| **Volatile Organic Compounds (QCLot: 558176)** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | 100 µg/L | 91.6 | 70.0 | 130 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | 100 µg/L | 91.8 | 70.0 | 130 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | 100 µg/L | 95.1 | 70.0 | 130 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | 100 µg/L | 89.1 | 70.0 | 130 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | 100 µg/L | 101 | 70.0 | 130 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | 200 µg/L | 100 | 70.0 | 130 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | 100 µg/L | 92.0 | 70.0 | 130 | ---- |
| **Volatile Organic Compounds (QCLot: 559795)** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | 100 µg/L | 93.9 | 70.0 | 130 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | 100 µg/L | 90.6 | 70.0 | 130 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | 100 µg/L | 98.9 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (QCLot: 559795) - continued** | | | | | | | | | |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | 100 µg/L | 96.1 | 70.0 | 130 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | 100 µg/L | 98.2 | 70.0 | 130 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | 200 µg/L | 97.3 | 70.0 | 130 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | 100 µg/L | 93.4 | 70.0 | 130 | ---- |
| **Volatile Organic Compounds (QCLot: 560640)** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | 100 µg/L | 91.6 | 70.0 | 130 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | 100 µg/L | 88.2 | 70.0 | 130 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | 100 µg/L | 100 | 70.0 | 130 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | 100 µg/L | 92.8 | 70.0 | 130 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | 100 µg/L | 97.0 | 70.0 | 130 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | 200 µg/L | 94.6 | 70.0 | 130 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | 100 µg/L | 91.2 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 556480)** | | | | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | 6491 µg/L | 104 | 70.0 | 130 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | 3363 µg/L | 107 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 558175)** | | | | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | 6310 µg/L | 73.1 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 558449)** | | | | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | 6491 µg/L | 104 | 70.0 | 130 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | 3363 µg/L | 106 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 559794)** | | | | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | 6310 µg/L | 105 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 560639)** | | | | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | 6310 µg/L | 79.9 | 70.0 | 130 | ---- |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 556479)** | | | | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 99.1 | 60.0 | 130 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.01 | µg/L | 0.5 µg/L | 103 | 60.0 | 130 | ---- |
| acridine | 260-94-6 | E641A | 0.01 | µg/L | 0.5 µg/L | 102 | 60.0 | 130 | ---- |
| anthracene | 120-12-7 | E641A | 0.01 | µg/L | 0.5 µg/L | 108 | 60.0 | 130 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.01 | µg/L | 0.5 µg/L | 97.0 | 60.0 | 130 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.005 | µg/L | 0.5 µg/L | 116 | 60.0 | 130 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.01 | µg/L | 0.5 µg/L | 112 | 60.0 | 130 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.01 | µg/L | 0.5 µg/L | 112 | 60.0 | 130 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 122 | 60.0 | 130 | ---- |
| chrysene | 218-01-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 106 | 60.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 556479) - continued** | | | | | | | | | |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.005 | µg/L | 0.5 µg/L | 108 | 60.0 | 130 | ---- |
| fluoranthene | 206-44-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 117 | 60.0 | 130 | ---- |
| fluorene | 86-73-7 | E641A | 0.01 | µg/L | 0.5 µg/L | 104 | 60.0 | 130 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.01 | µg/L | 0.5 µg/L | 102 | 60.0 | 130 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 96.7 | 60.0 | 130 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.01 | µg/L | 0.5 µg/L | 90.8 | 60.0 | 130 | ---- |
| naphthalene | 91-20-3 | E641A | 0.05 | µg/L | 0.5 µg/L | 100 | 50.0 | 130 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.02 | µg/L | 0.5 µg/L | 113 | 60.0 | 130 | ---- |
| pyrene | 129-00-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 116 | 60.0 | 130 | ---- |
| quinoline | 91-22-5 | E641A | 0.05 | µg/L | 0.5 µg/L | 104 | 60.0 | 130 | ---- |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 558448)** | | | | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 100 | 60.0 | 130 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.01 | µg/L | 0.5 µg/L | 99.8 | 60.0 | 130 | ---- |
| acridine | 260-94-6 | E641A | 0.01 | µg/L | 0.5 µg/L | 85.9 | 60.0 | 130 | ---- |
| anthracene | 120-12-7 | E641A | 0.01 | µg/L | 0.5 µg/L | 103 | 60.0 | 130 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.01 | µg/L | 0.5 µg/L | 76.0 | 60.0 | 130 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.005 | µg/L | 0.5 µg/L | 96.9 | 60.0 | 130 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.01 | µg/L | 0.5 µg/L | 93.7 | 60.0 | 130 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.01 | µg/L | 0.5 µg/L | 102 | 60.0 | 130 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 105 | 60.0 | 130 | ---- |
| chrysene | 218-01-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 92.0 | 60.0 | 130 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.005 | µg/L | 0.5 µg/L | 94.9 | 60.0 | 130 | ---- |
| fluoranthene | 206-44-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 104 | 60.0 | 130 | ---- |
| fluorene | 86-73-7 | E641A | 0.01 | µg/L | 0.5 µg/L | 110 | 60.0 | 130 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.01 | µg/L | 0.5 µg/L | 91.6 | 60.0 | 130 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 104 | 60.0 | 130 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.01 | µg/L | 0.5 µg/L | 98.7 | 60.0 | 130 | ---- |
| naphthalene | 91-20-3 | E641A | 0.05 | µg/L | 0.5 µg/L | 104 | 50.0 | 130 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.02 | µg/L | 0.5 µg/L | 112 | 60.0 | 130 | ---- |
| pyrene | 129-00-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 105 | 60.0 | 130 | ---- |
| quinoline | 91-22-5 | E641A | 0.05 | µg/L | 0.5 µg/L | 96.3 | 60.0 | 130 | ---- |

## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 552313)** | | | | | | | | | | |
| WR2200650-002 | SD_MW13-04_2022-06-26 | fluoride | 16984-48-8 | E235.F | 1.06 mg/L | 1 mg/L | 106 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 552314)** | | | | | | | | | | |
| WR2200650-002 | SD_MW13-04_2022-06-26 | chloride | 16887-00-6 | E235.Cl | 106 mg/L | 100 mg/L | 106 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 552315)** | | | | | | | | | | |
| WR2200650-002 | SD_MW13-04_2022-06-26 | bromide | 24959-67-9 | E235.Br-L | 0.484 mg/L | 0.5 mg/L | 96.8 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 552316)** | | | | | | | | | | |
| WR2200650-002 | SD_MW13-04_2022-06-26 | nitrate (as N) | 14797-55-8 | E235.NO3-L | 2.73 mg/L | 2.5 mg/L | 109 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 552317)** | | | | | | | | | | |
| WR2200650-002 | SD_MW13-04_2022-06-26 | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.503 mg/L | 0.5 mg/L | 100 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 552318)** | | | | | | | | | | |
| WR2200650-002 | SD_MW13-04_2022-06-26 | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 107 mg/L | 100 mg/L | 107 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 558919)** | | | | | | | | | | |
| FJ2201752-002 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | ND mg/L | 0.1 mg/L | ND | 75.0 | 125 | MS-B |
| **Anions and Nutrients (QCLot: 558923)** | | | | | | | | | | |
| WR2200645-002 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.1000 mg/L | 0.1 mg/L | 100.0 | 75.0 | 125 | ---- |
| **Dissolved Metals (QCLot: 554026)** | | | | | | | | | | |
| WR2200650-003 | SD_MW13-05_2022-06-26 | aluminum, dissolved | 7429-90-5 | E421 | 0.194 mg/L | 0.2 mg/L | 97.0 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0200 mg/L | 0.02 mg/L | 100 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0196 mg/L | 0.02 mg/L | 98.0 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0401 mg/L | 0.04 mg/L | 100 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00890 mg/L | 0.01 mg/L | 89.0 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.098 mg/L | 0.1 mg/L | 97.5 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00388 mg/L | 0.004 mg/L | 97.0 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0386 mg/L | 0.04 mg/L | 96.5 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0190 mg/L | 0.02 mg/L | 95.1 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0185 mg/L | 0.02 mg/L | 92.6 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.90 mg/L | 2 mg/L | 94.8 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0189 mg/L | 0.02 mg/L | 94.6 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *Concentration* | *Target* | *MS* | *Low* | *High* | *Qualifier* |
| **Dissolved Metals (QCLot: 554026) - continued** | | | | | | | | | | |
| WR2200650-003 | SD_MW13-05_2022-06-26 | lithium, dissolved | 7439-93-2 | E421 | 0.0972 mg/L | 0.1 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0192 mg/L | 0.02 mg/L | 95.8 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0201 mg/L | 0.02 mg/L | 100 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0368 mg/L | 0.04 mg/L | 91.9 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 9.76 mg/L | 10 mg/L | 97.6 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 4.10 mg/L | 4 mg/L | 102 | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0413 mg/L | 0.04 mg/L | 103 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 9.84 mg/L | 10 mg/L | 98.4 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00383 mg/L | 0.004 mg/L | 95.7 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 1.96 mg/L | 2 mg/L | 97.9 | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 21.6 mg/L | 20 mg/L | 108 | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00378 mg/L | 0.004 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0198 mg/L | 0.02 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0384 mg/L | 0.04 mg/L | 96.1 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.00389 mg/L | 0.004 mg/L | 97.4 | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.0978 mg/L | 0.1 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.389 mg/L | 0.4 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0398 mg/L | 0.04 mg/L | 99.6 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 555516)** | | | | | | | | | | |
| VA22B5668-001 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000947 mg/L | 0.0001 mg/L | 94.7 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 555517)** | | | | | | | | | | |
| WR2200650-009 | SD_MW14-01_2022-06-26 | mercury, dissolved | 7439-97-6 | E509 | 0.0000942 mg/L | 0.0001 mg/L | 94.2 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 556466)** | | | | | | | | | | |
| VA22B5188-001 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.182 mg/L | 0.2 mg/L | 91.0 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0192 mg/L | 0.02 mg/L | 96.1 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0194 mg/L | 0.02 mg/L | 97.0 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.0183 mg/L | 0.02 mg/L | 91.3 | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0387 mg/L | 0.04 mg/L | 96.7 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00895 mg/L | 0.01 mg/L | 89.5 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.095 mg/L | 0.1 mg/L | 95.4 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00400 mg/L | 0.004 mg/L | 99.9 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0371 mg/L | 0.04 mg/L | 92.8 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0187 mg/L | 0.02 mg/L | 93.4 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 556466) - continued** | | | | | | | | | | |
| VA22B5188-001 | Anonymous | copper, dissolved | 7440-50-8 | E421 | 0.0186 mg/L | 0.02 mg/L | 93.2 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.83 mg/L | 2 mg/L | 91.6 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0191 mg/L | 0.02 mg/L | 95.7 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0907 mg/L | 0.1 mg/L | 90.7 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0184 mg/L | 0.02 mg/L | 92.2 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0191 mg/L | 0.02 mg/L | 95.6 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0377 mg/L | 0.04 mg/L | 94.3 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 10.2 mg/L | 10 mg/L | 102 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 3.77 mg/L | 4 mg/L | 94.3 | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0435 mg/L | 0.04 mg/L | 109 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 9.15 mg/L | 10 mg/L | 91.5 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00376 mg/L | 0.004 mg/L | 94.0 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 1.94 mg/L | 2 mg/L | 96.8 | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 19.6 mg/L | 20 mg/L | 98.1 | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00380 mg/L | 0.004 mg/L | 95.0 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0189 mg/L | 0.02 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0368 mg/L | 0.04 mg/L | 91.9 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.00383 mg/L | 0.004 mg/L | 95.8 | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.0960 mg/L | 0.1 mg/L | 96.0 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.388 mg/L | 0.4 mg/L | 97.0 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0398 mg/L | 0.04 mg/L | 99.4 | 70.0 | 130 | ---- |
| **Volatile Organic Compounds (QCLot: 558176)** | | | | | | | | | | |
| KS2202375-003 | Anonymous | benzene | 71-43-2 | E611A | 93.0 µg/L | 100 µg/L | 93.0 | 60.0 | 140 | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 89.6 µg/L | 100 µg/L | 89.6 | 60.0 | 140 | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 98.2 µg/L | 100 µg/L | 98.2 | 60.0 | 140 | ---- |
| | | styrene | 100-42-5 | E611A | 92.4 µg/L | 100 µg/L | 92.4 | 60.0 | 140 | ---- |
| | | toluene | 108-88-3 | E611A | 99.2 µg/L | 100 µg/L | 99.2 | 60.0 | 140 | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 193 µg/L | 200 µg/L | 96.6 | 60.0 | 140 | ---- |
| | | xylene, o- | 95-47-6 | E611A | 91.8 µg/L | 100 µg/L | 91.8 | 60.0 | 140 | ---- |
| **Volatile Organic Compounds (QCLot: 559795)** | | | | | | | | | | |
| KS2202375-008 | Anonymous | benzene | 71-43-2 | E611A | 95.7 µg/L | 100 µg/L | 95.7 | 60.0 | 140 | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 87.5 µg/L | 100 µg/L | 87.5 | 60.0 | 140 | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 96.4 µg/L | 100 µg/L | 96.4 | 60.0 | 140 | ---- |
| | | styrene | 100-42-5 | E611A | 89.9 µg/L | 100 µg/L | 89.9 | 60.0 | 140 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Volatile Organic Compounds (QCLot: 559795) - continued** | | | | | | | | | | |
| KS2202375-008 | Anonymous | toluene | 108-88-3 | E611A | 98.2 µg/L | 100 µg/L | 98.2 | 60.0 | 140 | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 188 µg/L | 200 µg/L | 94.1 | 60.0 | 140 | ---- |
| | | xylene, o- | 95-47-6 | E611A | 89.6 µg/L | 100 µg/L | 89.6 | 60.0 | 140 | ---- |
| **Volatile Organic Compounds (QCLot: 560640)** | | | | | | | | | | |
| FJ2201741-021 | Anonymous | benzene | 71-43-2 | E611A | 91.6 µg/L | 100 µg/L | 91.6 | 60.0 | 140 | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 88.7 µg/L | 100 µg/L | 88.7 | 60.0 | 140 | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 97.0 µg/L | 100 µg/L | 97.0 | 60.0 | 140 | ---- |
| | | styrene | 100-42-5 | E611A | 89.3 µg/L | 100 µg/L | 89.3 | 60.0 | 140 | ---- |
| | | toluene | 108-88-3 | E611A | 97.3 µg/L | 100 µg/L | 97.3 | 60.0 | 140 | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 192 µg/L | 200 µg/L | 96.0 | 60.0 | 140 | ---- |
| | | xylene, o- | 95-47-6 | E611A | 91.1 µg/L | 100 µg/L | 91.1 | 60.0 | 140 | ---- |
| **Hydrocarbons (QCLot: 558175)** | | | | | | | | | | |
| KS2202375-004 | Anonymous | VHw (C6-C10) | ---- | E581.VH+F1 | 4310 µg/L | 6310 µg/L | 68.2 | 60.0 | 140 | ---- |
| **Hydrocarbons (QCLot: 559794)** | | | | | | | | | | |
| KS2202375-011 | Anonymous | VHw (C6-C10) | ---- | E581.VH+F1 | 4160 µg/L | 6310 µg/L | 65.9 | 60.0 | 140 | ---- |
| **Hydrocarbons (QCLot: 560639)** | | | | | | | | | | |
| FJ2201741-022 | Anonymous | VHw (C6-C10) | ---- | E581.VH+F1 | 4600 µg/L | 6310 µg/L | 72.9 | 60.0 | 140 | ---- |

## *Qualifiers*

| *Qualifier* | *Description* |
|---|---|
| *MS-B* | *Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.* |

ALS Environmental

**Chain of Custody / Analytical Request Form**
**Canada Toll Free: 1 800 668 9878**
www.alsglobal.com

COC # ________

Page 1 of 2

Environmental Division
Whitehorse
Work Order Reference
WR2200650

Telephone : +1 867 668 6689

| Report To | | Report Format / Distribution | | Service Requested (Rush for routine analysis subject to availability) |
|---|---|---|---|---|
| Company: | TECK Metals Ltd | ☑ Standard ☐ Other | | ◉ Regular (Standard Turnaround Times - Business Days) |
| Contact: | Michelle Unger | ☑ PDF ☑ Excel ☑ Digital ☐ Fax | | ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to ( |
| Address: | 601 Knightton Road | Email 1: | azheng@ensero.com, slyons@ensero.com | ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to ( |
| | Kimberly, BC | Email 2: | wendy.mcbain@teck.com, colin.lynch@teck.com | ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT |
| Phone: | 250-427-8422 Fax: | Email 3: | chanson@ensero.com, teckkimb@equisonline.co | Analysis Request |
| Invoice To | Same as Report ? ☑ Yes ☐ No | Invoice Distribution | | Please indicate below Filtered, Preserved or bo |
| Hardcopy of Invoice with Report? | ☐ Yes ☑ No | Select Email Distribution: | | |
| Client / Project Information | | Email 1 or Fax: michelle.unger@teck.com | | |
| Project # | ECA22YT00199 | Email 2: legacy.ap@teck.com | | |
| PO / AFE: | TECK PO10289 | | | |
| LSD: | | Quote #: | Q62635 | |
| Lab Work Order # (lab use only) | | ALS Contact: Can Dang | Sampler: | |

| Sample # | Sample Identification (This description will appear on the report) | Sample Location (This description will appear on the bottle) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | pH, SPC, alkalinity, hardness | dissolved metals low level +Hg (F/P) | Anions (nitrate, nitrite, sulphate, Cl, F, Br) | Ammonia (P) | BTEX, LEPH, HEPH (P) | VPH, PAH (P) | | | | | | | | | Numb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SD_MW13-01_2022-06-26 | SD_MW13-01 | 29-Jun-22 | 10:00 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW13-04_2022-06-26 | SD_MW13-04 | 28-Jun-22 | 15:00 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW13-05_2022-06-26 | SD_MW13-05 | 29-Jun-22 | 9:15 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW13-06_2022-06-26 | SD_MW13-06 | 29-Jun-22 | 13:30 | Groundwater | X | X | X | X | | | | | | | | | | | |
| | SD_MW13-07_2022-06-26 | SD_MW13-07 | 28-Jun-22 | 16:00 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW13-08_2022-06-26 | SD_MW13-08 | 29-Jun-22 | 14:45 | Groundwater | X | X | X | X | | | | | | | | | | | |
| | SD_MW13-10_2022-06-26 | SD_MW13-10 | 29-Jun-22 | 16:00 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW13-13_2022-06-26 | SD_MW13-13 | 29-Jun-22 | 11:00 | Groundwater | X | X | X | X | | | | | | | | | | | |
| | SD_MW14-01_2022-06-26 | SD_MW14-01 | 30-Jun-22 | 11:00 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW14-02_2022-06-26 | SD_MW14-02 | 30-Jun-22 | 10:30 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW14-03_2022-06-26 | SD_MW14-03 | | | Groundwater | | | | | | | | | | | | | | | |
| | SD_MW14-04_2022-06-26 | SD_MW14-04 | 30-Jun-22 | 9:50 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW-FB_2022-06-26 | SD_MW-FB | 28-Jun-22 | NA | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| 14 | SD_MW-FD_2022-06-26 | SD_MW14-FD | 30-Jun-22 | NA | Groundwater | X | X | X | X | X | X | | | | | | | | | |

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

**Yukon EQWin and ACC200 digital formats. General A:** pH, EC, TSS (low) **General B:** pH, EC, TSS (low), anions-all
**General C:** pH, EC, TSS (low), anions-all, ion balance, alkalinity **General D:** pH, EC, TSS (low), SO4, ion balance, alkalinity **General E:** pH, EC, TSS (low), SO4, ion balance

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**

**By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.**

**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use | | |
|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh-mm) | Received by: ? | Date: July 4/22 | Time: 13:15 | Temperature: 7/3/4/6/8/4 | Verified by: | Date: | Time: |

2

ALS Environmental

# Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC #



| Report To | | Report Format / Distribution | | Service Requested (Rush for routine analysis subject to availability) |
|---|---|---|---|---|
| Company: | TECK Metals Ltd | ☑ Standard ☐ Other | | ◉ Regular (Standard Turnaround Times - Business Days) |
| Contact: | Michelle Unger | ☑ PDF ☑ Excel ☑ Digital ☐ Fax | | ○ ~~Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT~~ |
| Address: | 601 Knightton Road | Email 1: | azheng@ensero.com, slyons@ensero.com | ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT |
| | Kimberly, BC | Email 2: | wendy.mcbain@teck.com, colin.lynch@teck.com | ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT |
| Phone: | 250-427-8422 Fax: | Email 3: | chanson@ensero.com, teckkimb@equisonline.co | Analysis Request |
| Invoice To | Same as Report ? ☑ Yes ☐ No | Invoice Distribution | | Please indicate below Filtered, Preserved or both (F, P, F/P) |
| Hardcopy of Invoice with Report? | ☐ Yes ☑ No | Select Email Distribution: | | |
| Client / Project Information | | Email 1 or Fax: michelle.unger@teck.com | | |
| Project # | ECA22YT00199 | Email 2: legacy.ap@teck.com | | |
| PO / AFE: | TECK PO10289 | | | |
| LSD: | | Quote #: | Q62635 | |
| Lab Work Order # (lab use only) | | ALS Contact: Can Dang | Sampler: | |

| Sample # | Sample Identification (This description will appear on the report) | Sample Location (This description will appear on the bottle) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | pH, SPC, alkalinity, hardness | dissolved metals low level +Hg (F/P) | Anions (nitrate, nitrite, sulphate, Cl, F, Br) | Ammonia (P) | BTEX, LEPH, HEPH (P) | VPH, PAH (P) | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ~~15~~ | SD_MW-TB_2022-06-26 | SD_MW-TripBlank | Empty TB | NA | Groundwater | ~~X~~ | ~~X~~ | ~~X~~ | ~~X~~ | ~~X~~ | ~~X~~ | |
| 15 | SD_MW-FD3_2022-06-26 | GW_DUP | 29-Jun-22 | NA | Groundwater | X | X | X | X | | | |
| ~~17~~ 16 | SD_MW-FD2_2022-06-26 | SD_MW14-FD2_2022-06-26 | 29-Jun-22 | NA | Groundwater | X | X | X | X | | | |

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

**Yukon EQWin and ACC200 digital formats. General A:** pH, EC, TSS (low) **General B:** pH, EC, TSS (low), anions-all
**General C:** pH, EC, TSS (low), anions-all, ion balance, alkalinity **General D:** pH, EC, TSS (low), SO4, ion balance, alkalinity **General E:** pH, EC, TSS (low), SO4, ion balance

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**

**By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.**

**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh-mm) | Received by: | Date: | Time: | Temperature: °C | Verified by: | Date: | Time: | Obs Observations: Yes Yes / No ? If Ye If Yes add SIF |

GENF 20.00 Front

ALS Environmental

# Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # ____________



Environmental Division
Whitehorse
Work Order Reference
WR2200650

Telephone : +1 867 668 6689

| Report To | | Report Format / Distribution | | Service Requested (Rush for routine analysis subject to availability) |
|---|---|---|---|---|
| Company: | TECK Metals Ltd | ☑ Standard ☐ Other | | ◉ Regular (Standard Turnaround Times - Business Days) |
| Contact: | Michelle Unger | ☑ PDF ☑ Excel ☑ Digital ☐ Fax | | ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to C |
| Address: | 601 Knighton Road | Email 1: | azheng@ensero.com, slyons@ensero.com | ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to C |
| | Kimberly, BC | Email 2: | wendy.mcbain@teck.com, colin.lynch@teck.com | ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT |
| Phone: | 250-427-8422 Fax: | Email 3: | chanson@ensero.com, teckkimb@equisonline.co | Analysis Request |
| Invoice To | Same as Report ? ☑ Yes ☐ No | Invoice Distribution | | Please indicate below Filtered, Preserved or bo |
| Hardcopy of Invoice with Report? | ☐ Yes ☑ No | Select Email Distribution: | | |
| Client / Project Information | | Email 1 or Fax: michelle.unger@teck.com | | |
| Project # | ECA22YT00199 | Email 2: legacy.ap@teck.com | | |
| PO / AFE: | TECK PO10289 | | | |
| LSD: | | Quote #: | Q62635 | |
| Lab Work Order # (lab use only) | | ALS Contact: Can Dang | Sampler: | |

| Sample # | Sample Identification (This description will appear on the report) | Sample Location This description will appear on the bottle | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | pH, SPC, alkalinity, hardness | dissolved metals low level +Hg (F/P) | Anions (nitrate, nitrite, sulphate, Cl, F, Br) | Ammonia (P) | BTEX, LEPH, HEPH (P) | VPH, PAH (P) | Numb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SD_MW13-01_2022-06-26 | SD_MW13-01 | 29-Jun-22 | 10:00 | Groundwater | X | X | X | X | X | X | |
| | SD_MW13-04_2022-06-26 | SD_MW13-04 | 28-Jun-22 | 15:00 | Groundwater | X | X | X | X | X | X | |
| | SD_MW13-05_2022-06-26 | SD_MW13-05 | 29-Jun-22 | 9:15 | Groundwater | X | X | X | X | X | X | |
| | SD_MW13-06_2022-06-26 | SD_MW13-06 | 29-Jun-22 | 13:30 | Groundwater | X | X | X | X | | | |
| | SD_MW13-07_2022-06-26 | SD_MW13-07 | 28-Jun-22 | 16:00 | Groundwater | X | X | X | X | X | X | |
| | SD_MW13-08_2022-06-26 | SD_MW13-08 | 29-Jun-22 | 14:45 | Groundwater | X | X | X | X | | | |
| | SD_MW13-10_2022-06-26 | SD_MW13-10 | 29-Jun-22 | 16:00 | Groundwater | X | X | X | X | X | X | |
| | SD_MW13-13_2022-06-26 | SD_MW13-13 | 29-Jun-22 | 11:00 | Groundwater | X | X | X | X | | | |
| | SD_MW14-01_2022-06-26 | SD_MW14-01 | 30-Jun-22 | 11:00 | Groundwater | X | X | X | X | X | X | |
| | SD_MW14-02_2022-06-26 | SD_MW14-02 | 30-Jun-22 | 10:30 | Groundwater | X | X | X | X | X | X | |
| | SD_MW14-03_2022-06-26 | SD_MW14-03 | | | Groundwater | | | | | | | |
| | SD_MW14-04_2022-06-26 | SD_MW14-04 | 30-Jun-22 | 9:50 | Groundwater | X | X | X | X | X | X | |
| | SD_MW-FB_2022-06-26 | SD_MW-FB | 28-Jun-22 | NA | Groundwater | X | X | X | X | X | X | |
| 14 | SD_MW-FD_2022-06-26 | SD_MW14-FD | 30-Jun-22 | NA | Groundwater | X | X | X | X | X | X | |

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

**Yukon EQWin and ACC200 digital formats. General A:** pH, EC, TSS (low) **General B:** pH, EC, TSS (low), anions-all
**General C:** pH, EC, TSS (low), anions-all, ion balance, alkalinity **General D:** pH, EC, TSS (low), SO4, ion balance, alkalinity **General E:** pH, EC, TSS (low), SO4, ion balance

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**

**By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.**

**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use | | |
|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh-mm) | Received by: [illegible] | Date: July 4/22 | Time: 13:15 | Temperature: 7/3/4/10/8/4 | Verified by: | Date: | Time: |

2

**ALS Environmental**

**Chain of Custody / Analytical Request Form**
**Canada Toll Free: 1 800 668 9878**
www.alsglobal.com

COC # ____________



| **Report To** | | **Report Format / Distribution** | |
|---|---|---|---|
| Company: | TECK Metals Ltd | ☑ Standard ☐ Other | |
| Contact: | Michelle Unger | ☑ PDF ☑ Excel ☑ Digital ☐ Fax | |
| Address: | 601 Knightton Road | Email 1: | azheng@ensero.com, slyons@ensero.com |
| | Kimberly, BC | Email 2: | wendy.mcbain@teck.com, colin.lynch@teck.com |
| Phone: | 250-427-8422 Fax: | Email 3: | chanson@ensero.com, teckkimb@equisonline.co |
| Invoice To | Same as Report ? ☑ Yes ☐ No | **Invoice Distribution** | |
| Hardcopy of Invoice with Report? | ☐ Yes ☑ No | Select Email Distribution: | |
| **Client / Project Information** | | Email 1 or Fax: michelle.unger@teck.com | |
| Project # | ECA22YT00199 | Email 2: legacy.ap@teck.com | |
| PO / AFE: | TECK PO10289 | | |
| LSD: | | Quote #: | Q62635 |
| Lab Work Order # (lab use only) | | ALS Contact: Can Dang | Sampler: |

**Service Requested** (Rush for routine analysis subject to availability)
- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ ~~Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT~~
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

**Analysis Request**
Please indicate below Filtered, Preserved or both (F, P, F/P)

| Sample # | Sample Identification (This description will appear on the report) | Sample Location (This description will appear on the bottle) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | pH, SPC, alkalinity, hardness | dissolved metals low level +Hg (F/P) | Anions (nitrate, nitrite, sulphate, Cl, F, Br) | Ammonia (P) | BTEX, LEPH, HEPH (P) | VPH, PAH (P) | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ~~15~~ | SD_MW-TB_2022-06-26 | SD_MW-TripBlank | Empty TB | NA | Groundwater | ~~X~~ | ~~X~~ | ~~X~~ | ~~X~~ | ~~X~~ | ~~X~~ | |
| 15 | SD_MW-FD3_2022-06-26 | GW_DUP | 29-Jun-22 | NA | Groundwater | X | X | X | X | | | |
| ~~17~~ 16 | SD_MW-FD2_2022-06-26 | SD_MW14-FD2_2022-06-26 | 29-Jun-22 | NA | Groundwater | X | X | X | X | | | |

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

**Yukon EQWin and ACC200 digital formats. General A:** pH, EC, TSS (low) **General B:** pH, EC, TSS (low), anions-all
**General C:** pH, EC, TSS (low), anions-all, ion balance, alkalinity **General D:** pH, EC, TSS (low), SO4, ion balance, alkalinity **General E:** pH, EC, TSS (low), SO4, ion balance

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**
**By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.**
**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh-mm) | Received by: | Date: | Time: | Temperature: °C | Verified by: | Date: | Time: | Obs Observations: Yes / No ? If Yes add SIF |

GENF 20.00 Front

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200652** | Page | : 1 of 14 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 04-Jul-2022 13:15 |
| PO | : PO# 10289 | Date Analysis Commenced | : 06-Jul-2022 |
| C-O-C number | : ---- | Issue Date | : 21-Jul-2022 15:49 |
| Sampler | : ---- | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 13 | | |
| No. of samples analysed | : 13 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Brieanna Allen | Production/Validation Manager | Inorganics, Burnaby, British Columbia |
| Delson Resende | Lab Assistant | Metals, Burnaby, British Columbia |
| Erin Sanchez | | Metals, Burnaby, British Columbia |
| Hamideh Moradi | Analyst | Metals, Burnaby, British Columbia |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Inorganics, Burnaby, British Columbia |
| Parnian Sane | Analyst | Metals, Burnaby, British Columbia |
| Sam Silveira | Lab Assistant | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| - | No Unit |
| µg/L | micrograms per litre |
| µS/cm | Microsiemens per centimetre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

***The sample "SD-MH-30_2022-06-26" was not received.***

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLA* | *Detection Limit adjusted for required dilution.* |
| *DLDS* | *Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.* |
| *DTC* | *Dissolved concentration exceeds total. Results were confirmed by re-analysis.* |
| *DTMF* | *Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.* |
| *RRV* | *Reported result verified by repeat analysis.* |

## *Analytical Results*

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| | | | | *Client sample ID* | SD_MH-02_2022-06-26 | SD_MH-04_2022-06-26 | SD_MH-11_2022-06-26 | SD_MH-12_2022-06-26 | SD_MH-13_2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *Client sampling date / time* | 27-Jun-2022 17:00 | 28-Jun-2022 17:00 | 30-Jun-2022 12:30 | 27-Jun-2022 16:00 | 28-Jun-2022 10:30 |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | WR2200652-001 | WR2200652-002 | WR2200652-003 | WR2200652-004 | WR2200652-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 249 | 143 | 161 | 134 | 156 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 730 | 265 | 319 | 257 | 293 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 413 | 135 | 160 | 128 | 152 |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | 427 | 137 | 167 | 138 | 161 |
| **pH** | ---- | E108 | 0.10 | pH units | 8.16 | 8.26 | 8.36 | 8.28 | 8.34 |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 534 | 144 | 174 | 132 | 145 |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 1.5 | <1.0 | 2.0 | 5.1 | 3.4 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | 0.0124 | 0.0100 | <0.0050 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.250 DLDS | <0.050 | <0.050 | <0.050 | <0.050 |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <2.50 DLDS | <0.50 | <0.50 | <0.50 | <0.50 |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | <0.100 DLDS | 0.128 | 0.086 | 0.082 | 0.056 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | <0.0250 DLDS | 0.120 | 0.138 | 0.0936 | 0.0601 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0050 DLDS | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 196 | 13.1 | 12.4 | 5.72 | 6.75 |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0088 | 0.0039 | 0.0291 | 0.102 | 0.0356 |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00017 | 0.00015 | 0.00023 | 0.00032 | 0.00016 |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00066 | 0.00033 | 0.00063 | 0.00124 | 0.00051 |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | 0.157 | 0.0175 | 0.0462 | 0.0505 | 0.117 |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.000219 | 0.000244 | 0.000107 | 0.0000799 | 0.0000330 |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | 154 | 50.4 | 57.4 | 48.0 | 48.5 |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | 0.00051 | <0.00010 | <0.00010 | 0.00011 | <0.00010 |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.00199 | <0.00050 |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | 0.080 | <0.010 | 0.071 | 0.155 | 0.169 |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000391 | 0.000252 | 0.000908 | 0.00194 | 0.000201 |

## Analytical Results

Sub-Matrix: Surface Water
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-02_2022-06-26 | SD_MH-04_2022-06-26 | SD_MH-11_2022-06-26 | SD_MH-12_2022-06-26 | SD_MH-13_2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 27-Jun-2022 17:00 | 28-Jun-2022 17:00 | 30-Jun-2022 12:30 | 27-Jun-2022 16:00 | 28-Jun-2022 10:30 |
| | | | | | WR2200652-001 | WR2200652-002 | WR2200652-003 | WR2200652-004 | WR2200652-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | <0.0010 | 0.0012 | 0.0015 | 0.0013 | 0.0011 |
| magnesium, total | 7439-95-4 | E420 | 0.100 | mg/L | 10.4 | 2.64 | 5.69 | 4.47 | 9.65 |
| manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.452 | 0.00036 | 0.00830 | 0.00979 | 0.0130 |
| mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.000974 | 0.000545 | 0.000735 | 0.00102 | 0.000806 |
| nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | 0.00056 | <0.00050 | <0.00050 | 0.00108 | <0.00050 |
| phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| potassium, total | 7440-09-7 | E420 | 0.100 | mg/L | 1.38 | 0.373 | 0.391 | 0.764 | 0.320 |
| selenium, total | 7782-49-2 | E420 | 0.050 | µg/L | 0.205 | 0.604 | 0.672 | 0.658 | 0.636 |
| silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 4.56 | 3.10 | 3.64 | 4.09 | 3.15 |
| silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 7.71 | 0.685 | 0.797 | 0.983 | 0.696 |
| strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.513 | 0.165 | 0.206 | 0.166 | 0.171 |
| sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 66.1 | 4.38 | 4.14 | 1.81 | 2.14 |
| thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00011 | <0.00010 |
| titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0.00068 | 0.00288 | 0.00071 |
| uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00143 | 0.000569 | 0.000767 | 0.000702 | 0.000893 |
| vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.00067 | <0.00050 |
| zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | 0.0196 | 0.0053 | 0.0060 | 0.0246 | <0.0030 |
| zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0049 | 0.0056 | 0.0082 | 0.0054 | 0.0046 |
| antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00015 | 0.00012 | 0.00018 | 0.00021 | 0.00014 |
| arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00064 | 0.00035 | 0.00056 | 0.00100 | 0.00039 |
| barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.151 | 0.0172 | 0.0456 | 0.0486 | 0.105 |
| beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.000168 | 0.000237 | 0.0000824 | 0.0000427 | 0.0000221 |
| calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 150 | 49.9 | 55.4 | 44.7 | 46.0 |

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-02_2022-06-26 | SD_MH-04_2022-06-26 | SD_MH-11_2022-06-26 | SD_MH-12_2022-06-26 | SD_MH-13_2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 27-Jun-2022 17:00 | 28-Jun-2022 17:00 | 30-Jun-2022 12:30 | 27-Jun-2022 16:00 | 28-Jun-2022 10:30 |
| | | | | | WR2200652-001 | WR2200652-002 | WR2200652-003 | WR2200652-004 | WR2200652-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | 0.00051 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00038 | 0.00020 | 0.00038 | 0.00062 | 0.00041 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | 0.053 | <0.010 | 0.021 | <0.010 | 0.082 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000388 | 0.000434 DTMF | 0.000430 | 0.000240 | <0.000050 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0010 | 0.0013 | 0.0015 | 0.0012 | 0.0011 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 9.40 | 2.49 | 5.28 | 4.06 | 9.13 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.421 | 0.00070 DTMF | 0.00350 | 0.00137 | 0.00865 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00104 | 0.000526 | 0.000734 | 0.00102 | 0.000800 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00061 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 1.37 | 0.386 | 0.416 | 0.509 | 0.345 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.180 | 0.591 | 0.699 | 0.649 | 0.594 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 4.09 | 2.75 | 3.18 | 3.58 | 2.76 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 7.90 | 0.714 | 0.856 | 0.843 | 0.749 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.509 | 0.169 | 0.205 | 0.167 | 0.169 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 64.3 | 4.27 | 4.08 | 1.79 | 1.98 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00143 | 0.000598 | 0.000771 | 0.000704 | 0.000910 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0213 | 0.0048 | 0.0052 | 0.0058 | 0.0011 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Speciated Metals** | | | | | | | | | |
| **chromium, hexavalent [Cr VI], total** | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-06-26 | SD_MH-29_2022-06-26 | SD_MH-FB_2022-06-26 | SD_MH-FD_2022-06-26 | SD_MH-22D_2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 28-Jun-2022 11:00 | 30-Jun-2022 12:45 | 28-Jun-2022 | 27-Jun-2022 | 29-Jun-2022 14:30 |
| | | | | | WR2200652-006 | WR2200652-007 | WR2200652-009 | WR2200652-010 | WR2200652-011 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 179 | 155 | <1.0 | 216 | 85.8 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 322 | 285 | <2.0 | 728 | 216 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 171 | 144 | <0.60 | 385 | 102 |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | 176 | 153 | <0.60 | 430 | 107 |
| **pH** | ---- | E108 | 0.10 | pH units | 8.40 | 8.36 | 5.27 | 8.10 | 8.05 |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 238 | 159 | <10 | 551 | 128 |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 1.6 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0051 | <0.0050 | <0.0050 | <0.0050 | 0.0082 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.250 DLDS | <0.050 |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | <0.50 | <2.50 DLDS | <0.50 |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | 0.085 | 0.048 | <0.020 | <0.100 DLDS | 0.844 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.0073 | 0.102 | <0.0050 | <0.0250 DLDS | 0.124 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0050 DLDS | <0.0010 |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 3.13 | 3.02 | <0.30 | 196 | 22.9 |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0053 | 0.0127 | <0.0030 | 0.0093 | 0.0085 |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00014 | 0.00022 | <0.00010 | 0.00016 | 0.00182 |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00039 | 0.00075 | <0.00010 | 0.00068 | 0.00359 |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | 0.175 | 0.0363 | <0.00010 | 0.162 | 0.0142 |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000079 | 0.0000848 | <0.0000050 | 0.000224 | 0.00308 |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | 51.2 | 54.4 | <0.050 | 155 | 35.8 |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00051 | <0.00010 |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | 0.068 | 0.023 | <0.010 | 0.075 | 0.025 |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | 0.000146 | <0.000050 | 0.000421 | 0.00257 |
| **lithium, total** | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0011 | 0.0013 | <0.0010 | <0.0010 | 0.0041 |

## Analytical Results

Sub-Matrix: Surface Water
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-06-26 | SD_MH-29_2022-06-26 | SD_MH-FB_2022-06-26 | SD_MH-FD_2022-06-26 | SD_MH-22D_2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 28-Jun-2022 11:00 | 30-Jun-2022 12:45 | 28-Jun-2022 | 27-Jun-2022 | 29-Jun-2022 14:30 |
| | | | | | WR2200652-006 | WR2200652-007 | WR2200652-009 | WR2200652-010 | WR2200652-011 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| **magnesium, total** | 7439-95-4 | E420 | 0.100 | mg/L | 11.8 | 4.12 | <0.100 | 10.4 | 4.25 |
| **manganese, total** | 7439-96-5 | E420 | 0.00010 | mg/L | 0.00590 | 0.00367 | <0.00010 | 0.464 | 0.00335 |
| **mercury, total** | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, total** | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00195 | 0.000596 | <0.000050 | 0.000976 | 0.00762 |
| **nickel, total** | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.00060 | 0.00257 |
| **phosphorus, total** | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, total** | 7440-09-7 | E420 | 0.100 | mg/L | 0.287 | 0.328 | <0.100 | 1.37 | 0.590 |
| **selenium, total** | 7782-49-2 | E420 | 0.050 | µg/L | 0.363 | 0.596 | <0.050 | 0.167 | 8.29 |
| **silicon, total** | 7440-21-3 | E420 | 0.10 | mg/L | 3.42 | 3.91 | <0.10 | 4.50 | 4.42 |
| **silver, total** | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, total** | 7440-23-5 | E420 | 0.050 | mg/L | 0.792 | 0.646 | <0.050 | 7.73 | 0.792 |
| **strontium, total** | 7440-24-6 | E420 | 0.00020 | mg/L | 0.160 | 0.172 | <0.00020 | 0.499 | 0.164 |
| **sulfur, total** | 7704-34-9 | E420 | 0.50 | mg/L | 0.99 | 0.92 | <0.50 | 65.8 | 7.66 |
| **thallium, total** | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, total** | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, total** | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | 0.00034 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, total** | 7440-61-1 | E420 | 0.000010 | mg/L | 0.000668 | 0.000469 | <0.000010 | 0.00144 | 0.00160 |
| **vanadium, total** | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, total** | 7440-66-6 | E420 | 0.0030 | mg/L | <0.0030 | <0.0030 | <0.0030 | 0.0202 | 0.363 |
| **zirconium, total** | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0022 | 0.0046 | <0.0010 | 0.0097 | 0.0010 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00012 | 0.00019 | <0.00010 | 0.00015 | 0.00167 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00036 | 0.00073 | <0.00010 | 0.00064 | 0.00341 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.168 | 0.0354 | <0.00010 | 0.144 | 0.0138 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000099 | 0.0000740 | <0.0000050 | 0.000164 | 0.00298 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 49.9 | 51.5 | <0.050 | 139 | 34.3 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-06-26 | SD_MH-29_2022-06-26 | SD_MH-FB_2022-06-26 | SD_MH-FD_2022-06-26 | SD_MH-22D_2022-06-26 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 28-Jun-2022 11:00 | 30-Jun-2022 12:45 | 28-Jun-2022 | 27-Jun-2022 | 29-Jun-2022 14:30 |
| | | | | | WR2200652-006 | WR2200652-007 | WR2200652-009 | WR2200652-010 | WR2200652-011 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00050 | <0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00020 | 0.00040 | <0.00020 | 0.00037 | 0.00033 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | 0.037 | <0.010 | <0.010 | 0.063 | <0.010 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | 0.000183 | <0.000050 | 0.000660 DTMF | 0.00136 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0011 | 0.0013 | <0.0010 | <0.0010 | 0.0039 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 11.3 | 3.76 | <0.100 | 9.30 | 3.98 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00328 | 0.00092 | <0.00010 | 0.402 | 0.00161 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00189 | 0.000552 | 0.000248 DTC, RRV | 0.000922 | 0.00687 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.00063 | 0.00243 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.311 | 0.343 | <0.100 | 1.33 | 0.544 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.470 | 0.668 | <0.050 | 0.210 | 7.85 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 3.06 | 3.36 | <0.050 | 3.85 | 3.94 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 0.879 | 0.692 | <0.050 | 7.57 | 0.788 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.167 | 0.176 | <0.00020 | 0.493 | 0.164 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 1.00 | 0.92 | <0.50 | 61.3 | 7.30 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000690 | 0.000492 | <0.000010 | 0.00141 | 0.00159 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | 0.0014 | <0.0010 | 0.0207 | 0.355 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Speciated Metals** | | | | | | | | | |
| **chromium, hexavalent [Cr VI], total** | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | ---- |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-SDH-S2_2022-06-26 | SD_MH-22_2022-06-26 | Dup2 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Jun-2022 12:00 | 29-Jun-2022 14:00 | 29-Jun-2022 | ---- | ---- |
| | | | | | WR2200652-012 | WR2200652-013 | WR2200652-014 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 52.2 | 86.8 | 47.3 | ---- | ---- |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 428 | 215 | 427 | ---- | ---- |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 191 | 99.7 | 188 | ---- | ---- |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | 209 | 107 | 210 | ---- | ---- |
| **pH** | ---- | E108 | 0.10 | pH units | 7.59 | 8.05 | 7.61 | ---- | ---- |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 281 | 122 | 288 | ---- | ---- |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 19.2 | 1.4 | 17.7 | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | <0.0050 | ---- | ---- |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | ---- | ---- |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | <0.50 | ---- | ---- |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | 0.090 | 0.801 | 0.093 | ---- | ---- |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.204 | 0.127 | 0.202 | ---- | ---- |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | ---- | ---- |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 165 | 21.3 | 165 | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | 0.151 | 0.0039 | 0.168 | ---- | ---- |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | <0.00050 DLA | 0.00205 | 0.00051 | ---- | ---- |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00063 | 0.00394 | 0.00079 | ---- | ---- |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | 0.0193 | 0.0134 | 0.0193 | ---- | ---- |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000100 DLA | <0.000020 | <0.000100 DLA | ---- | ---- |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000250 DLA | <0.000050 | <0.000250 DLA | ---- | ---- |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.050 DLA | <0.010 | <0.050 DLA | ---- | ---- |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.109 | 0.00203 | 0.107 | ---- | ---- |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | 79.3 | 35.8 | 79.8 | ---- | ---- |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | 0.00058 | <0.00010 | 0.00058 | ---- | ---- |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00250 DLA | <0.00050 | <0.00250 DLA | ---- | ---- |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | 0.354 | <0.010 | 0.420 | ---- | ---- |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | 0.442 | 0.00136 | 0.558 | ---- | ---- |
| **lithium, total** | 7439-93-2 | E420 | 0.0010 | mg/L | <0.0050 DLA | 0.0041 | <0.0050 DLA | ---- | ---- |

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-SDH-S2_2022-06-26 | SD_MH-22_2022-06-26 | Dup2 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Jun-2022 12:00 | 29-Jun-2022 14:00 | 29-Jun-2022 | ---- | ---- |
| | | | | | WR2200652-012 | WR2200652-013 | WR2200652-014 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **magnesium, total** | 7439-95-4 | E420 | 0.100 | mg/L | 2.63 | 4.28 | 2.58 | ---- | ---- |
| **manganese, total** | 7439-96-5 | E420 | 0.00010 | mg/L | 0.0400 | 0.00294 | 0.0384 | ---- | ---- |
| **mercury, total** | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | ---- | ---- |
| **molybdenum, total** | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00405 | 0.0107 | 0.000589 | ---- | ---- |
| **nickel, total** | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00250 DLA | 0.00277 | <0.00250 DLA | ---- | ---- |
| **phosphorus, total** | 7723-14-0 | E420 | 0.050 | mg/L | <0.250 DLA | <0.050 | <0.250 DLA | ---- | ---- |
| **potassium, total** | 7440-09-7 | E420 | 0.100 | mg/L | 0.632 | 0.437 | 0.609 | ---- | ---- |
| **selenium, total** | 7782-49-2 | E420 | 0.050 | µg/L | 3.12 | 7.78 | 3.20 | ---- | ---- |
| **silicon, total** | 7440-21-3 | E420 | 0.10 | mg/L | 2.72 | 4.45 | 2.78 | ---- | ---- |
| **silver, total** | 7440-22-4 | E420 | 0.000010 | mg/L | 0.000200 | <0.000010 | 0.000268 | ---- | ---- |
| **sodium, total** | 7440-23-5 | E420 | 0.050 | mg/L | 0.363 | 0.708 | 0.354 | ---- | ---- |
| **strontium, total** | 7440-24-6 | E420 | 0.00020 | mg/L | 0.0882 | 0.164 | 0.0879 | ---- | ---- |
| **sulfur, total** | 7704-34-9 | E420 | 0.50 | mg/L | 53.4 | 7.05 | 54.6 | ---- | ---- |
| **thallium, total** | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000050 DLA | 0.000014 | <0.000050 DLA | ---- | ---- |
| **tin, total** | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00050 DLA | 0.00015 | <0.00050 DLA | ---- | ---- |
| **titanium, total** | 7440-32-6 | E420 | 0.00030 | mg/L | 0.00341 | <0.00030 | 0.00526 | ---- | ---- |
| **uranium, total** | 7440-61-1 | E420 | 0.000010 | mg/L | 0.000258 | 0.00161 | 0.000253 | ---- | ---- |
| **vanadium, total** | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00250 DLA | <0.00050 | <0.00250 DLA | ---- | ---- |
| **zinc, total** | 7440-66-6 | E420 | 0.0030 | mg/L | 12.5 | 0.220 | 12.2 | ---- | ---- |
| **zirconium, total** | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00100 DLA | <0.00020 | <0.00100 DLA | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | <0.0050 DLA | 0.0046 | <0.0050 DLA | ---- | ---- |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | <0.00050 DLA | 0.00164 | <0.00050 DLA | ---- | ---- |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | <0.00050 DLA | 0.00393 | <0.00050 DLA | ---- | ---- |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0158 | 0.0128 | 0.0161 | ---- | ---- |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000100 DLA | <0.000020 | <0.000100 DLA | ---- | ---- |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000250 DLA | <0.000050 | <0.000250 DLA | ---- | ---- |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.050 DLA | <0.010 | <0.050 DLA | ---- | ---- |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0990 | 0.00195 | 0.101 | ---- | ---- |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 72.8 | 33.3 | 71.2 | ---- | ---- |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |

## Analytical Results

Sub-Matrix: Surface Water
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-SDH-S2_2022-06-26 | SD_MH-22_2022-06-26 | Dup2 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 29-Jun-2022 12:00 | 29-Jun-2022 14:00 | 29-Jun-2022 | ---- | ---- |
| | | | | | WR2200652-012 | WR2200652-013 | WR2200652-014 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00050 DLA | <0.00010 | <0.00050 DLA | ---- | ---- |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00100 DLA | 0.00024 | <0.00100 DLA | ---- | ---- |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.050 DLA | <0.010 | <0.050 DLA | ---- | ---- |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.0416 | 0.000454 | 0.0369 | ---- | ---- |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0050 DLA | 0.0038 | <0.0050 DLA | ---- | ---- |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 2.32 | 4.02 | 2.37 | ---- | ---- |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00837 | 0.00326 | 0.00883 | ---- | ---- |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | ---- | ---- |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000449 | 0.00679 | 0.000460 | ---- | ---- |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00250 DLA | 0.00250 | <0.00250 DLA | ---- | ---- |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.250 DLA | <0.050 | <0.250 DLA | ---- | ---- |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.661 | 0.437 | 0.672 | ---- | ---- |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 3.72 | 7.46 | 2.66 | ---- | ---- |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 2.31 | 3.88 | 2.18 | ---- | ---- |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000050 DLA | <0.000010 | <0.000050 DLA | ---- | ---- |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 0.393 | 0.716 | 0.395 | ---- | ---- |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.0866 | 0.160 | 0.0843 | ---- | ---- |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 56.2 | 6.73 | 56.0 | ---- | ---- |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000050 DLA | 0.000012 | <0.000050 DLA | ---- | ---- |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00050 DLA | <0.00010 | <0.00050 DLA | ---- | ---- |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00150 DLA | <0.00030 | <0.00150 DLA | ---- | ---- |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000201 | 0.00162 | 0.000203 | ---- | ---- |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00250 DLA | <0.00050 | <0.00250 DLA | ---- | ---- |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | 11.4 | 0.216 | 11.6 | ---- | ---- |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00100 DLA | <0.00020 | <0.00100 DLA | ---- | ---- |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | ---- | ---- |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | ---- | ---- |
| **Speciated Metals** | | | | | | | | | |
| **chromium, hexavalent [Cr VI], total** | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

# QUALITY CONTROL INTERPRETIVE REPORT



| | | | |
|---|---|---|---|
| Work Order | : **WR2200652** | Laboratory | : Whitehorse - Environmental |
| Client | : **Teck Metals Ltd** | Account Manager | : Can Dang |
| Contact | : Wendy McBain | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Telephone | : +1 867 668 6689 |
| Telephone | : ---- | Date Samples Received | : 04-Jul-2022 13:15 |
| Project | : Sa Dena Hes | Issue Date | : 21-Jul-2022 15:49 |
| PO | : PO# 10289 | | |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 13 | | |
| No. of samples analysed | : 13 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**
**CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.**
**DQO: Data Quality Objective.**
**LOR: Limit of Reporting (detection limit).**
**RPD: Relative Percent Difference.**

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-11_2022-06-26 | E298 | 30-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 20 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-29_2022-06-26 | E298 | 30-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 20 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** Dup2 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 21 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-22_2022-06-26 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 21 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-22D_2022-06-26 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 21 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-SDH-S2_2022-06-26 | E298 | 29-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 21 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-04_2022-06-26 | E298 | 28-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 22 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-13_2022-06-26 | E298 | 28-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 22 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-15_2022-06-26 | E298 | 28-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 22 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-FB_2022-06-26 | E298 | 28-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 22 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-02_2022-06-26 | E298 | 27-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 23 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-12_2022-06-26 | E298 | 27-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 23 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MH-FD_2022-06-26 | E298 | 27-Jun-2022 | 12-Jul-2022 | ---- | ---- | | 20-Jul-2022 | 28 days | 23 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-06-26 | E235.Br-L | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-06-26 | E235.Br-L | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** Dup2 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22_2022-06-26 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22D_2022-06-26 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-SDH-S2_2022-06-26 | E235.Br-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-06-26 | E235.Br-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-13_2022-06-26 | E235.Br-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-06-26 | E235.Br-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FB_2022-06-26 | E235.Br-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-02_2022-06-26 | E235.Br-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-12_2022-06-26 | E235.Br-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-06-26 | E235.Br-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-06-26 | E235.Cl | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-06-26 | E235.Cl | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** Dup2 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-06-26 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-22D_2022-06-26 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-SDH-S2_2022-06-26 | E235.Cl | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-06-26 | E235.Cl | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-06-26 | E235.Cl | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-06-26 | E235.Cl | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FB_2022-06-26 | E235.Cl | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-02_2022-06-26 | E235.Cl | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-12_2022-06-26 | E235.Cl | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD_2022-06-26 | E235.Cl | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-11_2022-06-26 | E235.F | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-06-26 | E235.F | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>Dup2 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22_2022-06-26 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22D_2022-06-26 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-SDH-S2_2022-06-26 | E235.F | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-06-26 | E235.F | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-13_2022-06-26 | E235.F | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-06-26 | E235.F | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FB_2022-06-26 | E235.F | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-02_2022-06-26 | E235.F | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-12_2022-06-26 | E235.F | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD_2022-06-26 | E235.F | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-11_2022-06-26 | E235.NO3-L | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 6 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-06-26 | E235.NO3-L | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 6 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>Dup2 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 7 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22_2022-06-26 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 7 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22D_2022-06-26 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 7 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-SDH-S2_2022-06-26 | E235.NO3-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 7 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-06-26 | E235.NO3-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-13_2022-06-26 | E235.NO3-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-06-26 | E235.NO3-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 8 days | × EHTR |

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* / Container / Client Sample ID(s) | *Method* | *Sampling Date* | *Extraction / Preparation* | | | | *Analysis* | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | *Preparation Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* | *Analysis Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-06-26 | E235.NO3-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 8 days | ✘ EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-06-26 | E235.NO3-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 9 days | ✘ EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-06-26 | E235.NO3-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 9 days | ✘ EHTR |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-06-26 | E235.NO3-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 9 days | ✘ EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-06-26 | E235.NO2-L | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 6 days | ✘ EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-06-26 | E235.NO2-L | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 6 days | ✘ EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** Dup2 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 7 days | ✘ EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-06-26 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 7 days | ✘ EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-22D_2022-06-26 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 7 days | ✘ EHTR |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-SDH-S2_2022-06-26 | E235.NO2-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 7 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-06-26 | E235.NO2-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-06-26 | E235.NO2-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-06-26 | E235.NO2-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-06-26 | E235.NO2-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 8 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-06-26 | E235.NO2-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-06-26 | E235.NO2-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-06-26 | E235.NO2-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 3 days | 9 days | × EHTR |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-06-26 | E235.SO4 | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-06-26 | E235.SO4 | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** Dup2 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-06-26 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-22D_2022-06-26 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-SDH-S2_2022-06-26 | E235.SO4 | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-06-26 | E235.SO4 | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-06-26 | E235.SO4 | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-06-26 | E235.SO4 | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-06-26 | E235.SO4 | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-02_2022-06-26 | E235.SO4 | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-12_2022-06-26 | E235.SO4 | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD_2022-06-26 | E235.SO4 | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-11_2022-06-26 | E509 | 30-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-29_2022-06-26 | E509 | 30-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 13 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>Dup2 | E509 | 29-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 14 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-22_2022-06-26 | E509 | 29-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 14 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-22D_2022-06-26 | E509 | 29-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 14 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MH-SDH-S2_2022-06-26 | E509 | 29-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 14 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-04_2022-06-26 | E509 | 28-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 15 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-13_2022-06-26 | E509 | 28-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 15 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-15_2022-06-26 | E509 | 28-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 15 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-FB_2022-06-26 | E509 | 28-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 15 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-02_2022-06-26 | E509 | 27-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 16 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-12_2022-06-26 | E509 | 27-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 16 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-FD_2022-06-26 | E509 | 27-Jun-2022 | 13-Jul-2022 | ---- | ---- | | 13-Jul-2022 | 28 days | 16 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-11_2022-06-26 | E421 | 30-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 15 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-29_2022-06-26 | E421 | 30-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 15 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** Dup2 | E421 | 29-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 16 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-04_2022-06-26 | E421 | 28-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 16 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-22_2022-06-26 | E421 | 29-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 16 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-22D_2022-06-26 | E421 | 29-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 16 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-SDH-S2_2022-06-26 | E421 | 29-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 16 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-02_2022-06-26 | E421 | 27-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 17 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-13_2022-06-26 | E421 | 28-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 17 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-15_2022-06-26 | E421 | 28-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 17 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-FB_2022-06-26 | E421 | 28-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 17 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* Container / Client Sample ID(s) | *Method* | *Sampling Date* | *Extraction / Preparation* Preparation Date | Holding Times Rec | Holding Times Actual | Eval | *Analysis* Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-12_2022-06-26 | E421 | 27-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 18 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-FD_2022-06-26 | E421 | 27-Jun-2022 | 14-Jul-2022 | ---- | ---- | | 15-Jul-2022 | 180 days | 18 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-06-26 | E290 | 30-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 12 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-06-26 | E290 | 30-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 12 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** Dup2 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 13 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-06-26 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 13 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-22D_2022-06-26 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 13 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-SDH-S2_2022-06-26 | E290 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 13 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-06-26 | E290 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 14 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-06-26 | E290 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 14 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-06-26 | E290 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 14 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-06-26 | E290 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 15 days | × EHT |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-06-26 | E290 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 15 days | × EHT |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-06-26 | E290 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 15 days | × EHT |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-06-26 | E290 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 14 days | 15 days | × EHT |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-06-26 | E100 | 30-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 12 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-06-26 | E100 | 30-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 12 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** Dup2 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 13 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22_2022-06-26 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 13 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22D_2022-06-26 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 13 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-SDH-S2_2022-06-26 | E100 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 13 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-06-26 | E100 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 14 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-06-26 | E100 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 14 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FB_2022-06-26 | E100 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 14 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-02_2022-06-26 | E100 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 15 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-12_2022-06-26 | E100 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 15 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-13_2022-06-26 | E100 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 15 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD_2022-06-26 | E100 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 15 days | ✓ |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-06-26 | E108 | 30-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 297 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-11_2022-06-26 | E108 | 30-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 298 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>Dup2 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 319 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22_2022-06-26 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 320 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22D_2022-06-26 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 320 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-SDH-S2_2022-06-26 | E108 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 322 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-06-26 | E108 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 341 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FB_2022-06-26 | E108 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 343 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-06-26 | E108 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 347 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-06-26 | E108 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 348 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-06-26 | E108 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 365 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-06-26 | E108 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 366 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-06-26 | E108 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 0.25 hrs | 367 hrs | × EHTR-FM |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-06-26 | E162 | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-06-26 | E162 | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** Dup2 | E162 | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-06-26 | E162 | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-22D_2022-06-26 | E162 | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-SDH-S2_2022-06-26 | E162 | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-06-26 | E162 | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-06-26 | E162 | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-06-26 | E162 | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-06-26 | E162 | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 8 days | × |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-06-26 | E162 | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 9 days | × EHTL |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-06-26 | E162 | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 9 days | × EHTL |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-06-26 | E162 | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 9 days | × EHT |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-06-26 | E160-L | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-06-26 | E160-L | 30-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** Dup2 | E160-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-06-26 | E160-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-22D_2022-06-26 | E160-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-SDH-S2_2022-06-26 | E160-L | 29-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-06-26 | E160-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-06-26 | E160-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-06-26 | E160-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 8 days | × EHT |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-06-26 | E160-L | 28-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 8 days | × |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-06-26 | E160-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 9 days | × EHTL |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-06-26 | E160-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 9 days | × EHTL |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-06-26 | E160-L | 27-Jun-2022 | ---- | ---- | ---- | | 06-Jul-2022 | 7 days | 9 days | × EHT |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-11_2022-06-26 | E532 | 30-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 12 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-29_2022-06-26 | E532 | 30-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 12 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** Dup2 | E532 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 13 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-22_2022-06-26 | E532 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 13 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-SDH-S2_2022-06-26 | E532 | 29-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 13 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-04_2022-06-26 | E532 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 14 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-13_2022-06-26 | E532 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 14 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-15_2022-06-26 | E532 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 14 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-FB_2022-06-26 | E532 | 28-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 14 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-02_2022-06-26 | E532 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 15 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-12_2022-06-26 | E532 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 15 days | ✓ |
| **Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC** | | | | | | | | | | |
| **UV-inhibited HDPE - total (sodium hydroxide)** SD_MH-FD_2022-06-26 | E532 | 27-Jun-2022 | ---- | ---- | ---- | | 12-Jul-2022 | 28 days | 15 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-11_2022-06-26 | E508 | 30-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 18 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-29_2022-06-26 | E508 | 30-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 18 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>Dup2 | E508 | 29-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 19 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-22_2022-06-26 | E508 | 29-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 19 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-22D_2022-06-26 | E508 | 29-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 19 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-SDH-S2_2022-06-26 | E508 | 29-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 19 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-04_2022-06-26 | E508 | 28-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 20 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-13_2022-06-26 | E508 | 28-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 20 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-15_2022-06-26 | E508 | 28-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 20 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-FB_2022-06-26 | E508 | 28-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 20 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-02_2022-06-26 | E508 | 27-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 21 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-12_2022-06-26 | E508 | 27-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 21 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-FD_2022-06-26 | E508 | 27-Jun-2022 | ---- | ---- | ---- | | 18-Jul-2022 | 28 days | 21 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-11_2022-06-26 | E420 | 30-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 15 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-29_2022-06-26 | E420 | 30-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 15 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>Dup2 | E420 | 29-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 16 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-22_2022-06-26 | E420 | 29-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 16 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-22D_2022-06-26 | E420 | 29-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 16 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-SDH-S2_2022-06-26 | E420 | 29-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 16 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-04_2022-06-26 | E420 | 28-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 17 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* | *Method* | *Sampling Date* | *Extraction / Preparation* | | | | *Analysis* | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Container / Client Sample ID(s)** | | | *Preparation Date* | *Holding Times* | | *Eval* | *Analysis Date* | *Holding Times* | | *Eval* |
| | | | | *Rec* | *Actual* | | | *Rec* | *Actual* | |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** | | | | | | | | | | |
| SD_MH-15_2022-06-26 | E420 | 28-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 17 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** | | | | | | | | | | |
| SD_MH-FB_2022-06-26 | E420 | 28-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 17 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** | | | | | | | | | | |
| SD_MH-02_2022-06-26 | E420 | 27-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 18 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** | | | | | | | | | | |
| SD_MH-12_2022-06-26 | E420 | 27-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 18 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** | | | | | | | | | | |
| SD_MH-13_2022-06-26 | E420 | 28-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 18 days | ✓ |
| **Total Metals : Total Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** | | | | | | | | | | |
| SD_MH-FD_2022-06-26 | E420 | 27-Jun-2022 | ---- | ---- | ---- | | 15-Jul-2022 | 180 days | 18 days | ✓ |

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 551417 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 558923 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 551426 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 551425 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Conductivity in Water | E100 | 551415 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 561401 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 559860 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 551424 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 551422 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 551423 | 1 | 20 | 5.0 | 5.0 | ✓ |
| pH by Meter | E108 | 551416 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 551421 | 1 | 20 | 5.0 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 551526 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 558534 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 567082 | 2 | 24 | 8.3 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 559859 | 1 | 20 | 5.0 | 5.0 | ✓ |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 551417 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 558923 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 551426 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 551425 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Conductivity in Water | E100 | 551415 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 561401 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 559860 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 551424 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 551422 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 551423 | 1 | 20 | 5.0 | 5.0 | ✓ |
| pH by Meter | E108 | 551416 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 551421 | 1 | 20 | 5.0 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 551526 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 558534 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 567082 | 2 | 24 | 8.3 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 559859 | 1 | 20 | 5.0 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 551501 | 2 | 28 | 7.1 | 5.0 | ✓ |
| **Method Blanks (MB)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 551417 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 558923 | 1 | 19 | 5.2 | 5.0 | ✓ |

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC Lot # | QC | Regular | Actual | Expected | Evaluation |
| **Method Blanks (MB) - Continued** | | | | | | | |
| Bromide in Water by IC (Low Level) | E235.Br-L | 551426 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 551425 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Conductivity in Water | E100 | 551415 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 561401 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 559860 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 551424 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 551422 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 551423 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 551421 | 1 | 20 | 5.0 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 551526 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 558534 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 567082 | 2 | 24 | 8.3 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 559859 | 1 | 20 | 5.0 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 551501 | 2 | 28 | 7.1 | 5.0 | ✓ |
| **Matrix Spikes (MS)** | | | | | | | |
| Ammonia by Fluorescence | E298 | 558923 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 551426 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 551425 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 561401 | 1 | 17 | 5.8 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 559860 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 551424 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 551422 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 551423 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 551421 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Total Hexavalent Chromium (Cr VI) by IC | E532 | 558534 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 567082 | 2 | 24 | 8.3 | 5.0 | ✓ |
| Total Metals in Water by CRC ICPMS | E420 | 559859 | 1 | 20 | 5.0 | 5.0 | ✓ |

## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Conductivity in Water | E100<br><br>Vancouver - Environmental | Water | APHA 2510 (mod) | Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C. |
| pH by Meter | E108<br><br>Vancouver - Environmental | Water | APHA 4500-H (mod) | pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time. |
| TSS by Gravimetry (Low Level) | E160-L<br><br>Vancouver - Environmental | Water | APHA 2540 D (mod) | Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples. |
| TDS by Gravimetry | E162<br><br>Vancouver - Environmental | Water | APHA 2540 C (mod) | Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue. |
| Bromide in Water by IC (Low Level) | E235.Br-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Chloride in Water by IC | E235.Cl<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Fluoride in Water by IC | E235.F<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrite in Water by IC (Low Level) | E235.NO2-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrate in Water by IC (Low Level) | E235.NO3-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Sulfate in Water by IC | E235.SO4<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Alkalinity Species by Titration | E290<br><br>Vancouver - Environmental | Water | APHA 2320 B (mod) | Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. |
| Ammonia by Fluorescence | E298<br><br>Vancouver - Environmental | Water | Method Fialab 100, 2018 | Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021) |
| Total Metals in Water by CRC ICPMS | E420<br><br>Vancouver - Environmental | Water | EPA 200.2/6020B (mod) | Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Dissolved Metals in Water by CRC ICPMS | E421<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 6020B (mod) | Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Total Mercury in Water by CVAAS | E508<br><br>Vancouver - Environmental | Water | EPA 1631E (mod) | Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS |
| Dissolved Mercury in Water by CVAAS | E509<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 1631E (mod) | Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS. |
| Total Hexavalent Chromium (Cr VI) by IC | E532<br><br>Vancouver - Environmental | Water | APHA 3500-Cr C (Ion Chromatography) | Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.<br><br>Results are based on an un-filtered, field-preserved sample. |
| Dissolved Hardness (Calculated) | EC100<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. |
| Hardness (Calculated) from Total Ca/Mg | EC100A<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters. |
| Total Trivalent Chromium (Cr III) by Calculation | EC535<br><br>Vancouver - Environmental | Water | APHA 3030B/6020A/EPA 7196A (mod) | Chromium (III)-Total is calculated as the difference between the total chromium and the total hexavalent chromium (Cr(VI)) results.The Limit of Reporting for Chromium (III) varies as a function of the test results. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Preparation for Ammonia | EP298<br><br>Vancouver - Environmental | Water | | Sample preparation for Preserved Nutrients Water Quality Analysis. |
| Dissolved Metals Water Filtration | EP421<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HNO3. |
| Dissolved Mercury Water Filtration | EP509<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HCl. |

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200652** | Page | : 1 of 16 |
| Client | : Teck Metals Ltd | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 04-Jul-2022 13:15 |
| PO | : PO# 10289 | Date Analysis Commenced | : 06-Jul-2022 |
| C-O-C number | : ---- | Issue Date | : 21-Jul-2022 15:49 |
| Sampler | : ---- | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 13 | | |
| No. of samples analysed | : 13 | | |



This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Brieanna Allen | Production/Validation Manager | Vancouver Inorganics, Burnaby, British Columbia |
| Delson Resende | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |
| Erin Sanchez | | Vancouver Metals, Burnaby, British Columbia |
| Hamideh Moradi | Analyst | Vancouver Metals, Burnaby, British Columbia |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Vancouver Metals, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Vancouver Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Vancouver Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Vancouver Inorganics, Burnaby, British Columbia |
| Parnian Sane | Analyst | Vancouver Metals, Burnaby, British Columbia |
| Sam Silveira | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests (QC Lot: 551415)** | | | | | | | | | | | |
| YL2200779-001 | Anonymous | conductivity | ---- | E100 | 2.0 | µS/cm | 10200 | 10200 | 0.0977% | 10% | ---- |
| **Physical Tests (QC Lot: 551416)** | | | | | | | | | | | |
| YL2200779-001 | Anonymous | pH | ---- | E108 | 0.10 | pH units | 8.18 | 8.18 | 0.00% | 4% | ---- |
| **Physical Tests (QC Lot: 551417)** | | | | | | | | | | | |
| YL2200779-001 | Anonymous | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 173 | 170 | 1.86% | 20% | ---- |
| **Physical Tests (QC Lot: 551526)** | | | | | | | | | | | |
| VA22B5038-001 | Anonymous | solids, total dissolved [TDS] | ---- | E162 | 20 | mg/L | 1230 | 1240 | 0.445% | 20% | ---- |
| **Physical Tests (QC Lot: 551527)** | | | | | | | | | | | |
| WR2200652-010 | SD_MH-FD_2022-06-26 | solids, total dissolved [TDS] | ---- | E162 | 20 | mg/L | 551 | 541 | 1.92% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 551421)** | | | | | | | | | | | |
| VA22B5248-001 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 104 | 104 | 0.209% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 551422)** | | | | | | | | | | | |
| VA22B5248-001 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 2.60 | 2.59 | 0.420% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 551423)** | | | | | | | | | | | |
| VA22B5248-001 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | 0.0430 | 0.0428 | 0.498% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 551424)** | | | | | | | | | | | |
| VA22B5248-001 | Anonymous | fluoride | 16984-48-8 | E235.F | 0.020 | mg/L | 0.164 | 0.162 | 0.002 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 551425)** | | | | | | | | | | | |
| VA22B5248-001 | Anonymous | chloride | 16887-00-6 | E235.Cl | 0.50 | mg/L | 3.78 | 3.77 | 0.003 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 551426)** | | | | | | | | | | | |
| VA22B5248-001 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 558923)** | | | | | | | | | | | |
| WR2200645-001 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | 0.0051 | 0.0001 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 559859)** | | | | | | | | | | | |
| FJ2201833-001 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0276 | 0.0327 | 16.9% | 20% | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00016 | 0.00014 | 0.00001 | Diff <2x LOR | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.127 | 0.127 | 0.0689% | 20% | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Total Metals (QC Lot: 559859) - continued** | | | | | | | | | | | |
| FJ2201833-001 | Anonymous | cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000154 | 0.0000133 | 0.0000021 | Diff <2x LOR | ---- |
| | | calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 33.0 | 33.6 | 1.72% | 20% | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | iron, total | 7439-89-6 | E420 | 0.010 | mg/L | 0.069 | 0.073 | 0.004 | Diff <2x LOR | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0076 | 0.0077 | 0.00006 | Diff <2x LOR | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 0.0050 | mg/L | 14.6 | 15.0 | 2.59% | 20% | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.00621 | 0.00638 | 2.60% | 20% | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.000509 | 0.000508 | 0.252% | 20% | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | 0.00079 | 0.00085 | 0.00006 | Diff <2x LOR | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, total | 7440-09-7 | E420 | 0.050 | mg/L | 0.655 | 0.670 | 2.34% | 20% | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.000050 | mg/L | 0.00431 | 0.00418 | 2.91% | 20% | ---- |
| | | silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 1.97 | 2.05 | 3.88% | 20% | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 8.27 | 8.32 | 0.537% | 20% | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.207 | 0.205 | 0.772% | 20% | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 19.6 | 19.9 | 1.88% | 20% | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | 0.00043 | 0.00013 | Diff <2x LOR | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.000511 | 0.000509 | 0.288% | 20% | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | <0.0030 | <0.0030 | 0 | Diff <2x LOR | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 567082)** | | | | | | | | | | | |
| VA22B5205-001 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 567144)** | | | | | | | | | | | |
| FJ2201783-001 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | 0.0000052 | 0.0000002 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 559860)** | | | | | | | | | | | |
| WR2200652-001 | SD_MH-02_2022-06-26 | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0049 | 0.0056 | 0.0007 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00015 | 0.00014 | 0.000006 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00064 | 0.00069 | 0.00004 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Dissolved Metals (QC Lot: 559860) - continued** | | | | | | | | | | | |
| WR2200652-001 | SD_MH-02_2022-06-26 | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.151 | 0.165 | 9.03% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.000168 | 0.000188 | 11.0% | 20% | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 150 | 150 | 0.277% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | 0.00051 | 0.00053 | 0.00002 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00038 | 0.00039 | 0.00001 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | 0.053 | 0.053 | 0.0002 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000388 | 0.000381 | 0.000007 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 9.40 | 10.2 | 8.12% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.421 | 0.446 | 5.79% | 20% | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00104 | 0.00100 | 3.84% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00061 | 0.00065 | 0.00004 | Diff <2x LOR | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 1.37 | 1.48 | 7.27% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | 0.180 µg/L | 0.000205 | 0.000026 | Diff <2x LOR | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 4.09 | 3.98 | 2.69% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 7.90 | 8.30 | 4.90% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.509 | 0.513 | 0.836% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 64.3 | 62.2 | 3.27% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00143 | 0.00147 | 2.60% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0213 | 0.0224 | 4.95% | 20% | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 561401)** | | | | | | | | | | | |
| WR2200651-001 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Speciated Metals (QC Lot: 558534)** | | | | | | | | | | | |
| FJ2201787-001 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.00050 | mg/L | 0.00070 | 0.00060 | 0.00010 | Diff <2x LOR | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Physical Tests (QCLot: 551415)** | | | | | | |
| conductivity | ---- | E100 | 1 | μS/cm | <1.0 | ---- |
| **Physical Tests (QCLot: 551417)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 551501)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 551502)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 551526)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Physical Tests (QCLot: 551527)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Anions and Nutrients (QCLot: 551421)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 551422)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 551423)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 551424)** | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | <0.020 | ---- |
| **Anions and Nutrients (QCLot: 551425)** | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | <0.50 | ---- |
| **Anions and Nutrients (QCLot: 551426)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 558923)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Total Metals (QCLot: 559859)** | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | <0.010 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 559859) - continued** | | | | | | |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | <0.050 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | <0.010 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | <0.050 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | <0.050 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | <0.10 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | <0.050 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | <0.50 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| **Total Metals (QCLot: 567082)** | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Total Metals (QCLot: 567144)** | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 559860)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 559860) - continued** | | | | | | |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 561401)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Speciated Metals (QCLot: 558534)** | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | <0.00050 | ---- |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 551415)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 96.4 | 90.0 | 110 | ---- |
| **Physical Tests (QCLot: 551416)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 100 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 551417)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 102 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 551501)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 97.2 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 551502)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 99.8 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 551526)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 97.3 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 551527)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 99.1 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 551421)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 103 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 551422)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 102 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 551423)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 98.2 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 551424)** | | | | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | 1 mg/L | 99.4 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 551425)** | | | | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | 100 mg/L | 101 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 551426)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 94.2 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 558923)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 99.6 | 85.0 | 115 | ---- |
| **Total Metals (QCLot: 559859)** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | 2 mg/L | 98.0 | 80.0 | 120 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | 1 mg/L | 109 | 80.0 | 120 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | 1 mg/L | 101 | 80.0 | 120 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | 0.25 mg/L | 101 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| | | | | | Concentration | LCS | Low | High | Qualifier |
| **Total Metals (QCLot: 559859) - continued** | | | | | | | | | |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | 0.1 mg/L | 102 | 80.0 | 120 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | 1 mg/L | 100 | 80.0 | 120 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | 1 mg/L | 87.7 | 80.0 | 120 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | 0.1 mg/L | 100 | 80.0 | 120 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | 50 mg/L | 100 | 80.0 | 120 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | 0.25 mg/L | 97.2 | 80.0 | 120 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | 0.25 mg/L | 98.8 | 80.0 | 120 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | 0.25 mg/L | 97.9 | 80.0 | 120 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | 1 mg/L | 100 | 80.0 | 120 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | 0.25 mg/L | 103 | 80.0 | 120 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | 50 mg/L | 104 | 80.0 | 120 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | 0.25 mg/L | 98.6 | 80.0 | 120 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | 0.25 mg/L | 105 | 80.0 | 120 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | 0.5 mg/L | 100 | 80.0 | 120 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | 10 mg/L | 109 | 80.0 | 120 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | 50 mg/L | 104 | 80.0 | 120 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | 10 mg/L | 108 | 80.0 | 120 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | 0.1 mg/L | 103 | 80.0 | 120 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | 50 mg/L | 103 | 80.0 | 120 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | 0.25 mg/L | 97.9 | 80.0 | 120 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | 50 mg/L | 89.3 | 80.0 | 120 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | 1 mg/L | 101 | 80.0 | 120 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | 0.5 mg/L | 103 | 80.0 | 120 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | 0.25 mg/L | 96.5 | 80.0 | 120 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | 0.005 mg/L | 100 | 80.0 | 120 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | 0.5 mg/L | 102 | 80.0 | 120 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | 0.5 mg/L | 98.2 | 80.0 | 120 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | 0.1 mg/L | 97.9 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 567082)** | | | | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | 0.0001 mg/L | 96.8 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 567144)** | | | | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | 0.0001 mg/L | 98.0 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 559860)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 98.4 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 559860) - continued** | | | | | | | | | |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 96.6 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 99.6 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 99.3 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 98.4 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 101 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 94.1 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 97.2 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 99.7 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 100 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 98.6 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 97.9 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 103 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 103 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 99.9 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 98.1 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 97.0 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 100 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 97.4 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 106 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 98.5 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 97.8 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 95.3 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 103 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 99.1 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 92.6 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 94.9 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 94.2 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 108 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 102 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 94.5 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 95.2 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 95.2 | 80.0 | 120 | ---- |
| **Speciated Metals (QCLot: 558534)** | | | | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | 0.25 mg/L | 100 | 90.0 | 110 | ---- |

## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 551421)** | | | | | | | | | | |
| VA22B5249-001 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 102 mg/L | 100 mg/L | 102 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 551422)** | | | | | | | | | | |
| VA22B5249-001 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 2.65 mg/L | 2.5 mg/L | 106 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 551423)** | | | | | | | | | | |
| VA22B5249-001 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.511 mg/L | 0.5 mg/L | 102 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 551424)** | | | | | | | | | | |
| VA22B5249-001 | Anonymous | fluoride | 16984-48-8 | E235.F | 1.05 mg/L | 1 mg/L | 105 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 551425)** | | | | | | | | | | |
| VA22B5249-001 | Anonymous | chloride | 16887-00-6 | E235.Cl | 106 mg/L | 100 mg/L | 106 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 551426)** | | | | | | | | | | |
| VA22B5249-001 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.468 mg/L | 0.5 mg/L | 93.6 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 558923)** | | | | | | | | | | |
| WR2200645-002 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.1000 mg/L | 0.1 mg/L | 100.0 | 75.0 | 125 | ---- |
| **Total Metals (QCLot: 559859)** | | | | | | | | | | |
| FJ2201833-002 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.190 mg/L | 0.2 mg/L | 95.1 | 70.0 | 130 | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.0206 mg/L | 0.02 mg/L | 103 | 70.0 | 130 | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.0194 mg/L | 0.02 mg/L | 96.9 | 70.0 | 130 | ---- |
| | | barium, total | 7440-39-3 | E420 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.0395 mg/L | 0.04 mg/L | 98.9 | 70.0 | 130 | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.00950 mg/L | 0.01 mg/L | 95.0 | 70.0 | 130 | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.099 mg/L | 0.1 mg/L | 98.7 | 70.0 | 130 | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.00393 mg/L | 0.004 mg/L | 98.3 | 70.0 | 130 | ---- |
| | | calcium, total | 7440-70-2 | E420 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.0386 mg/L | 0.04 mg/L | 96.5 | 70.0 | 130 | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.0193 mg/L | 0.02 mg/L | 96.7 | 70.0 | 130 | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.0193 mg/L | 0.02 mg/L | 96.4 | 70.0 | 130 | ---- |
| | | iron, total | 7439-89-6 | E420 | 1.98 mg/L | 2 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.0196 mg/L | 0.02 mg/L | 98.0 | 70.0 | 130 | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.102 mg/L | 0.1 mg/L | 102 | 70.0 | 130 | ---- |
| | | magnesium, total | 7439-95-4 | E420 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *Concentration* | *Target* | *MS* | *Low* | *High* | *Qualifier* |
| **Total Metals (QCLot: 559859) - continued** | | | | | | | | | | |
| FJ2201833-002 | Anonymous | manganese, total | 7439-96-5 | E420 | 0.0194 mg/L | 0.02 mg/L | 97.1 | 70.0 | 130 | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.0203 mg/L | 0.02 mg/L | 102 | 70.0 | 130 | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.0386 mg/L | 0.04 mg/L | 96.5 | 70.0 | 130 | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 9.94 mg/L | 10 mg/L | 99.4 | 70.0 | 130 | ---- |
| | | potassium, total | 7440-09-7 | E420 | 3.92 mg/L | 4 mg/L | 98.0 | 70.0 | 130 | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.0408 mg/L | 0.04 mg/L | 102 | 70.0 | 130 | ---- |
| | | silicon, total | 7440-21-3 | E420 | 9.51 mg/L | 10 mg/L | 95.1 | 70.0 | 130 | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.00407 mg/L | 0.004 mg/L | 102 | 70.0 | 130 | ---- |
| | | sodium, total | 7440-23-5 | E420 | 1.95 mg/L | 2 mg/L | 97.5 | 70.0 | 130 | ---- |
| | | strontium, total | 7440-24-6 | E420 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 19.9 mg/L | 20 mg/L | 99.6 | 70.0 | 130 | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.00380 mg/L | 0.004 mg/L | 94.9 | 70.0 | 130 | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.0197 mg/L | 0.02 mg/L | 98.6 | 70.0 | 130 | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.0381 mg/L | 0.04 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.00389 mg/L | 0.004 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.0982 mg/L | 0.1 mg/L | 98.2 | 70.0 | 130 | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.382 mg/L | 0.4 mg/L | 95.5 | 70.0 | 130 | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.0406 mg/L | 0.04 mg/L | 102 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 567082)** | | | | | | | | | | |
| VA22B5205-002 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000945 mg/L | 0.0001 mg/L | 94.5 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 567144)** | | | | | | | | | | |
| FJ2201783-002 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000967 mg/L | 0.0001 mg/L | 96.7 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 559860)** | | | | | | | | | | |
| WR2200652-002 | SD_MH-04_2022-06-26 | aluminum, dissolved | 7429-90-5 | E421 | 0.200 mg/L | 0.2 mg/L | 99.9 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0185 mg/L | 0.02 mg/L | 92.5 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0206 mg/L | 0.02 mg/L | 103 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.0196 mg/L | 0.02 mg/L | 98.3 | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0401 mg/L | 0.04 mg/L | 100 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00879 mg/L | 0.01 mg/L | 87.9 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.096 mg/L | 0.1 mg/L | 96.2 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00392 mg/L | 0.004 mg/L | 98.0 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0411 mg/L | 0.04 mg/L | 103 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0199 mg/L | 0.02 mg/L | 99.5 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0199 mg/L | 0.02 mg/L | 99.6 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.92 mg/L | 2 mg/L | 96.3 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 559860) - continued** | | | | | | | | | | |
| WR2200652-002 | SD_MH-04_2022-06-26 | lead, dissolved | 7439-92-1 | E421 | 0.0194 mg/L | 0.02 mg/L | 96.8 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0961 mg/L | 0.1 mg/L | 96.1 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0199 mg/L | 0.02 mg/L | 99.7 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0195 mg/L | 0.02 mg/L | 97.4 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0394 mg/L | 0.04 mg/L | 98.6 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 10.8 mg/L | 10 mg/L | 108 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 4.08 mg/L | 4 mg/L | 102 | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0399 mg/L | 0.04 mg/L | 99.6 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 8.93 mg/L | 10 mg/L | 89.3 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00368 mg/L | 0.004 mg/L | 91.9 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 2.15 mg/L | 2 mg/L | 107 | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 20.0 mg/L | 20 mg/L | 100 | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00390 mg/L | 0.004 mg/L | 97.4 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0180 mg/L | 0.02 mg/L | 90.1 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0400 mg/L | 0.04 mg/L | 99.9 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.00403 mg/L | 0.004 mg/L | 101 | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.104 mg/L | 0.1 mg/L | 104 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.397 mg/L | 0.4 mg/L | 99.2 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0376 mg/L | 0.04 mg/L | 94.0 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 561401)** | | | | | | | | | | |
| WR2200651-002 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000988 mg/L | 0.0001 mg/L | 98.8 | 70.0 | 130 | ---- |
| **Speciated Metals (QCLot: 558534)** | | | | | | | | | | |
| WR2200652-001 | SD_MH-02_2022-06-26 | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.265 mg/L | 0.25 mg/L | 106 | 85.0 | 115 | ---- |

ALS Environmental
www.alsglobal.com

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 652



Environmental Division
Whitehorse
Work Order Reference
WR2200652
Telephone: +1 867 668 6689

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Phone: | 250-4278422 |
| | Company address below will appear on the final report |
| Street: | 601 Knightton Road |
| City/Province: | Kimberly, BC |
| Postal Code: | V1A 3E1 |
| Invoice To | Same as Report To |
| | Copy of Invoice with Report |
| Company: | |
| Contact: | |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | |
| Quality Control (QC) Report with Report | |
| Select Distribution: | |
| Email 1 or Fax | azheng@ensero.com, slyons@ensero.com |
| Email 2 | wendy.mcbain@teck.com, colin.lynch@teck.com |
| Email 3 | chanson@ensero.com,teckkimb@equisonline.com |
| **Invoice Distribution** | |
| Select Invoice Distribution: | |
| Email 1 or Fax | Michelle.unger@teck.com |
| Email 2 | legacy.ap@teck.com |

Select Service Level Below - Please confirm all E&P

Regular [R]

PRIORITY (Business Days): 4 day [P4]; 3 day [P3]; 2 day [P2]

Date and Time Required for all E&P TA

For tests that can not be performed according to the

Ana

Indicate Filtered (F), Preserved (P) or

| Project Information | |
|---|---|
| ALS Account # / Quote #: | Q62635 |
| Job #: | ECA22YT00199 |
| PO / AFE: | Teck PO-10289 |
| LSD: | |

| Oil and Gas Required Fields (client use) | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |

ALS Lab Work Order # (lab use only)

ALS Contact: Can Dang | Sampler:

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Sample Location This description will appear on the bottle | Date (dd-mmm-yy) | Time (hh:mm) | Field Matrix | Total Metals (low level) + Hg (P) | Dissolved Metals (low level) +Hg (F/P) | pH, SPC, alkalinity, hardness | Anions( Nitrate, Nitrite, Sulphate, Cl, F, Br) (P) | Ammonia (P) | TDS, TSS(low) | Chromium Speciation (P) | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SD_MH-02_2022-06-26 | SD_MH-02 | 27-Jun-22 | 17:00 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-04_2022-06-26 | SD_MH-04 | 28-Jun-22 | 17:00 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-11_2022-06-26 | SD_MH-11 | 30-Jun-22 | 12:30 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-12_2022-06-26 | SD_MH-12 | 27-Jun-22 | 16:00 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-13_2022-06-26 | SD_MH-13 | 28-Jun-22 | 10:30 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-15_2022-06-26 | SD_MH-15 | 28-Jun-22 | 11:00 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-29_2022-06-26 | SD_MH-29 | 30-Jun-22 | 12:45 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-30_2022-06-26 | SD_MH-30 | | | | | | | | | | | |
| | SD_MH-FB_2022-06-26 | SD_MH-FB | 28-Jun-22 | NA | WS | R | R | R | R | R | R | R | 7 |
| 10 | SD_MH-FD_2022-06-26 | SD_MH-FD | 27-Jun-22 | NA | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-TB_2022-06-26 | SD_MH-TripBlank | Empty TribBlank | | WS | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | | 5 |

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?

Are samples for human drinking water use?

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C: 7/3/4/4/8/4
FINAL COOLER TEMPERATURES °C:

| SHIPMENT RELEASE (client use) | | | INITIAL SHIPMENT RECEPTION (lab use only) | | | FINAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|---|---|---|---|---|---|
| Released by: | Date: | Time: | Received by: D | Date: July 4/22 | Time: 13:15 | Received by: | Date: | Time: |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

# Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number:



| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Phone: | 250-4278422 |
| | Company address below will appear on the final report |
| Street: | 601 Knightton Road |
| City/Province: | Kimberly, BC |
| Postal Code: | V1A 3E1 |
| Invoice To | Same as Report To |
| | Copy of Invoice with Report |
| Company: | |
| Contact: | |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | |
| Quality Control (QC) Report with Report | |
| Select Distribution: | |
| Email 1 or Fax | azheng@ensero.com, slyons@ensero.com |
| Email 2 | wendy.mcbain@teck.com, colin.lynch@teck.com |
| Email 3 | chanson@ensero.com,teckkimb@equisonline.com |
| **Invoice Distribution** | |
| Select Invoice Distribution: | |
| Email 1 or Fax | Michelle.unger@teck.com |
| Email 2 | legacy.ap@teck.com |

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R]

PRIORITY (Business Days): 4 day [P4]; 3 day [P3]; 2 day [P2]

EMERGENCY: 1 Business day [E1]; Same Day, Weekend or Statutory holiday [E0]

Date and Time Required for all E&P TATs: dd-mmm-yy hh mm

For tests that can not be performed according to the service level selected, you will be contacted.

| Project Information | |
|---|---|
| ALS Account # / Quote #: | Q62635 |
| Job #: | ECA22YT00199 |
| PO / AFE: | Teck PO-10289 |
| LSD: | |

| Oil and Gas Required Fields (client use) | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |

ALS Lab Work Order # (lab use only)

ALS Contact: Can Dang | Sampler:

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Sample Location (This description will appear on the bottle) | Date (dd-mmm-yy) | Time (hh:mm) | Field Matrix | Total Metals (low level) + Hg | Dissolved Metals (low level) +Hg | pH, SPC, alkalinity, hardness | Anions( Nitrate, Nitrite, Sulphate, Cl, F, Br) | Ammonia | TDS, TSS(low) | Chromium Speciation | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | P | F/P | | P | P | | P | |
| 11 | SD_MH-22D_2022-06-26 | SD_MH-22D | 29-Jun-22 | 14:30 | WS | R | R | R | R | R | R | | 7 |
| | SD_MH-SDH-S2_2022-06-26 | SD_SDH-S2 | 29-Jun-22 | 12:00 | WS | R | R | R | R | R | R | R | 7 |
| 13 | SD_MH-22_2022-06-26 | SD_MH-22 | 29-Jun-22 | 14:00 | WS | R | R | R | R | R | R | R | 7 |
| | | Dup2 | 29-Jun-22 | NA | WS | R | R | R | R | R | R | R | 7 |

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?

Are samples for human drinking water use?

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C

| SHIPMENT RELEASE (client use) | | | INITIAL SHIPMENT RECEPTION (lab use only) | | | FINAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|---|---|---|---|---|---|
| Released by: | Date: | Time: | Received by: | Date: | Time: | Received by: | Date: | Time: |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Environmental
www.alsglobal.com

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

**Affix ALS barcode label here**
(lab use only)

COC Number: 652

Page 1 of 2

Environmental Division
Whitehorse
Work Order Reference
WR2200652

Telephone : +1 867 668 6689

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Phone: | 250-4278422 |
| | Company address below will appear on the final report |
| Street: | 601 Knightton Road |
| City/Province: | Kimberly, BC |
| Postal Code: | V1A 3E1 |
| **Invoice To** | Same as Report To |
| | Copy of Invoice with Report |
| Company: | |
| Contact: | |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | |
| Quality Control (QC) Report with Report | |
| Select Distribution: | |
| Email 1 or Fax | azheng@ensero.com, slyons@ensero.com |
| Email 2 | wendy.mcbain@teck.com, colin.lynch@teck.com |
| Email 3 | chanson@ensero.com,teckkimb@equisonline.com |
| **Invoice Distribution** | |
| Select Invoice Distribution: | |
| Email 1 or Fax | Michelle.unger@teck.com |
| Email 2 | legacy.ap@teck.com |

Select Service Level Below - Please confirm all E&P

Regular [R]

PRIORITY (Business Days): 4 day [P4] / 3 day [P3] / 2 day [P2]

Date and Time Required for all E&P TA

For tests that can not be performed according to the

Ana

Indicate Filtered (F), Preserved (P) or

| Project Information | |
|---|---|
| ALS Account # / Quote #: | Q62635 |
| Job #: | ECA22YT00199 |
| PO / AFE: | Teck PO-10289 |
| LSD: | |
| ALS Lab Work Order # (lab use only) | |

| Oil and Gas Required Fields (client use) | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |
| ALS Contact: Can Dang | Sampler: |

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Sample Location This description will appear on the bottle | Date (dd-mmm-yy) | Time (hh:mm) | Field Matrix | Total Metals (low level) + Hg (P) | Dissolved Metals (low level) +Hg (F/P) | pH, SPC, alkalinity, hardness | Anions( Nitrate, Nitrite, Sulphate, Cl, F, Br) (P) | Ammonia (P) | TDS, TSS(low) | Chromium Speciation (P) | | | | | | | | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SD_MH-02_2022-06-26 | SD_MH-02 | 27-Jun-22 | 17:00 | WS | R | R | R | R | R | R | R | | | | | | | | 7 |
| | SD_MH-04_2022-06-26 | SD_MH-04 | 28-Jun-22 | 17:00 | WS | R | R | R | R | R | R | R | | | | | | | | 7 |
| | SD_MH-11_2022-06-26 | SD_MH-11 | 30-Jun-22 | 12:30 | WS | R | R | R | R | R | R | R | | | | | | | | 7 |
| | SD_MH-12_2022-06-26 | SD_MH-12 | 27-Jun-22 | 16:00 | WS | R | R | R | R | R | R | R | | | | | | | | 7 |
| | SD_MH-13_2022-06-26 | SD_MH-13 | 28-Jun-22 | 10:30 | WS | R | R | R | R | R | R | R | | | | | | | | 7 |
| | SD_MH-15_2022-06-26 | SD_MH-15 | 28-Jun-22 | 11:00 | WS | R | R | R | R | R | R | R | | | | | | | | 7 |
| | SD_MH-29_2022-06-26 | SD_MH-29 | 30-Jun-22 | 12:45 | WS | R | R | R | R | R | R | R | | | | | | | | 7 |
| | ~~SD_MH-30_2022-06-26~~ | ~~SD_MH-30~~ | | | | | | | | | | | | | | | | | | |
| | SD_MH-FB_2022-06-26 | SD_MH-FB | 28-Jun-22 | NA | WS | R | R | R | R | R | R | R | | | | | | | | 7 |
| 10 | SD_MH-FD_2022-06-26 | SD_MH-FD | 27-Jun-22 | NA | WS | R | R | R | R | R | R | R | | | | | | | | 7 |
| | SD_MH-TB_2022-06-26 | SD_MH-TripBlank | Empty TribBlank | | WS | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | ~~R~~ | | | | | | | | | 5 |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System?

Are samples for human drinking water use?

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐ — SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C: 7 / 3 / 4 / 4 / 8 / 4

FINAL COOLER TEMPERATURES °C: 10.5 C

| SHIPMENT RELEASE (client use) | | | INITIAL SHIPMENT RECEPTION (lab use only) | | | FINAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|---|---|---|---|---|---|
| Released by: | Date: | Time: | Received by: D | Date: July 4/22 | Time: 13:15 | Received by: JH | Date: 7/5/2022 | Time: 1pm |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

# Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

**Affix ALS barcode label here** (lab use only)

COC Number:



| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Phone: | 250-4278422 |
| | Company address below will appear on the final report |
| Street: | 601 Knightton Road |
| City/Province: | Kimberly, BC |
| Postal Code: | V1A 3E1 |
| Invoice To | Same as Report To |
| | Copy of Invoice with Report |
| Company: | |
| Contact: | |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | |
| Quality Control (QC) Report with Report | |
| Select Distribution: | |
| Email 1 or Fax | azheng@ensero.com, slyons@ensero.com |
| Email 2 | wendy.mcbain@teck.com, colin.lynch@teck.com |
| Email 3 | chanson@ensero.com,teckkimb@equisonline.com |
| **Invoice Distribution** | |
| Select Invoice Distribution: | |
| Email 1 or Fax | Michelle.unger@teck.com |
| Email 2 | legacy.ap@teck.com |

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

| Regular [R] | | | |
|---|---|---|---|
| PRIORITY (Business Days) | 4 day [P4] | EMERGENCY | 1 Business day [E1] |
| | 3 day [P3] | | Same Day, Weekend or Statutory holiday [E0] |
| | 2 day [P2] | | |
| Date and Time Required for all E&P TATs: | | dd-mmm-yy hh:mm | |

For tests that can not be performed according to the service level selected, you will be contacted.

| Project Information | |
|---|---|
| ALS Account # / Quote #: | Q62635 |
| Job #: | ECA22YT00199 |
| PO / AFE: | Teck PO-10289 |
| LSD: | |
| ALS Lab Work Order # (lab use only) | |

| Oil and Gas Required Fields (client use) | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |
| ALS Contact: Can Dang | Sampler: |

**Analysis Request** — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Sample Location (This description will appear on the bottle) | Date (dd-mmm-yy) | Time (hh:mm) | Field Matrix | Total Metals (low level) + Hg | Dissolved Metals (low level) +Hg | pH, SPC, alkalinity, hardness | Anions( Nitrate, Nitrite, Sulphate, Cl, F, Br) | Ammonia | TDS, TSS(low) | Chromium Speciation | | | | | | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | P | F/P | | P | P | | P | | | | | | |
| 11 | SD_MH-22D_2022-06-26 | SD_MH-22D | 29-Jun-22 | 14:30 | WS | R | R | R | R | R | R | | | | | | | 7 |
| | SD_MH-SDH-S2_2022-06-26 | SD_SDH-S2 | 29-Jun-22 | 12:00 | WS | R | R | R | R | R | R | R | | | | | | 7 |
| 13 | SD_MH-22_2022-06-26 | SD_MH-22 | 29-Jun-22 | 14:00 | WS | R | R | R | R | R | R | R | | | | | | 7 |
| | | Dup2 | 29-Jun-22 | NA | WS | R | R | R | R | R | R | R | | | | | | 7 |

| Drinking Water (DW) Samples[1] (client use) | Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) |
|---|---|
| Are samples taken from a Regulated DW System? | |
| Are samples for human drinking water use? | |

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

| INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C |
|---|---|
| | 10.5 °C |

| SHIPMENT RELEASE (client use) | | | INITIAL SHIPMENT RECEPTION (lab use only) | | | FINAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|---|---|---|---|---|---|
| Released by: | Date: | Time: | Received by: | Date: | Time: | Received by: JA | Date: 7/5/2022 | Time: 1pm |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION    WHITE - LABORATORY COPY    YELLOW - CLIENT COPY    OCTOBER 2015 FRONT

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1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| Work Order | : **WR2200849** | Page | : 1 of 18 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Aug-2022 16:45 |
| PO | : PO# 10289 | Date Analysis Commenced | : 15-Aug-2022 |
| C-O-C number | : ---- | Issue Date | : 22-Aug-2022 19:05 |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 16 | | |
| No. of samples analysed | : 16 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Metals, Burnaby, British Columbia |
| ChingXing Yew | Analsyt | Organics, Burnaby, British Columbia |
| Dan Gebert | Laboratory Analyst | Metals, Burnaby, British Columbia |
| Erin Sanchez | | Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Inorganics, Burnaby, British Columbia |
| Owen Cheng | | Metals, Burnaby, British Columbia |
| Parnian Sane | Analyst | Metals, Burnaby, British Columbia |
| Sukhman Khosa | Lab Assistant | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| - | No Unit |
| µg/L | micrograms per litre |
| µS/cm | Microsiemens per centimetre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLDS* | *Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.* |
| *DLM* | *Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).* |
| *DLQ* | *Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.* |
| *RRV* | *Reported result verified by repeat analysis.* |

## *Analytical Results*

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| | | | | *Client sample ID* | **SD_MW13-01_ 2022-08-08** | **SD_MW13-04_ 2022-08-08** | **SD_MW13-06_ 2022-08-08** | **SD_MW13-07_ 2022-08-08** | **SD_MW13-08_ 2022-08-08** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *Client sampling date / time* | 10-Aug-2022 17:00 | 08-Aug-2022 15:40 | 10-Aug-2022 14:00 | 09-Aug-2022 13:45 | 08-Aug-2022 16:30 |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | **WR2200849-001** | **WR2200849-002** | **WR2200849-003** | **WR2200849-004** | **WR2200849-005** |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 144 | 153 | 176 | 232 | 250 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 307 | 306 | 825 | 480 | 485 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 155 | 178 | 411 | 235 | 244 |
| **pH** | ---- | E108 | 0.10 | pH units | 7.64 | 7.89 | 7.27 | 7.83 | 7.55 |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 168 | 210 | 620 | 295 | 285 |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 30.5 | 2640 | 9.1 | 95.8 | 353 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | 0.0751 | 0.0164 | 0.153 | 0.0192 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.250 DLDS | <0.050 | <0.050 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.223 | 0.376 | <0.0250 DLDS | <0.0050 | 0.226 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0050 DLDS | 0.0028 | <0.0010 |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 9.36 | 4.28 | 258 | 30.4 | 7.62 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0013 | 1.15 | 0.0013 | 0.0100 | 0.0020 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00014 | 0.00040 | 0.00021 | <0.00010 | 0.00015 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00048 | 0.00242 | 0.0488 | 0.00167 | 0.00025 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0191 | 0.146 | 0.0237 | 0.0410 | 0.159 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | 0.000203 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0.012 | 0.021 | <0.010 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.000590 | 0.000621 | 0.0000962 | <0.0000050 | 0.0000560 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 55.8 | 62.6 | 146 | 67.2 | 83.3 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | 0.00313 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | 0.00542 | 0.00264 | <0.00010 | <0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00020 | 0.0116 | 0.00108 | 0.00022 | 0.00039 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | 3.57 | 0.518 | 0.674 | <0.010 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000868 | 0.0510 | 0.000053 | <0.000050 | <0.000050 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0014 | 0.0026 | 0.0077 | 0.0090 | 0.0016 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 3.86 | 5.35 | 11.2 | 16.4 | 8.86 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00030 | 0.222 | 0.306 | 0.114 | 0.00051 |

## Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-01_ 2022-08-08 | SD_MW13-04_ 2022-08-08 | SD_MW13-06_ 2022-08-08 | SD_MW13-07_ 2022-08-08 | SD_MW13-08_ 2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 10-Aug-2022 17:00 | 08-Aug-2022 15:40 | 10-Aug-2022 14:00 | 09-Aug-2022 13:45 | 08-Aug-2022 16:30 |
| | | | | | WR2200849-001 | WR2200849-002 | WR2200849-003 | WR2200849-004 | WR2200849-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | 0.0000461 | <0.0000050 | <0.0000050 | <0.0000050 |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000778 | 0.000426 | 0.0342 | 0.00291 | 0.000675 |
| nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | 0.00772 | 0.0286 | <0.00050 | <0.00050 |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | 0.231 | 0.167 | <0.050 | <0.050 |
| potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 0.663 | 0.693 | 2.00 | 2.87 | 0.609 |
| selenium, dissolved | 7782-49-2 | E421 | 0.050 | µg/L | 1.22 | 1.14 | <0.050 | <0.050 | 1.14 |
| silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 3.50 | 5.13 | 15.4 | 8.17 | 4.06 |
| silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | 0.000102 | <0.000010 | <0.000010 | <0.000010 |
| sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 0.741 | 1.04 | 4.81 | 5.20 | 0.941 |
| strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.178 | 0.173 | 0.517 | 0.532 | 0.283 |
| sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 3.87 | 1.68 | 96.6 | 11.4 | 3.40 |
| thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | 0.000044 | 0.000017 | <0.000010 | <0.000010 |
| tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | 0.0223 | <0.00030 | <0.00030 | <0.00030 |
| uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000986 | 0.000933 | 0.0126 | 0.00673 | 0.00126 |
| vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | 0.00483 | <0.00050 | <0.00050 | <0.00050 |
| zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0197 | 0.138 | 0.127 | 0.0012 | <0.0010 |
| zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | 0.00040 | <0.00020 | <0.00020 | <0.00020 |
| dissolved mercury filtration location | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| dissolved metals filtration location | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | ---- |
| styrene | 100-42-5 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | ---- |
| toluene | 108-88-3 | E611A | 0.50 | µg/L | ---- | 0.62 | ---- | <0.50 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | ---- | <0.40 | ---- | <0.40 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | ---- | <0.30 | ---- | <0.30 | ---- |
| xylenes, total | 1330-20-7 | E611A | 0.50 | µg/L | ---- | <0.50 | ---- | <0.50 | ---- |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| bromofluorobenzene, 4- | 460-00-4 | E611A | 1.0 | % | ---- | 76.0 | ---- | 74.3 | ---- |

## Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-01_ 2022-08-08 | SD_MW13-04_ 2022-08-08 | SD_MW13-06_ 2022-08-08 | SD_MW13-07_ 2022-08-08 | SD_MW13-08_ 2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2022 17:00 | 08-Aug-2022 15:40 | 10-Aug-2022 14:00 | 09-Aug-2022 13:45 | 08-Aug-2022 16:30 |
| | | | | | WR2200849-001 | WR2200849-002 | WR2200849-003 | WR2200849-004 | WR2200849-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| difluorobenzene, 1,4- | 540-36-3 | E611A | 1.0 | % | ---- | 98.0 | ---- | 98.8 | ---- |
| **Hydrocarbons** | | | | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | ---- | <250 | ---- | <250 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | ---- | <250 | ---- | 2620 | ---- |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | ---- | <100 | ---- | <100 | ---- |
| HEPHw | ---- | EC600A | 250 | µg/L | ---- | <250 | ---- | 2620 | ---- |
| LEPHw | ---- | EC600A | 250 | µg/L | ---- | <250 | ---- | <250 | ---- |
| VPHw | ---- | EC580A | 100 | µg/L | ---- | <100 | ---- | <100 | ---- |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| bromobenzotrifluoride, 2- (EPH surr) | 392-83-6 | E601A | 1.0 | % | ---- | 85.8 | ---- | 77.2 | ---- |
| dichlorotoluene, 3,4- | 97-75-0 | E581.VH+F1 | 1.0 | % | ---- | 93.1 | ---- | 99.6 | ---- |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| acridine | 260-94-6 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| anthracene | 120-12-7 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.0050 | µg/L | ---- | <0.0050 | ---- | <0.0050 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| benzo(b+j+k)fluoranthene | n/a | E641A | 0.015 | µg/L | ---- | <0.015 | ---- | <0.015 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| chrysene | 218-01-9 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.0050 | µg/L | ---- | <0.0050 | ---- | <0.0050 | ---- |
| fluoranthene | 206-44-0 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| fluorene | 86-73-7 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| naphthalene | 91-20-3 | E641A | 0.050 | µg/L | ---- | <0.050 | ---- | <0.050 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.020 | µg/L | ---- | <0.020 | ---- | <0.020 | ---- |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| | | | | Client sample ID | SD_MW13-01_ 2022-08-08 | SD_MW13-04_ 2022-08-08 | SD_MW13-06_ 2022-08-08 | SD_MW13-07_ 2022-08-08 | SD_MW13-08_ 2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2022 17:00 | 08-Aug-2022 15:40 | 10-Aug-2022 14:00 | 09-Aug-2022 13:45 | 08-Aug-2022 16:30 |
| Analyte | CAS Number | Method | LOR | Unit | WR2200849-001 | WR2200849-002 | WR2200849-003 | WR2200849-004 | WR2200849-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **pyrene** | 129-00-0 | E641A | 0.010 | µg/L | ---- | <0.010 | ---- | <0.010 | ---- |
| **quinoline** | 91-22-5 | E641A | 0.050 | µg/L | ---- | <0.050 | ---- | <0.050 | ---- |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| **chrysene-d12** | 1719-03-5 | E641A | 0.1 | % | ---- | 99.9 | ---- | 96.7 | ---- |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | ---- | 104 | ---- | 98.1 | ---- |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | ---- | 105 | ---- | 108 | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-10_ 2022-08-08 | SD_MW13-13_ 2022-08-08 | SD_MW14-01_ 2022-08-08 | SD_MW14-02_ 2022-08-08 | SD_MW14-03_ 2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2022 15:25 | 10-Aug-2022 11:50 | 09-Aug-2022 18:00 | 09-Aug-2022 17:15 | 09-Aug-2022 15:45 |
| | | | | | WR2200849-006 | WR2200849-007 | WR2200849-008 | WR2200849-009 | WR2200849-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 211 | 85.5 | 244 | 203 | 373 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 474 | 271 | 465 | 385 | 846 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 237 | 124 | 250 | 187 | 428 |
| **pH** | ---- | E108 | 0.10 | pH units | 7.81 | 7.75 | 7.64 | 8.07 | 7.44 |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 317 | 199 | 264 | 227 | 569 |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 828 | 1740 | 2470 | 2560 | 712 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0097 | 0.0233 | 0.0241 | 0.0255 | 0.0102 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.250 DLDS |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.469 | 0.313 | 0.313 | 0.167 | 0.524 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | 0.0031 | <0.0010 | <0.0010 | <0.0050 DLDS |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 35.3 | 43.4 | 4.27 | 5.33 | 90.1 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0024 | 0.0151 | 0.0183 | 0.0050 | 0.0018 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00012 | 0.00017 | 0.00017 | 0.00024 | 0.00029 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00115 | 0.00053 | 0.00029 | 0.00072 | 0.00015 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.00897 | 0.0274 | 0.270 | 0.278 | 0.175 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | 0.842 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000179 | 0.000938 | 0.0000371 | 0.0000222 | 0.000453 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 81.4 | 46.6 | 80.8 | 60.1 | 147 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0.00066 | 0.00115 | <0.00050 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00052 | 0.00323 | 0.00112 | 0.00058 | 0.00119 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | 0.018 | 0.037 | <0.010 | <0.010 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000120 | 0.000752 | 0.000090 | 0.000127 | 0.000116 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0016 | <0.0010 | 0.0015 | 0.0013 | 0.0014 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 8.27 | 1.87 | 11.6 | 8.98 | 14.8 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00041 | 0.00124 | 0.00131 | 0.00042 | 0.00070 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-10_ 2022-08-08 | SD_MW13-13_ 2022-08-08 | SD_MW14-01_ 2022-08-08 | SD_MW14-02_ 2022-08-08 | SD_MW14-03_ 2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2022 15:25 | 10-Aug-2022 11:50 | 09-Aug-2022 18:00 | 09-Aug-2022 17:15 | 09-Aug-2022 15:45 |
| | | | | | WR2200849-006 | WR2200849-007 | WR2200849-008 | WR2200849-009 | WR2200849-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00186 | 0.000394 | 0.00132 | 0.00149 | 0.000574 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | 0.00082 | <0.00050 | <0.00050 | 0.00070 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 1.15 | 0.869 | 0.707 | 0.698 | 1.20 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 1.95 | 1.35 | 0.837 | 0.238 | 1.03 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 4.17 | 2.39 | 5.58 | 4.78 | 5.12 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 1.89 | 0.898 | 2.27 | 6.84 | 14.4 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.375 | 0.0848 | 0.278 | 0.188 | 0.482 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 13.5 | 15.9 | 2.71 | 2.33 | 34.8 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | 0.00021 | 0.00015 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00060 DLM | <0.00030 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00291 | 0.000521 | 0.00122 | 0.000836 | 0.00190 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0019 | 0.0226 | 0.0016 | <0.0010 | 0.0045 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| **benzene** | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | ---- | <0.50 | <0.50 | <0.50 |
| **ethylbenzene** | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | ---- | <0.50 | <0.50 | <0.50 |
| **methyl-tert-butyl ether [MTBE]** | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | ---- | <0.50 | <0.50 | <0.50 |
| **styrene** | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | ---- | <0.50 | <0.50 | <0.50 |
| **toluene** | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | ---- | <0.50 | <0.50 | <0.50 |
| **xylene, m+p-** | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | ---- | <0.40 | <0.40 | <0.40 |
| **xylene, o-** | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | ---- | <0.30 | <0.30 | <0.30 |
| **xylenes, total** | 1330-20-7 | E611A | 0.50 | µg/L | <0.50 | ---- | <0.50 | <0.50 | <0.50 |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| **bromofluorobenzene, 4-** | 460-00-4 | E611A | 1.0 | % | 78.7 | ---- | 77.2 | 77.4 | 74.1 |
| **difluorobenzene, 1,4-** | 540-36-3 | E611A | 1.0 | % | 98.8 | ---- | 98.3 | 98.2 | 98.3 |

## Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-10_ 2022-08-08 | SD_MW13-13_ 2022-08-08 | SD_MW14-01_ 2022-08-08 | SD_MW14-02_ 2022-08-08 | SD_MW14-03_ 2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2022 15:25 | 10-Aug-2022 11:50 | 09-Aug-2022 18:00 | 09-Aug-2022 17:15 | 09-Aug-2022 15:45 |
| | | | | | WR2200849-006 | WR2200849-007 | WR2200849-008 | WR2200849-009 | WR2200849-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Hydrocarbons** | | | | | | | | | |
| **EPH (C10-C19)** | ---- | E601A | 250 | µg/L | 440 | ---- | <250 | <250 | <250 |
| **EPH (C19-C32)** | ---- | E601A | 250 | µg/L | <250 | ---- | 290 | <250 | <250 |
| **VHw (C6-C10)** | ---- | E581.VH+F1 | 100 | µg/L | <100 | ---- | <100 | <100 | <100 |
| **HEPHw** | ---- | EC600A | 250 | µg/L | <250 | ---- | 290 | <250 | <250 |
| **LEPHw** | ---- | EC600A | 250 | µg/L | 440 | ---- | <250 | <250 | <250 |
| **VPHw** | ---- | EC580A | 100 | µg/L | <100 | ---- | <100 | <100 | <100 |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| **bromobenzotrifluoride, 2- (EPH surr)** | 392-83-6 | E601A | 1.0 | % | 83.5 | ---- | 83.7 | 82.8 | 84.0 |
| **dichlorotoluene, 3,4-** | 97-75-0 | E581.VH+F1 | 1.0 | % | 102 | ---- | 102 | 99.1 | 76.9 |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **acenaphthene** | 83-32-9 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **acenaphthylene** | 208-96-8 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **acridine** | 260-94-6 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **anthracene** | 120-12-7 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **benz(a)anthracene** | 56-55-3 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **benzo(a)pyrene** | 50-32-8 | E641A | 0.0050 | µg/L | <0.0050 | ---- | <0.0050 | <0.0050 | <0.0050 |
| **benzo(b+j)fluoranthene** | n/a | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **benzo(b+j+k)fluoranthene** | n/a | E641A | 0.015 | µg/L | <0.015 | ---- | <0.015 | <0.015 | <0.015 |
| **benzo(g,h,i)perylene** | 191-24-2 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **benzo(k)fluoranthene** | 207-08-9 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **chrysene** | 218-01-9 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **dibenz(a,h)anthracene** | 53-70-3 | E641A | 0.0050 | µg/L | <0.0050 | ---- | <0.0050 | <0.0050 | <0.0050 |
| **fluoranthene** | 206-44-0 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **fluorene** | 86-73-7 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **indeno(1,2,3-c,d)pyrene** | 193-39-5 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **methylnaphthalene, 1-** | 90-12-0 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **methylnaphthalene, 2-** | 91-57-6 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **naphthalene** | 91-20-3 | E641A | 0.050 | µg/L | <0.050 | ---- | <0.050 | <0.050 | <0.050 |
| **phenanthrene** | 85-01-8 | E641A | 0.020 | µg/L | <0.020 | ---- | <0.020 | <0.020 | <0.020 |
| **pyrene** | 129-00-0 | E641A | 0.010 | µg/L | <0.010 | ---- | <0.010 | <0.010 | <0.010 |
| **quinoline** | 91-22-5 | E641A | 0.050 | µg/L | <0.050 | ---- | <0.050 | <0.050 | <0.050 |

## Analytical Results

Sub-Matrix: **Groundwater**

**(Matrix: Water)**

| | | | | Client sample ID | SD_MW13-10_ 2022-08-08 | SD_MW13-13_ 2022-08-08 | SD_MW14-01_ 2022-08-08 | SD_MW14-02_ 2022-08-08 | SD_MW14-03_ 2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2022 15:25 | 10-Aug-2022 11:50 | 09-Aug-2022 18:00 | 09-Aug-2022 17:15 | 09-Aug-2022 15:45 |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | **WR2200849-006** | **WR2200849-007** | **WR2200849-008** | **WR2200849-009** | **WR2200849-010** |
| | | | | | Result | Result | Result | Result | Result |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| **chrysene-d12** | 1719-03-5 | E641A | 0.1 | % | 105 | ---- | 112 | 89.8 | 112 |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | 102 | ---- | 110 | 95.5 | 110 |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | 113 | ---- | 119 | 102 | 116 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW14-04_2022-08-08 | SD_MW-FB_2022-08-08 | SD_MW-FD1_2022-08-08 | SD_MW-TB_2022-06-26 | SD_MW-FD2_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 09-Aug-2022 16:20 | 10-Aug-2022 | 08-Aug-2022 | 11-Aug-2022 | 09-Aug-2022 |
| | | | | | WR2200849-011 | WR2200849-012 | WR2200849-013 | WR2200849-014 | WR2200849-015 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 173 | 1.5 | 246 | <1.0 | 362 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 317 | <2.0 | 491 | <2.0 | 838 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 166 | <0.60 | 252 | ---- | 424 |
| **pH** | ---- | E108 | 0.10 | pH units | 7.92 | 5.68 | 7.59 | 5.62 | 7.38 |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 199 | <10 | 277 | <10 | 543 |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 404 | 1.9 | 345 | 25.7 | 688 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0112 | <0.0050 | 0.0177 | 0.0163 RRV | 0.0098 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.250 DLDS |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.178 | <0.0050 | 0.226 | <0.0050 | 0.506 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0050 DLDS |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 4.45 | <0.30 | 7.63 | <0.30 | 87.9 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0041 | <0.0010 | 0.0031 | ---- | 0.0032 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00018 | <0.00010 | 0.00020 | ---- | 0.00028 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00039 | <0.00010 | 0.00040 | ---- | 0.00016 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.105 | <0.00010 | 0.148 | ---- | 0.178 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | ---- | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | ---- | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | ---- | 0.851 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000201 | <0.0000050 | 0.0000661 | ---- | 0.000472 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 56.7 | <0.050 | 85.9 | ---- | 144 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | 0.00122 | <0.00050 | <0.00050 | ---- | <0.00050 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | ---- | 0.00012 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00084 | 0.00022 | 0.00062 | ---- | 0.00185 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | ---- | <0.010 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000052 | <0.000050 | 0.000066 | ---- | 0.000154 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0012 | <0.0010 | 0.0017 | ---- | 0.0014 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 5.99 | <0.100 | 9.18 | ---- | 15.7 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00052 | <0.00010 | 0.00165 | ---- | 0.00082 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | ---- | <0.0000050 |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW14-04_2022-08-08 | SD_MW-FB_2022-08-08 | SD_MW-FD1_2022-08-08 | SD_MW-TB_2022-06-26 | SD_MW-FD2_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 09-Aug-2022 16:20 | 10-Aug-2022 | 08-Aug-2022 | 11-Aug-2022 | 09-Aug-2022 |
| | | | | | WR2200849-011 | WR2200849-012 | WR2200849-013 | WR2200849-014 | WR2200849-015 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000858 | <0.000050 | 0.000726 | ---- | 0.000528 |
| nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | 0.00073 |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | ---- | <0.050 |
| potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 0.685 | <0.100 | 0.688 | ---- | 1.27 |
| selenium, dissolved | 7782-49-2 | E421 | 0.050 | µg/L | 0.586 | <0.050 | 1.24 | ---- | 0.942 |
| silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 3.89 | <0.050 | 3.99 | ---- | 5.16 |
| silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | ---- | <0.000010 |
| sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 2.48 | <0.050 | 1.06 | ---- | 14.6 |
| strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.214 | <0.00020 | 0.289 | ---- | 0.494 |
| sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 1.86 | <0.50 | 3.83 | ---- | 35.5 |
| thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | ---- | <0.000010 |
| tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0.00020 | ---- | <0.00010 |
| titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | ---- | <0.00030 |
| uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000451 | <0.000010 | 0.00131 | ---- | 0.00188 |
| vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | <0.00050 |
| zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0031 | <0.0010 | 0.0017 | ---- | 0.0054 |
| zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | ---- | <0.00020 |
| dissolved mercury filtration location | ---- | EP509 | - | - | Field | Field | Field | ---- | Field |
| dissolved metals filtration location | ---- | EP421 | - | - | Field | Field | Field | ---- | Field |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| styrene | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| toluene | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | <0.40 | <0.40 | <0.40 |
| xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 |
| xylenes, total | 1330-20-7 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| bromofluorobenzene, 4- | 460-00-4 | E611A | 1.0 | % | 79.5 | 73.8 | 78.5 | 78.9 | 77.3 |
| difluorobenzene, 1,4- | 540-36-3 | E611A | 1.0 | % | 99.6 | 98.3 | 100 | 97.3 | 99.1 |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW14-04_2022-08-08 | SD_MW-FB_2022-08-08 | SD_MW-FD1_2022-08-08 | SD_MW-TB_2022-06-26 | SD_MW-FD2_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 09-Aug-2022 16:20 | 10-Aug-2022 | 08-Aug-2022 | 11-Aug-2022 | 09-Aug-2022 |
| | | | | | WR2200849-011 | WR2200849-012 | WR2200849-013 | WR2200849-014 | WR2200849-015 |
| | | | | | Result | Result | Result | Result | Result |
| **Hydrocarbons** | | | | | | | | | |
| **EPH (C10-C19)** | ---- | E601A | 250 | µg/L | <250 | <250 | <250 | <250 | <250 |
| **EPH (C19-C32)** | ---- | E601A | 250 | µg/L | <250 | <250 | <250 | <250 | <250 |
| **VHw (C6-C10)** | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **HEPHw** | ---- | EC600A | 250 | µg/L | <250 | <250 | <250 | <250 | <250 |
| **LEPHw** | ---- | EC600A | 250 | µg/L | <250 | <250 | <250 | <250 | <250 |
| **VPHw** | ---- | EC580A | 100 | µg/L | <100 | <100 | <100 | <100 | <100 |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| **bromobenzotrifluoride, 2- (EPH surr)** | 392-83-6 | E601A | 1.0 | % | 82.7 | 83.5 | 80.9 | 77.7 | 63.6 |
| **dichlorotoluene, 3,4-** | 97-75-0 | E581.VH+F1 | 1.0 | % | 102 | 104 | 108 | 103 | 91.5 |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **acenaphthene** | 83-32-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **acenaphthylene** | 208-96-8 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **acridine** | 260-94-6 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **anthracene** | 120-12-7 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **benz(a)anthracene** | 56-55-3 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **benzo(a)pyrene** | 50-32-8 | E641A | 0.0050 | µg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| **benzo(b+j)fluoranthene** | n/a | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **benzo(b+j+k)fluoranthene** | n/a | E641A | 0.015 | µg/L | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 |
| **benzo(g,h,i)perylene** | 191-24-2 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **benzo(k)fluoranthene** | 207-08-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **chrysene** | 218-01-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **dibenz(a,h)anthracene** | 53-70-3 | E641A | 0.0050 | µg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| **fluoranthene** | 206-44-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **fluorene** | 86-73-7 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **indeno(1,2,3-c,d)pyrene** | 193-39-5 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **methylnaphthalene, 1-** | 90-12-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **methylnaphthalene, 2-** | 91-57-6 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **naphthalene** | 91-20-3 | E641A | 0.050 | µg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **phenanthrene** | 85-01-8 | E641A | 0.020 | µg/L | <0.020 | <0.020 | <0.020 | <0.020 | <0.020 |
| **pyrene** | 129-00-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **quinoline** | 91-22-5 | E641A | 0.050 | µg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |

## *Analytical Results*

| Sub-Matrix: **Groundwater** (Matrix: **Water**) | | | | *Client sample ID* | **SD_MW14-04_2022-08-08** | **SD_MW-FB_2022-08-08** | **SD_MW-FD1_2022-08-08** | **SD_MW-TB_2022-06-26** | **SD_MW-FD2_2022-08-08** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *Client sampling date / time* | 09-Aug-2022 16:20 | 10-Aug-2022 | 08-Aug-2022 | 11-Aug-2022 | 09-Aug-2022 |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | **WR2200849-011** | **WR2200849-012** | **WR2200849-013** | **WR2200849-014** | **WR2200849-015** |
| | | | | | Result | Result | Result | Result | Result |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| **chrysene-d12** | 1719-03-5 | E641A | 0.1 | % | 108 | 111 | 97.7 | 104 | 95.1 |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | 107 | 105 | 103 | 104 | 102 |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | 112 | 112 | 108 | 112 | 110 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW-FD3_2022-08-08 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2022 | ---- | ---- | ---- | ---- |
| | | | | | WR2200849-016 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 210 | ---- | ---- | ---- | ---- |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 475 | ---- | ---- | ---- | ---- |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 240 | ---- | ---- | ---- | ---- |
| **pH** | ---- | E108 | 0.10 | pH units | 7.84 | ---- | ---- | ---- | ---- |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 289 | ---- | ---- | ---- | ---- |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 553 | ---- | ---- | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0062 | ---- | ---- | ---- | ---- |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.472 | ---- | ---- | ---- | ---- |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 35.2 | ---- | ---- | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0029 | ---- | ---- | ---- | ---- |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00013 | ---- | ---- | ---- | ---- |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00116 | ---- | ---- | ---- | ---- |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.00892 | ---- | ---- | ---- | ---- |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | ---- | ---- | ---- | ---- |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000185 | ---- | ---- | ---- | ---- |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 82.4 | ---- | ---- | ---- | ---- |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00041 | ---- | ---- | ---- | ---- |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000308 | ---- | ---- | ---- | ---- |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0017 | ---- | ---- | ---- | ---- |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 8.30 | ---- | ---- | ---- | ---- |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00040 | ---- | ---- | ---- | ---- |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | ---- | ---- | ---- | ---- |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00181 | ---- | ---- | ---- | ---- |

## Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW-FD3_2022-08-08 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2022 | ---- | ---- | ---- | ---- |
| | | | | | WR2200849-016 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 1.16 | ---- | ---- | ---- | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.050 | µg/L | 1.70 | ---- | ---- | ---- | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 4.25 | ---- | ---- | ---- | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 1.91 | ---- | ---- | ---- | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.388 | ---- | ---- | ---- | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 13.2 | ---- | ---- | ---- | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | 0.00016 | ---- | ---- | ---- | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | ---- | ---- | ---- | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00292 | ---- | ---- | ---- | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0023 | ---- | ---- | ---- | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |
| dissolved mercury filtration location | ---- | EP509 | - | - | Field | ---- | ---- | ---- | ---- |
| dissolved metals filtration location | ---- | EP421 | - | - | Field | ---- | ---- | ---- | ---- |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| styrene | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| toluene | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | ---- | ---- | ---- | ---- |
| xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | ---- | ---- | ---- | ---- |
| xylenes, total | 1330-20-7 | E611A | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| bromofluorobenzene, 4- | 460-00-4 | E611A | 1.0 | % | 77.6 | ---- | ---- | ---- | ---- |
| difluorobenzene, 1,4- | 540-36-3 | E611A | 1.0 | % | 98.1 | ---- | ---- | ---- | ---- |
| **Hydrocarbons** | | | | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | 430 | ---- | ---- | ---- | ---- |

## Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

| | | | | Client sample ID | SD_MW-FD3_2022-08-08 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2022 | ---- | ---- | ---- | ---- |
| Analyte | CAS Number | Method | LOR | Unit | WR2200849-016 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Hydrocarbons** | | | | | | | | | |
| **EPH (C19-C32)** | ---- | E601A | 250 | µg/L | <250 | ---- | ---- | ---- | ---- |
| **VHw (C6-C10)** | ---- | E581.VH+F1 | 100 | µg/L | <100 | ---- | ---- | ---- | ---- |
| **HEPHw** | ---- | EC600A | 250 | µg/L | <250 | ---- | ---- | ---- | ---- |
| **LEPHw** | ---- | EC600A | 250 | µg/L | 430 | ---- | ---- | ---- | ---- |
| **VPHw** | ---- | EC580A | 100 | µg/L | <100 | ---- | ---- | ---- | ---- |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| **bromobenzotrifluoride, 2- (EPH surr)** | 392-83-6 | E601A | 1.0 | % | 81.1 | ---- | ---- | ---- | ---- |
| **dichlorotoluene, 3,4-** | 97-75-0 | E581.VH+F1 | 1.0 | % | 86.2 | ---- | ---- | ---- | ---- |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **acenaphthene** | 83-32-9 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **acenaphthylene** | 208-96-8 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **acridine** | 260-94-6 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **anthracene** | 120-12-7 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **benz(a)anthracene** | 56-55-3 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **benzo(a)pyrene** | 50-32-8 | E641A | 0.0050 | µg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **benzo(b+j)fluoranthene** | n/a | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **benzo(b+j+k)fluoranthene** | n/a | E641A | 0.015 | µg/L | <0.015 | ---- | ---- | ---- | ---- |
| **benzo(g,h,i)perylene** | 191-24-2 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **benzo(k)fluoranthene** | 207-08-9 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **chrysene** | 218-01-9 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **dibenz(a,h)anthracene** | 53-70-3 | E641A | 0.0050 | µg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **fluoranthene** | 206-44-0 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **fluorene** | 86-73-7 | E641A | 0.010 | µg/L | <0.011 DLQ | ---- | ---- | ---- | ---- |
| **indeno(1,2,3-c,d)pyrene** | 193-39-5 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **methylnaphthalene, 1-** | 90-12-0 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **methylnaphthalene, 2-** | 91-57-6 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **naphthalene** | 91-20-3 | E641A | 0.050 | µg/L | <0.050 | ---- | ---- | ---- | ---- |
| **phenanthrene** | 85-01-8 | E641A | 0.020 | µg/L | <0.020 | ---- | ---- | ---- | ---- |
| **pyrene** | 129-00-0 | E641A | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- |
| **quinoline** | 91-22-5 | E641A | 0.050 | µg/L | <0.050 | ---- | ---- | ---- | ---- |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| **chrysene-d12** | 1719-03-5 | E641A | 0.1 | % | 95.4 | ---- | ---- | ---- | ---- |

## *Analytical Results*

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| | | | | Client sample ID | SD_MW-FD3_2022-08-08 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2022 | ---- | ---- | ---- | ---- |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | **WR2200849-016** | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | 102 | ---- | ---- | ---- | ---- |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | 106 | ---- | ---- | ---- | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

# QUALITY CONTROL INTERPRETIVE REPORT



| | | | |
|---|---|---|---|
| Work Order | : **WR2200849** | | |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Aug-2022 16:45 |
| PO | : PO# 10289 | Issue Date | : 22-Aug-2022 19:06 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 16 | | |
| No. of samples analysed | : 16 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**
**CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.**
**DQO: Data Quality Objective.**
**LOR: Limit of Reporting (detection limit).**
**RPD: Relative Percent Difference.**

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

## *Outliers : Quality Control Samples*

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

| Analyte Group | Laboratory sample ID | Client/Ref Sample ID | Analyte | CAS Number | Method | Result | Limits | Comment |
|---|---|---|---|---|---|---|---|---|
| **Method Blank (MB) Values** | | | | | | | | |
| Physical Tests | QC-MRG2-6037720 01 | ---- | alkalinity, total (as CaCO3) | ---- | E290 | 1.6 mg/L B | 1.5 mg/L | Blank result exceeds permitted value |

### *Result Qualifiers*

| *Qualifier* | *Description* |
|---|---|
| *B* | *Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.* |

| Analyte Group | Laboratory sample ID | Client/Ref Sample ID | Analyte | CAS Number | Method | Result | Limits | Comment |
|---|---|---|---|---|---|---|---|---|
| **Laboratory Control Sample (LCS) Recoveries** | | | | | | | | |
| Dissolved Metals | QC-MRG2-6038480 02 | ---- | uranium, dissolved | 7440-61-1 | E421 | 126 % MES | 80.0-120% | Recovery greater than upper control limit |

### *Result Qualifiers*

| *Qualifier* | *Description* |
|---|---|
| *MES* | *Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).* |

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-04_2022-08-08 | E298 | 08-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 10 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-08_2022-08-08 | E298 | 08-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 10 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-FD1_2022-08-08 | E298 | 08-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 10 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-TB_2022-06-26 | E298 | 11-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-01_2022-08-08 | E298 | 10-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-06_2022-08-08 | E298 | 10-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-10_2022-08-08 | E298 | 10-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-13_2022-08-08 | E298 | 10-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-FB_2022-08-08 | E298 | 10-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-FD3_2022-08-08 | E298 | 10-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-07_2022-08-08 | E298 | 09-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW14-01_2022-08-08 | E298 | 09-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW14-02_2022-08-08 | E298 | 09-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW14-03_2022-08-08 | E298 | 09-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW14-04_2022-08-08 | E298 | 09-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-FD2_2022-08-08 | E298 | 09-Aug-2022 | 18-Aug-2022 | ---- | ---- | | 18-Aug-2022 | 28 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-01_2022-08-08 | E235.Br-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-06_2022-08-08 | E235.Br-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-10_2022-08-08 | E235.Br-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW-TB_2022-06-26 | E235.Br-L | 11-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-07_2022-08-08 | E235.Br-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-13_2022-08-08 | E235.Br-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-01_2022-08-08 | E235.Br-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-02_2022-08-08 | E235.Br-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-03_2022-08-08 | E235.Br-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-04_2022-08-08 | E235.Br-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FB_2022-08-08 | E235.Br-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD3_2022-08-08 | E235.Br-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-04_2022-08-08 | E235.Br-L | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-08_2022-08-08 | E235.Br-L | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD2_2022-08-08 | E235.Br-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD1_2022-08-08 | E235.Br-L | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-01_2022-08-08 | E235.NO3-L | 10-Aug-2022 | 15-Aug-2022 | 3 days | 5 days | ×<br>EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-06_2022-08-08 | E235.NO3-L | 10-Aug-2022 | 15-Aug-2022 | 3 days | 5 days | ×<br>EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-10_2022-08-08 | E235.NO3-L | 10-Aug-2022 | 15-Aug-2022 | 3 days | 5 days | ✘ EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW-TB_2022-06-26 | E235.NO3-L | 11-Aug-2022 | 15-Aug-2022 | 3 days | 5 days | ✘ EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-07_2022-08-08 | E235.NO3-L | 09-Aug-2022 | 15-Aug-2022 | 3 days | 6 days | ✘ EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-13_2022-08-08 | E235.NO3-L | 10-Aug-2022 | 15-Aug-2022 | 3 days | 6 days | ✘ EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-01_2022-08-08 | E235.NO3-L | 09-Aug-2022 | 15-Aug-2022 | 3 days | 6 days | ✘ EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-02_2022-08-08 | E235.NO3-L | 09-Aug-2022 | 15-Aug-2022 | 3 days | 6 days | ✘ EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-03_2022-08-08 | E235.NO3-L | 09-Aug-2022 | 15-Aug-2022 | 3 days | 6 days | ✘ EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-04_2022-08-08 | E235.NO3-L | 09-Aug-2022 | 15-Aug-2022 | 3 days | 6 days | ✘ EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FB_2022-08-08 | E235.NO3-L | 10-Aug-2022 | 15-Aug-2022 | 3 days | 6 days | ✘ EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD3_2022-08-08 | E235.NO3-L | 10-Aug-2022 | 15-Aug-2022 | 3 days | 6 days | × EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-08-08 | E235.NO3-L | 08-Aug-2022 | 15-Aug-2022 | 3 days | 7 days | × EHTL | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-08-08 | E235.NO3-L | 08-Aug-2022 | 15-Aug-2022 | 3 days | 7 days | × EHTL | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-08-08 | E235.NO3-L | 09-Aug-2022 | 15-Aug-2022 | 3 days | 7 days | × EHT | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD1_2022-08-08 | E235.NO3-L | 08-Aug-2022 | 15-Aug-2022 | 3 days | 8 days | × EHTL | 16-Aug-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-08-08 | E235.NO2-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 5 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-08-08 | E235.NO2-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 5 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-08-08 | E235.NO2-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 5 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-06-26 | E235.NO2-L | 11-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 5 days | × EHT |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-08-08 | E235.NO2-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-13_2022-08-08 | E235.NO2-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-08-08 | E235.NO2-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-08-08 | E235.NO2-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-03_2022-08-08 | E235.NO2-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-08-08 | E235.NO2-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-08-08 | E235.NO2-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD3_2022-08-08 | E235.NO2-L | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 6 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-08-08 | E235.NO2-L | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 7 days | × EHTL |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-08-08 | E235.NO2-L | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 7 days | × EHTL |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-08-08 | E235.NO2-L | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 7 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD1_2022-08-08 | E235.NO2-L | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 3 days | 8 days | × EHTL |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-08-08 | E235.SO4 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-08-08 | E235.SO4 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-08-08 | E235.SO4 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-06-26 | E235.SO4 | 11-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-08-08 | E235.SO4 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW13-13_2022-08-08 | E235.SO4 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-01_2022-08-08 | E235.SO4 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-02_2022-08-08 | E235.SO4 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-03_2022-08-08 | E235.SO4 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-04_2022-08-08 | E235.SO4 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FB_2022-08-08 | E235.SO4 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD3_2022-08-08 | E235.SO4 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-04_2022-08-08 | E235.SO4 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-08_2022-08-08 | E235.SO4 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD2_2022-08-08 | E235.SO4 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD1_2022-08-08 | E235.SO4 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW13-07_2022-08-08 | E509 | 09-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW14-01_2022-08-08 | E509 | 09-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW14-02_2022-08-08 | E509 | 09-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW14-03_2022-08-08 | E509 | 09-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW14-04_2022-08-08 | E509 | 09-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW-FD2_2022-08-08 | E509 | 09-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW13-04_2022-08-08 | E509 | 08-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 11 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)**<br>SD_MW13-08_2022-08-08 | E509 | 08-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 11 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW-FD1_2022-08-08 | E509 | 08-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 11 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-01_2022-08-08 | E509 | 10-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-06_2022-08-08 | E509 | 10-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-10_2022-08-08 | E509 | 10-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-13_2022-08-08 | E509 | 10-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW-FB_2022-08-08 | E509 | 10-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW-FD3_2022-08-08 | E509 | 10-Aug-2022 | 19-Aug-2022 | ---- | ---- | | 19-Aug-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW13-01_2022-08-08 | E421 | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 5 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW13-06_2022-08-08 | E421 | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW13-10_2022-08-08 | E421 | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW13-13_2022-08-08 | E421 | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW13-04_2022-08-08 | E421 | 08-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW13-07_2022-08-08 | E421 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW14-01_2022-08-08 | E421 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW14-02_2022-08-08 | E421 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW14-03_2022-08-08 | E421 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW14-04_2022-08-08 | E421 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW-FB_2022-08-08 | E421 | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW-FD3_2022-08-08 | E421 | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW13-08_2022-08-08 | E421 | 08-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW-FD2_2022-08-08 | E421 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW-FD1_2022-08-08 | E421 | 08-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 180 days | 9 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-04_2022-08-08 | E601A | 08-Aug-2022 | 18-Aug-2022 | 14 days | 10 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FD2_2022-08-08 | E601A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 10 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FD1_2022-08-08 | E601A | 08-Aug-2022 | 18-Aug-2022 | 14 days | 11 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-10_2022-08-08 | E601A | 10-Aug-2022 | 18-Aug-2022 | 14 days | 8 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-TB_2022-06-26 | E601A | 11-Aug-2022 | 18-Aug-2022 | 14 days | 8 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-07_2022-08-08 | E601A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-01_2022-08-08 | E601A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-02_2022-08-08 | E601A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-03_2022-08-08 | E601A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-04_2022-08-08 | E601A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FB_2022-08-08 | E601A | 10-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FD3_2022-08-08 | E601A | 10-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-10_2022-08-08 | E581.VH+F1 | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 6 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-TB_2022-06-26 | E581.VH+F1 | 11-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-07_2022-08-08 | E581.VH+F1 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-01_2022-08-08 | E581.VH+F1 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-02_2022-08-08 | E581.VH+F1 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-03_2022-08-08 | E581.VH+F1 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-04_2022-08-08 | E581.VH+F1 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FB_2022-08-08 | E581.VH+F1 | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FD3_2022-08-08 | E581.VH+F1 | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-04_2022-08-08 | E581.VH+F1 | 08-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 8 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FD2_2022-08-08 | E581.VH+F1 | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FD1_2022-08-08 | E581.VH+F1 | 08-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 9 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-08-08 | E290 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-08-08 | E290 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-08-08 | E290 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-06-26 | E290 | 11-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-08-08 | E290 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-13_2022-08-08 | E290 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-08-08 | E290 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-08-08 | E290 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW14-03_2022-08-08 | E290 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-08-08 | E290 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-08-08 | E290 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-FD3_2022-08-08 | E290 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-08-08 | E290 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-08-08 | E290 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-08-08 | E290 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-FD1_2022-08-08 | E290 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 14 days | 8 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-08-08 | E100 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-08-08 | E100 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-08-08 | E100 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-06-26 | E100 | 11-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 5 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-08-08 | E100 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-13_2022-08-08 | E100 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-08-08 | E100 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-08-08 | E100 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW14-03_2022-08-08 | E100 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-08-08 | E100 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-08-08 | E100 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW-FD3_2022-08-08 | E100 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-08-08 | E100 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-08-08 | E100 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-08-08 | E100 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW-FD1_2022-08-08 | E100 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 28 days | 8 days | ✓ |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-08-08 | E108 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-08-08 | E108 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-08-08 | E108 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-08-08 | E108 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-08-08 | E108 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-08-08 | E108 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW13-13_2022-08-08 | E108 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-08-08 | E108 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-08-08 | E108 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW14-03_2022-08-08 | E108 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-08-08 | E108 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-08-08 | E108 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD1_2022-08-08 | E108 | 08-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD2_2022-08-08 | E108 | 09-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW-FD3_2022-08-08 | E108 | 10-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW-TB_2022-06-26 | E108 | 11-Aug-2022 | 15-Aug-2022 | ---- | ---- | | 16-Aug-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MW-TB_2022-06-26 | E162 | 11-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-01_2022-08-08 | E162 | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-06_2022-08-08 | E162 | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-10_2022-08-08 | E162 | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-13_2022-08-08 | E162 | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-08-08 | E162 | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MW-FD3_2022-08-08 | E162 | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-08-08 | E162 | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-08-08 | E162 | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-08-08 | E162 | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MW14-03_2022-08-08 | E162 | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-08-08 | E162 | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-08-08 | E162 | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-08-08 | E162 | 08-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 8 days | × EHT |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-08-08 | E162 | 08-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MW-FD1_2022-08-08 | E162 | 08-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-06-26 | E160-L | 11-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-08-08 | E160-L | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-08-08 | E160-L | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-08-08 | E160-L | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-13_2022-08-08 | E160-L | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-08-08 | E160-L | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD3_2022-08-08 | E160-L | 10-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-08-08 | E160-L | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-08-08 | E160-L | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-08-08 | E160-L | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-03_2022-08-08 | E160-L | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-08-08 | E160-L | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-08-08 | E160-L | 09-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-04_2022-08-08 | E160-L | 08-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-08-08 | E160-L | 08-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 8 days | × EHT |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD1_2022-08-08 | E160-L | 08-Aug-2022 | ---- | ---- | ---- | | 16-Aug-2022 | 7 days | 8 days | × EHT |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation<br>Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis<br>Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW13-04_2022-08-08 | E641A | 08-Aug-2022 | 18-Aug-2022 | 14 days | 10 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW-FD2_2022-08-08 | E641A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 10 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW-FD1_2022-08-08 | E641A | 08-Aug-2022 | 18-Aug-2022 | 14 days | 11 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW13-10_2022-08-08 | E641A | 10-Aug-2022 | 18-Aug-2022 | 14 days | 8 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW-TB_2022-06-26 | E641A | 11-Aug-2022 | 18-Aug-2022 | 14 days | 8 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW13-07_2022-08-08 | E641A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW14-01_2022-08-08 | E641A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW14-02_2022-08-08 | E641A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW14-03_2022-08-08 | E641A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-04_2022-08-08 | E641A | 09-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FB_2022-08-08 | E641A | 10-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FD3_2022-08-08 | E641A | 10-Aug-2022 | 18-Aug-2022 | 14 days | 9 days | ✓ | 19-Aug-2022 | 40 days | 1 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-10_2022-08-08 | E611A | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 6 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-TB_2022-06-26 | E611A | 11-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 6 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-07_2022-08-08 | E611A | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-01_2022-08-08 | E611A | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-02_2022-08-08 | E611A | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-03_2022-08-08 | E611A | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)**<br>SD_MW14-04_2022-08-08 | E611A | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)**<br>SD_MW-FB_2022-08-08 | E611A | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)**<br>SD_MW-FD3_2022-08-08 | E611A | 10-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 7 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)**<br>SD_MW13-04_2022-08-08 | E611A | 08-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 8 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)**<br>SD_MW-FD2_2022-08-08 | E611A | 09-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 8 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)**<br>SD_MW-FD1_2022-08-08 | E611A | 08-Aug-2022 | 16-Aug-2022 | ---- | ---- | | 17-Aug-2022 | 14 days | 9 days | ✓ |

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

## *Quality Control Parameter Frequency Compliance*

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 603772 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 608012 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 603775 | 1 | 20 | 5.0 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 605308 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Conductivity in Water | E100 | 603773 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 609533 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 603750 | 3 | 27 | 11.1 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 603776 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 603777 | 1 | 20 | 5.0 | 5.0 | ✓ |
| pH by Meter | E108 | 603771 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 603778 | 1 | 20 | 5.0 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 604408 | 2 | 40 | 5.0 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 605309 | 2 | 37 | 5.4 | 5.0 | ✓ |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 603772 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 608012 | 1 | 19 | 5.2 | 5.0 | ✓ |
| BC PHCs - EPH by GC-FID | E601A | 609060 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 603775 | 1 | 20 | 5.0 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 605308 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Conductivity in Water | E100 | 603773 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 609533 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 603750 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 603776 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 603777 | 1 | 20 | 5.0 | 5.0 | ✓ |
| PAHs by Hexane LVI GC-MS | E641A | 609059 | 1 | 20 | 5.0 | 5.0 | ✓ |
| pH by Meter | E108 | 603771 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 603778 | 1 | 20 | 5.0 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 604408 | 2 | 40 | 5.0 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 604402 | 2 | 40 | 5.0 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 605309 | 2 | 37 | 5.4 | 5.0 | ✓ |
| **Method Blanks (MB)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 603772 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 608012 | 1 | 19 | 5.2 | 5.0 | ✓ |
| BC PHCs - EPH by GC-FID | E601A | 609060 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 603775 | 1 | 20 | 5.0 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 605308 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Conductivity in Water | E100 | 603773 | 1 | 20 | 5.0 | 5.0 | ✓ |

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type / Analytical Methods | Method | QC Lot # | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| | | | QC | Regular | Actual | Expected | Evaluation |
| **Method Blanks (MB) - Continued** | | | | | | | |
| Dissolved Mercury in Water by CVAAS | E509 | 609533 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 603750 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 603776 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 603777 | 1 | 20 | 5.0 | 5.0 | ✓ |
| PAHs by Hexane LVI GC-MS | E641A | 609059 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 603778 | 1 | 20 | 5.0 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 604408 | 2 | 40 | 5.0 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 604402 | 2 | 40 | 5.0 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 605309 | 2 | 37 | 5.4 | 5.0 | ✓ |
| **Matrix Spikes (MS)** | | | | | | | |
| Ammonia by Fluorescence | E298 | 608012 | 1 | 19 | 5.2 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 603775 | 1 | 20 | 5.0 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 605308 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 609533 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 603750 | 2 | 27 | 7.4 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 603776 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 603777 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 603778 | 1 | 20 | 5.0 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 605309 | 2 | 37 | 5.4 | 5.0 | ✓ |

## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Conductivity in Water | E100<br><br>Vancouver - Environmental | Water | APHA 2510 (mod) | Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C. |
| pH by Meter | E108<br><br>Vancouver - Environmental | Water | APHA 4500-H (mod) | pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time. |
| TSS by Gravimetry (Low Level) | E160-L<br><br>Vancouver - Environmental | Water | APHA 2540 D (mod) | Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples. |
| TDS by Gravimetry | E162<br><br>Vancouver - Environmental | Water | APHA 2540 C (mod) | Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue. |
| Bromide in Water by IC (Low Level) | E235.Br-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrite in Water by IC (Low Level) | E235.NO2-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrate in Water by IC (Low Level) | E235.NO3-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Sulfate in Water by IC | E235.SO4<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Alkalinity Species by Titration | E290<br><br>Vancouver - Environmental | Water | APHA 2320 B (mod) | Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. |
| Ammonia by Fluorescence | E298<br><br>Vancouver - Environmental | Water | Method Fialab 100, 2018 | Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021) |

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Dissolved Metals in Water by CRC ICPMS | E421<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 6020B (mod) | Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Dissolved Mercury in Water by CVAAS | E509<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 1631E (mod) | Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS. |
| VH and F1 by Headspace GC-FID | E581.VH+F1<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod) | Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. |
| BC PHCs - EPH by GC-FID | E601A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual | Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions. |
| BTEX by Headspace GC-MS | E611A<br><br>Vancouver - Environmental | Water | EPA 8260D (mod) | Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. |
| PAHs by Hexane LVI GC-MS | E641A<br><br>Vancouver - Environmental | Water | EPA 8270E (mod) | Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS. |
| Dissolved Hardness (Calculated) | EC100<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as $CaCO_3$), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. |
| VPH: VH-BTEX-Styrene | EC580A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual (VPH in Water and Solids) (mod) | Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VPHw = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene. |
| LEPH and HEPH: EPH-PAH | EC600A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual (LEPH and HEPH) (mod) | Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Acenaphthene, Acridine, Anthracene, Fluorene, Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(a)pyrene, Fluoranthene, and Pyrene. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Preparation for Ammonia | EP298<br><br>Vancouver - Environmental | Water | | Sample preparation for Preserved Nutrients Water Quality Analysis. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Dissolved Metals Water Filtration | EP421<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HNO3. |
| Dissolved Mercury Water Filtration | EP509<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HCl. |
| VOCs Preparation for Headspace Analysis | EP581<br><br>Vancouver - Environmental | Water | EPA 5021A (mod) | Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system. |
| PHCs and PAHs Hexane Extraction | EP601<br><br>Vancouver - Environmental | Water | EPA 3511 (mod) | Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction. |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200849** |  |  |
| Client | : Teck Metals Ltd | Laboratory | : Whitehorse - Environmental |
| Contact | : Wendy McBain | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : ---- | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Aug-2022 16:45 |
| PO | : PO# 10289 | Date Analysis Commenced | : 15-Aug-2022 |
| C-O-C number | : ---- | Issue Date | : 22-Aug-2022 19:05 |
| Sampler | : ---- | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 16 | | |
| No. of samples analysed | : 16 | | |



This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Vancouver Metals, Burnaby, British Columbia |
| ChingXing Yew | Analsyt | Vancouver Organics, Burnaby, British Columbia |
| Dan Gebert | Laboratory Analyst | Vancouver Metals, Burnaby, British Columbia |
| Erin Sanchez | | Vancouver Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Vancouver Inorganics, Burnaby, British Columbia |
| Owen Cheng | | Vancouver Metals, Burnaby, British Columbia |
| Parnian Sane | Analyst | Vancouver Metals, Burnaby, British Columbia |
| Sukhman Khosa | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD(%) or Difference* | *Duplicate Limits* | *Qualifier* |
| **Physical Tests (QC Lot: 603771)** | | | | | | | | | | | |
| WR2200848-003 | Anonymous | pH | ---- | E108 | 0.10 | pH units | 8.33 | 8.33 | 0.00% | 4% | ---- |
| **Physical Tests (QC Lot: 603772)** | | | | | | | | | | | |
| WR2200848-003 | Anonymous | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 134 | 135 | 0.372% | 20% | ---- |
| **Physical Tests (QC Lot: 603773)** | | | | | | | | | | | |
| WR2200848-003 | Anonymous | conductivity | ---- | E100 | 2.0 | µS/cm | 275 | 275 | 0.00% | 10% | ---- |
| **Physical Tests (QC Lot: 604408)** | | | | | | | | | | | |
| VA22B8670-001 | Anonymous | solids, total dissolved [TDS] | ---- | E162 | 13 | mg/L | 87 | 86 | 0.3 | Diff <2x LOR | ---- |
| **Physical Tests (QC Lot: 604409)** | | | | | | | | | | | |
| WR2200849-008 | SD_MW14-01_2022-08-08 | solids, total dissolved [TDS] | ---- | E162 | 20 | mg/L | 264 | 266 | 0.566% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 603775)** | | | | | | | | | | | |
| WR2200853-010 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 603776)** | | | | | | | | | | | |
| WR2200853-010 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.0087 | 0.0086 | 0.00009 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 603777)** | | | | | | | | | | | |
| WR2200853-010 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 603778)** | | | | | | | | | | | |
| WR2200853-010 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 27.0 | 26.9 | 0.375% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 608012)** | | | | | | | | | | | |
| WR2200826-001 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.100 | mg/L | 7.87 | 7.68 | 2.35% | 20% | ---- |
| **Dissolved Metals (QC Lot: 603750)** | | | | | | | | | | | |
| WR2200849-003 | SD_MW13-06_2022-08-08 | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0013 | 0.0030 | 0.0017 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00021 | 0.00018 | 0.00002 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.0488 | 0.0513 | 4.96% | 20% | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0237 | 0.0246 | 3.56% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | 0.012 | 0.011 | 0.0004 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000962 | 0.0000940 | 2.26% | 20% | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 146 | 148 | 1.58% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | 0.00264 | 0.00273 | 3.41% | 20% | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Dissolved Metals (QC Lot: 603750) - continued** | | | | | | | | | | | |
| WR2200849-003 | SD_MW13-06_2022-08-08 | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00108 | 0.00116 | 0.00008 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | 0.518 | 0.544 | 4.94% | 20% | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000053 | 0.000057 | 0.000003 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0077 | 0.0076 | 0.00003 | Diff <2x LOR | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 11.2 | 12.1 | 8.37% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.306 | 0.321 | 4.96% | 20% | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.0342 | 0.0344 | 0.735% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | 0.0286 | 0.0298 | 3.99% | 20% | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | 0.167 | 0.147 | 0.020 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 2.00 | 2.08 | 4.30% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | <0.050 µg/L | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 15.4 | 16.0 | 3.57% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 4.81 | 4.99 | 3.65% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.517 | 0.528 | 2.03% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 96.6 | 98.1 | 1.61% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | 0.000017 | 0.000016 | 0.000001 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.0126 | 0.0129 | 2.64% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.127 | 0.131 | 2.83% | 20% | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 603848)** | | | | | | | | | | | |
| YL2201194-001 | Anonymous | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00215 | 0.00212 | 1.37% | 20% | ---- |
| YL2201194-001 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0194 | 0.0183 | 5.53% | 20% | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.0351 | 0.0344 | 1.83% | 20% | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 1.36 | 1.34 | 1.43% | 20% | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0413 | 0.0438 | 5.87% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | 0.022 | 0.021 | 0.0010 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 29.0 | 29.5 | 1.78% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Dissolved Metals (QC Lot: 603848) - continued** | | | | | | | | | | | |
| YL2201194-001 | Anonymous | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00062 | 0.00052 | 0.00010 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0072 | 0.0073 | 0.00008 | Diff <2x LOR | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.0050 | mg/L | 18.2 | 18.0 | 1.06% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00538 | 0.00540 | 0.323% | 20% | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000313 | 0.000295 | 0.000018 | Diff <2x LOR | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.050 | mg/L | 3.78 | 3.81 | 0.999% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | 0.000077 | <0.000050 | 0.000027 | Diff <2x LOR | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 0.121 | 0.131 | 0.010 | Diff <2x LOR | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 4.96 | 4.77 | 4.03% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.0873 | 0.0861 | 1.39% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 13.6 | 13.6 | 0.243% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0010 | 0.0011 | 0.00007 | Diff <2x LOR | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 609533)** | | | | | | | | | | | |
| WR2200822-010 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 609534)** | | | | | | | | | | | |
| WR2200849-008 | SD_MW14-01_2022-08-08 | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Volatile Organic Compounds (QC Lot: 605308)** | | | | | | | | | | | |
| VA22B8718-001 | Anonymous | benzene | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | styrene | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | toluene | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | 0 | Diff <2x LOR | ---- |
| | | xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Volatile Organic Compounds (QC Lot: 605372)** | | | | | | | | | | | |
| WR2200849-011 | SD_MW14-04_2022-08-08 | benzene | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | styrene | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | toluene | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | 0 | Diff <2x LOR | ---- |
| | | xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | 0 | Diff <2x LOR | ---- |
| **Hydrocarbons (QC Lot: 605309)** | | | | | | | | | | | |
| VA22B8718-001 | Anonymous | VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | 0.0% | 30% | ---- |
| **Hydrocarbons (QC Lot: 605373)** | | | | | | | | | | | |
| WR2200849-011 | SD_MW14-04_2022-08-08 | VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | 0.0% | 30% | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Physical Tests (QCLot: 603772)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | # 1.6 | B |
| **Physical Tests (QCLot: 603773)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | <1.0 | ---- |
| **Physical Tests (QCLot: 604402)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 604403)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 604408)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Physical Tests (QCLot: 604409)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Anions and Nutrients (QCLot: 603775)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 603776)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 603777)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 603778)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 608012)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Dissolved Metals (QCLot: 603750)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 603750) - continued** | | | | | | |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 603848)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 603848) - continued** | | | | | | |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 609533)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 609534)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Volatile Organic Compounds (QCLot: 605308)** | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | <0.50 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | <0.50 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | <0.50 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | <0.40 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | <0.30 | ---- |
| **Volatile Organic Compounds (QCLot: 605372)** | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | <0.50 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (QCLot: 605372) - continued** | | | | | | |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | <0.50 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | <0.50 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | <0.40 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | <0.30 | ---- |
| **Hydrocarbons (QCLot: 605309)** | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | ---- |
| **Hydrocarbons (QCLot: 605373)** | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | ---- |
| **Hydrocarbons (QCLot: 609060)** | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | <250 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | <250 | ---- |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 609059)** | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.01 | µg/L | <0.010 | ---- |
| acridine | 260-94-6 | E641A | 0.01 | µg/L | <0.010 | ---- |
| anthracene | 120-12-7 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.005 | µg/L | <0.0050 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| chrysene | 218-01-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.005 | µg/L | <0.0050 | ---- |
| fluoranthene | 206-44-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| fluorene | 86-73-7 | E641A | 0.01 | µg/L | <0.010 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.01 | µg/L | <0.010 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.01 | µg/L | <0.010 | ---- |
| naphthalene | 91-20-3 | E641A | 0.05 | µg/L | <0.050 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.02 | µg/L | <0.020 | ---- |
| pyrene | 129-00-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| quinoline | 91-22-5 | E641A | 0.05 | µg/L | <0.050 | ---- |

## *Qualifiers*

| *Qualifier* | *Description* |
| --- | --- |
| *B* | *Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.* |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 603771)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 100 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 603772)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 107 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 603773)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 99.2 | 90.0 | 110 | ---- |
| **Physical Tests (QCLot: 604402)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 94.3 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 604403)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 106 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 604408)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 103 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 604409)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 106 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 603775)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 91.4 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 603776)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 97.7 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 603777)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 99.9 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 603778)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 99.8 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 608012)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 110 | 85.0 | 115 | ---- |
| **Dissolved Metals (QCLot: 603750)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 107 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 95.5 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 96.0 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 96.8 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 110 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 95.4 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 108 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 94.7 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Laboratory Control Sample (LCS) Report: Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 603750) - continued** | | | | | | | | | |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 96.7 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 94.0 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 92.3 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 107 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 94.1 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 108 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 97.5 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 97.1 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 94.1 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 104 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 101 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 93.7 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 105 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 88.4 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 104 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 97.2 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 108 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 94.7 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 92.3 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 98.8 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 96.2 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 98.5 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 97.2 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 96.4 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 603848)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 99.2 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 98.6 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 99.5 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 91.6 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 94.2 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 89.4 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 101 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 96.7 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 100.0 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 603848) - continued** | | | | | | | | | |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 97.9 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 97.7 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 112 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 96.6 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 90.8 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 99.6 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 97.2 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 103 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 99.2 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 108 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 100 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 106 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 105 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 93.7 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 104 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 107 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 98.2 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 97.5 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 96.6 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | # 126 | 80.0 | 120 | MES |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 99.8 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 104 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 103 | 80.0 | 120 | ---- |
| **Volatile Organic Compounds (QCLot: 605308)** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | 100 µg/L | 95.4 | 70.0 | 130 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | 100 µg/L | 96.7 | 70.0 | 130 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | 100 µg/L | 106 | 70.0 | 130 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | 100 µg/L | 96.7 | 70.0 | 130 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | 100 µg/L | 94.2 | 70.0 | 130 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | 200 µg/L | 107 | 70.0 | 130 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | 100 µg/L | 98.7 | 70.0 | 130 | ---- |
| **Volatile Organic Compounds (QCLot: 605372)** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | 100 µg/L | 93.8 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Volatile Organic Compounds (QCLot: 605372) - continued** | | | | | | | | | |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | 100 µg/L | 102 | 70.0 | 130 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | 100 µg/L | 98.1 | 70.0 | 130 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | 100 µg/L | 88.0 | 70.0 | 130 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | 100 µg/L | 102 | 70.0 | 130 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | 200 µg/L | 118 | 70.0 | 130 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | 100 µg/L | 99.6 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 605309)** | | | | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | 6310 µg/L | 91.2 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 605373)** | | | | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | 6310 µg/L | 87.5 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 609060)** | | | | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | 6491 µg/L | 105 | 70.0 | 130 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | 3363 µg/L | 110 | 70.0 | 130 | ---- |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 609059)** | | | | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 101 | 60.0 | 130 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.01 | µg/L | 0.5 µg/L | 103 | 60.0 | 130 | ---- |
| acridine | 260-94-6 | E641A | 0.01 | µg/L | 0.5 µg/L | 105 | 60.0 | 130 | ---- |
| anthracene | 120-12-7 | E641A | 0.01 | µg/L | 0.5 µg/L | 104 | 60.0 | 130 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.01 | µg/L | 0.5 µg/L | 98.6 | 60.0 | 130 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.005 | µg/L | 0.5 µg/L | 92.2 | 60.0 | 130 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.01 | µg/L | 0.5 µg/L | 89.6 | 60.0 | 130 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.01 | µg/L | 0.5 µg/L | 99.1 | 60.0 | 130 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 102 | 60.0 | 130 | ---- |
| chrysene | 218-01-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 103 | 60.0 | 130 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.005 | µg/L | 0.5 µg/L | 97.7 | 60.0 | 130 | ---- |
| fluoranthene | 206-44-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 104 | 60.0 | 130 | ---- |
| fluorene | 86-73-7 | E641A | 0.01 | µg/L | 0.5 µg/L | 106 | 60.0 | 130 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.01 | µg/L | 0.5 µg/L | 98.4 | 60.0 | 130 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 102 | 60.0 | 130 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.01 | µg/L | 0.5 µg/L | 100 | 60.0 | 130 | ---- |
| naphthalene | 91-20-3 | E641A | 0.05 | µg/L | 0.5 µg/L | 100 | 50.0 | 130 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.02 | µg/L | 0.5 µg/L | 106 | 60.0 | 130 | ---- |
| pyrene | 129-00-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 105 | 60.0 | 130 | ---- |
| quinoline | 91-22-5 | E641A | 0.05 | µg/L | 0.5 µg/L | 113 | 60.0 | 130 | ---- |

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *MES* | *Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).* |

## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 603775)** | | | | | | | | | | |
| WR2200848-002 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.500 mg/L | 0.5 mg/L | 100 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 603776)** | | | | | | | | | | |
| WR2200848-002 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 2.32 mg/L | 2.5 mg/L | 92.8 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 603777)** | | | | | | | | | | |
| WR2200848-002 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.463 mg/L | 0.5 mg/L | 92.6 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 603778)** | | | | | | | | | | |
| WR2200848-002 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 93.0 mg/L | 100 mg/L | 93.0 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 608012)** | | | | | | | | | | |
| WR2200838-009 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.0979 mg/L | 0.1 mg/L | 97.9 | 75.0 | 125 | ---- |
| **Dissolved Metals (QCLot: 603750)** | | | | | | | | | | |
| WR2200849-004 | SD_MW13-07_2022-08-08 | aluminum, dissolved | 7429-90-5 | E421 | 0.202 mg/L | 0.2 mg/L | 101 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0200 mg/L | 0.02 mg/L | 100 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0211 mg/L | 0.02 mg/L | 105 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0382 mg/L | 0.04 mg/L | 95.5 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00899 mg/L | 0.01 mg/L | 89.9 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.095 mg/L | 0.1 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00419 mg/L | 0.004 mg/L | 105 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0388 mg/L | 0.04 mg/L | 97.1 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0194 mg/L | 0.02 mg/L | 96.8 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0190 mg/L | 0.02 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.90 mg/L | 2 mg/L | 95.0 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0194 mg/L | 0.02 mg/L | 97.0 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0926 mg/L | 0.1 mg/L | 92.6 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0201 mg/L | 0.02 mg/L | 100 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0381 mg/L | 0.04 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 11.0 mg/L | 10 mg/L | 110 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 3.88 mg/L | 4 mg/L | 96.9 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *Concentration* | *Target* | *MS* | *Low* | *High* | *Qualifier* |
| **Dissolved Metals (QCLot: 603750) - continued** | | | | | | | | | | |
| WR2200849-004 | SD_MW13-07_2022-08-08 | selenium, dissolved | 7782-49-2 | E421 | 0.0482 mg/L | 0.04 mg/L | 120 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 9.32 mg/L | 10 mg/L | 93.2 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00379 mg/L | 0.004 mg/L | 94.8 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 22.2 mg/L | 20 mg/L | 111 | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00368 mg/L | 0.004 mg/L | 91.9 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0193 mg/L | 0.02 mg/L | 96.5 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0405 mg/L | 0.04 mg/L | 101 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | ND mg/L | 0.004 mg/L | ND | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.102 mg/L | 0.1 mg/L | 102 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.401 mg/L | 0.4 mg/L | 100 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0416 mg/L | 0.04 mg/L | 104 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 603848)** | | | | | | | | | | |
| YL2201194-002 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.210 mg/L | 0.2 mg/L | 105 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0207 mg/L | 0.02 mg/L | 104 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0205 mg/L | 0.02 mg/L | 102 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0403 mg/L | 0.04 mg/L | 101 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00846 mg/L | 0.01 mg/L | 84.6 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | ND mg/L | 0.1 mg/L | ND | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00388 mg/L | 0.004 mg/L | 97.0 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0408 mg/L | 0.04 mg/L | 102 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0192 mg/L | 0.02 mg/L | 95.8 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0182 mg/L | 0.02 mg/L | 91.3 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 2.01 mg/L | 2 mg/L | 101 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0183 mg/L | 0.02 mg/L | 91.5 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0940 mg/L | 0.1 mg/L | 94.0 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0375 mg/L | 0.04 mg/L | 93.8 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 11.3 mg/L | 10 mg/L | 113 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0461 mg/L | 0.04 mg/L | 115 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 603848) - continued** | | | | | | | | | | |
| YL2201194-002 | Anonymous | silicon, dissolved | 7440-21-3 | E421 | 10.6 mg/L | 10 mg/L | 106 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00382 mg/L | 0.004 mg/L | 95.6 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | ND mg/L | 20 mg/L | ND | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00345 mg/L | 0.004 mg/L | 86.2 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0201 mg/L | 0.02 mg/L | 100 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0439 mg/L | 0.04 mg/L | 110 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | ND mg/L | 0.004 mg/L | ND | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.107 mg/L | 0.1 mg/L | 107 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.374 mg/L | 0.4 mg/L | 93.5 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0452 mg/L | 0.04 mg/L | 113 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 609533)** | | | | | | | | | | |
| WR2200822-011 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.000100 mg/L | 0.0001 mg/L | 100 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 609534)** | | | | | | | | | | |
| WR2200849-009 | SD_MW14-02_2022-08-08 | mercury, dissolved | 7439-97-6 | E509 | 0.000101 mg/L | 0.0001 mg/L | 101 | 70.0 | 130 | ---- |
| **Volatile Organic Compounds (QCLot: 605308)** | | | | | | | | | | |
| VA22B8718-001 | Anonymous | benzene | 71-43-2 | E611A | 95.9 µg/L | 100 µg/L | 95.9 | 60.0 | 140 | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 94.0 µg/L | 100 µg/L | 94.0 | 60.0 | 140 | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 98.0 µg/L | 100 µg/L | 98.0 | 60.0 | 140 | ---- |
| | | styrene | 100-42-5 | E611A | 93.0 µg/L | 100 µg/L | 93.0 | 60.0 | 140 | ---- |
| | | toluene | 108-88-3 | E611A | 93.6 µg/L | 100 µg/L | 93.6 | 60.0 | 140 | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 206 µg/L | 200 µg/L | 103 | 60.0 | 140 | ---- |
| | | xylene, o- | 95-47-6 | E611A | 96.9 µg/L | 100 µg/L | 96.9 | 60.0 | 140 | ---- |
| **Volatile Organic Compounds (QCLot: 605372)** | | | | | | | | | | |
| WR2200849-011 | SD_MW14-04_2022-08-08 | benzene | 71-43-2 | E611A | 95.8 µg/L | 100 µg/L | 95.8 | 60.0 | 140 | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 98.0 µg/L | 100 µg/L | 98.0 | 60.0 | 140 | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 95.5 µg/L | 100 µg/L | 95.5 | 60.0 | 140 | ---- |
| | | styrene | 100-42-5 | E611A | 88.7 µg/L | 100 µg/L | 88.7 | 60.0 | 140 | ---- |
| | | toluene | 108-88-3 | E611A | 100 µg/L | 100 µg/L | 100 | 60.0 | 140 | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 217 µg/L | 200 µg/L | 108 | 60.0 | 140 | ---- |
| | | xylene, o- | 95-47-6 | E611A | 97.8 µg/L | 100 µg/L | 97.8 | 60.0 | 140 | ---- |
| **Hydrocarbons (QCLot: 605309)** | | | | | | | | | | |
| WR2200826-001 | Anonymous | VHw (C6-C10) | ---- | E581.VH+F1 | 4990 µg/L | 6310 µg/L | 79.1 | 60.0 | 140 | ---- |
| **Hydrocarbons (QCLot: 605373)** | | | | | | | | | | |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *Concentration* | *Target* | *MS* | *Low* | *High* | *Qualifier* |
| **Hydrocarbons (QCLot: 605373) - continued** | | | | | | | | | | |
| WR2200849-012 | SD_MW-FB_2022-08-08 | VHw (C6-C10) | ---- | E581.VH+F1 | 5290 µg/L | 6310 µg/L | 83.8 | 60.0 | 140 | ---- |

ALS Environmental

**Chain of Custody / Analytical Request Form**
**Canada Toll Free: 1 800 668 9878**
www.alsglobal.com

COC # —

Environmental Division
Whitehorse
Work Order Reference
**WR2200849**

Telephone : + 1 867 668 6689

| Report To | |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Address: | 601 Knighton Road |
| | Kimberly, BC |
| Phone: | 250-427-8422 Fax: |
| Invoice To | Same as Report ? [✓] Yes [ ] No |
| Hardcopy of Invoice with Report? | [ ] Yes [✓] No |
| **Client / Project Information** | |
| Project # | ECA22YT00199 |
| PO / AFE: | TECK PO10289 |
| LSD: | |
| Lab Work Order # (lab use only) | |

| Report Format / Distribution | |
|---|---|
| ✓ Standard | Other |
| ✓ PDF ✓ Excel ✓ Digital Fax | |
| Email 1: | azheng@ensero.com, slyons@ensero.com |
| Email 2: | wendy.mcbain@teck.com, colin.lynch@teck.com |
| Email 3: | chanson@ensero.com, teckkimb@equisonline.com |
| **Invoice Distribution** | |
| Select Email Distribution: | |
| Email 1 or Fax: | michelle.unger@teck.com |
| Email 2: | legacy.ap@teck.com |
| Quote #: | Q62635 |
| ALS Contact: | Can Dang |
| Sampler: | |

**Service Requested** (Rush for routine analysis subject to
- (●) Regular (Standard Turnaround Times - Business Days)
- ( ) Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to
- ( ) Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to
- ( ) Same Day or Weekend Emergency - Contact ALS to Confirm TA

**Analysis Request**
Please indicate below Filtered, Preserved or

| Sample # | Sample Identification | Sample Location (This description will appear on the bottle) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | pH, SPC, alkalinity, hardness | dissolved metals low level +Hg (F/P) | Anions (nitrate, nitrite, sulphate, Cl, F, Br) | Ammonia (P) | BTEX, LEPH, HEPH (P) | VPH, PAH (P) | | | | | | | | | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SD_MW13-01_2022-08-08 | SD_MW13-01 | 10-Aug-22 | 17:00 | Groundwater | X | X | X | X | | | | | | | | | | | |
| | SD_MW13-04_2022-08-08 | SD_MW13-04 | 08-Aug-22 | 15:40 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | SD_MW13-06_2022-08-08 | SD_MW13-06 | 10-Aug-22 | 14:00 | Groundwater | X | X | X | X | | | | | | | | | | | |
| | SD_MW13-07_2022-08-08 | SD_MW13-07 | 09-Aug-22 | 13:45 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW13-08_2022-08-08 | SD_MW13-08 | 08-Aug-22 | 16:30 | Groundwater | X | X | X | X | | | | | | | | | | | |
| | SD_MW13-10_2022-08-08 | SD_MW13-10 | 10-Aug-22 | 15:25 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW13-13_2022-08-08 | SD_MW13-13 | 10-Aug-22 | 11:50 | Groundwater | X | X | X | X | | | | | | | | | | | |
| | SD_MW14-01_2022-08-08 | SD_MW14-01 | 09-Aug-22 | 18:00 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW14-02_2022-08-08 | SD_MW14-02 | 09-Aug-22 | 17:15 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW14-03_2022-08-08 | SD_MW14-03 | 09-Aug-22 | 15:45 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW14-04_2022-08-08 | SD_MW14-04 | 09-Aug-22 | 16:20 | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW-FB_2022-08-08 | SD_MW-FB | 10-Aug-22 | | Groundwater | X | X | X | X | X | X | | | | | | | | | |
| | SD_MW-FD1_2022-08-08 | SD_MW-FD1 | 08-Aug-22 | | Groundwater | X | X | X | X | X | X | | | | | | | | | |

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

**Yukon EQWin and ACC200 digital formats.** General A: pH, EC, TSS (low) General B: pH, EC, TSS (low), anions-all
General C: pH, EC, TSS (low), anions-all, ion balance, alkalinity General D: pH, EC, TSS (low), SO4, ion balance, alkalinity General E: pH, EC, TSS (low), SO4, ion balance

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: Ex4/Sporting | Date (dd-mmm-yy) 11-Aug-22 | Time (hh-mm) | Received by: | Date: Aug 11 | Time: 4:07 | Temperature: °C | Verified by: | Date: | Time: | Observations: Yes / No ? If Yes add SIF |

10, 9, 5, 10, 11

GENF 20.00 Front

ALS Environmental

# Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #

Page 2 of 2

| Report To | | Report Format / Distribution | | Service Requested (Rush for routine analysis subject to availability) |
|---|---|---|---|---|
| Company: | TECK Metals Ltd | ✓ Standard / Other | | (●) Regular (Standard Turnaround Times - Business Days) |
| Contact: | Michelle Unger | ✓ PDF / ✓ Excel / ✓ Digital / Fax | | ( ) Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT |
| Address: | 601 Knighton Road | Email 1: | azheng@ensero.com, slyons@ensero.com | ( ) Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT |
| | Kimberly, BC | Email 2: | wendy.mcbain@teck.com, colin.lynch@teck.com | ( ) Same Day or Weekend Emergency - Contact ALS to Confirm TAT |
| Phone: | 250-427-8422 Fax: | Email 3: | chanson@ensero.com, teckkimb@equisonline.com | |
| Invoice To | Same as Report ? ✓ Yes / No | Invoice Distribution | | |
| Hardcopy of Invoice with Report? | Yes / ✓ No | Select Email Distribution: | | |
| Client / Project Information | | Email 1 or Fax: michelle.unger@teck.com | | |
| Project # | ECA22YT00199 | Email 2: legacy.ap@teck.com | | |
| PO / AFE: | TECK PO10289 | | | |
| LSD: | | Quote #: | Q62635 | |
| Lab Work Order # (lab use only) | | ALS Contact: Can Dang | Sampler: | |

**Analysis Request** — Please indicate below Filtered, Preserved or both (F, P, F/P)

| Sample # | Sample Identification | Sample Location (This description will appear on the bottle) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | pH, SPC, alkalinity, hardness | dissolved metals low level +Hg (F/P) | Anions (nitrate, nitrite, sulphate, Cl, F, Br) | Ammonia (P) | BTEX, LEPH, HEPH (P) | VPH, PAH (P) | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SD_MW-TB_2022-06-26 | SD_MW-TB | 11-Jul-22 | | Groundwater | X | X | X | X | X | X | |
| | SD_MW-FD2_2022-08-08 | SD_MW-FD2 | 09-Aug-22 | | Groundwater | X | X | X | X | X | X | |
| | SD_MW-FD3_2022-08-08 | SD_MW-FD3 | 10-Aug-22 | | Groundwater | X | X | X | X | X | X | |

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

Yukon EQWin and ACC200 digital formats. General A: pH, EC, TSS (low) General B: pH, EC, TSS (low), anions-all
General C: pH, EC, TSS (low), anions-all, ion balance, alkalinity General D: pH, EC, TSS (low), SO4, ion balance, alkalinity General E: pH, EC, TSS (low), SO4, ion balance

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh-mm) | Received by: | Date: | Time: | Temperature: °C | Verified by: | Date: | Time: | Observations: Yes / No ? If Yes add SIF |

Y

**Chain of Custody / Analytical Request Form**
**Canada Toll Free: 1 800 668 9878**
www.alsglobal.com

ALS Environmental

COC #

Environmental Division
Whitehorse
Work Order Reference
WR2200849

Telephone : +1 867 668 6689

| Report To | | Report Format / Distribution | |
|---|---|---|---|
| Company: | TECK Metals Ltd | ✓ Standard | Other |
| Contact: | Michelle Unger | ✓ PDF ✓ Excel ✓ Digital Fax | |
| Address: | 601 Knightton Road | Email 1: | azheng@ensero.com, slyons@ensero.com |
| | Kimberly, BC | Email 2: | wendy.mcbain@teck.com, colin.lynch@teck.com |
| Phone: | 250-427-8422 Fax: | Email 3: | chanson@ensero.com, teckkimb@equisonline.cor |
| Invoice To | Same as Report ? ✓ Yes No | Invoice Distribution | |
| Hardcopy of Invoice with Report? | Yes ✓ No | Select Email Distribution: | |
| Client / Project Information | | Email 1 or Fax: michelle.unger@teck.com | |
| Project # | ECA22YT00199 | Email 2: legacy.ap@teck.com | |
| PO / AFE: | TECK PO10289 | | |
| LSD: | | Quote #: | Q62635 |
| Lab Work Order # (lab use only) | | ALS Contact: Can Dang | Sampler: |

**Service Requested** (Rush for routine analysis subject to
- (●) Regular (Standard Turnaround Times - Business Days)
- ( ) Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to
- ( ) Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to
- ( ) Same Day or Weekend Emergency - Contact ALS to Confirm T/

**Analysis Request**
Please indicate below Filtered, Preserved or

| Sample # | Sample Identification | Sample Location (This description will appear on the bottle) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | pH, SPC, alkalinity, hardness | dissolved metals low level +Hg (F/P) | Anions (nitrate, nitrite, sulphate, Cl, F, Br) | Ammonia (P) | BTEX, LEPH, HEPH (P) | VPH, PAH (P) | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SD_MW13-01_2022-08-08 | SD_MW13-01 | 10-Aug-22 | 17:00 | Groundwater | X | X | X | X | | | |
| | SD_MW13-04_2022-08-08 | SD_MW13-04 | 08-Aug-22 | 15:40 | Groundwater | X | X | X | X | X | X | |
| | | | | | | | | | | | | |
| | SD_MW13-06_2022-08-08 | SD_MW13-06 | 10-Aug-22 | 14:00 | Groundwater | X | X | X | X | | | |
| | SD_MW13-07_2022-08-08 | SD_MW13-07 | 09-Aug-22 | 13:45 | Groundwater | X | X | X | X | X | X | |
| | SD_MW13-08_2022-08-08 | SD_MW13-08 | 08-Aug-22 | 16:30 | Groundwater | X | X | X | X | | | |
| | SD_MW13-10_2022-08-08 | SD_MW13-10 | 10-Aug-22 | 15:25 | Groundwater | X | X | X | X | X | X | |
| | SD_MW13-13_2022-08-08 | SD_MW13-13 | 10-Aug-22 | 11:50 | Groundwater | X | X | X | X | | | |
| | SD_MW14-01_2022-08-08 | SD_MW14-01 | 09-Aug-22 | 18:00 | Groundwater | X | X | X | X | X | X | |
| | SD_MW14-02_2022-08-08 | SD_MW14-02 | 09-Aug-22 | 17:15 | Groundwater | X | X | X | X | X | X | |
| | SD_MW14-03_2022-08-08 | SD_MW14-03 | 09-Aug-22 | 15:45 | Groundwater | X | X | X | X | X | X | |
| | SD_MW14-04_2022-08-08 | SD_MW14-04 | 09-Aug-22 | 16:20 | Groundwater | X | X | X | X | X | X | |
| | SD_MW-FB_2022-08-08 | SD_MW-FB | 10-Aug-22 | | Groundwater | X | X | X | X | X | X | |
| | SD_MW-FD1_2022-08-08 | SD_MW-FD1 | 08-Aug-22 | | Groundwater | X | X | X | X | X | X | |

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

Yukon EQWin and ACC200 digital formats. General A: pH, EC, TSS (low) General B: pH, EC, TSS (low), anions-all
General C: pH, EC, TSS (low), anions-all, ion balance, alkalinity General D: pH, EC, TSS (low), SO4, ion balance, alkalinity General E: pH, EC, TSS (low), SO4, ion balance

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**
**By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.**
**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab us | | |
|---|---|---|---|---|---|---|---|---|---|
| Released by: Finley Sparling | Date (dd-mmm-yy): 11-Aug-22 | Time (hh-mm) | Received by: JL | Date: Aug 11 | Time: 4:15 | Temperature: °C | Verified by: AUG 1 4 2022 | Date: | Time: 11:50am |

10, 9, 5, 10, 11

2

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200850-AA** | Page | : 1 of 10 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Aug-2022 16:45 |
| PO | : 10289 | Date Analysis Commenced | : 15-Aug-2022 |
| C-O-C number | : ---- | Issue Date | : 23-Aug-2022 14:11 |
| Sampler | : ---- | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 11 | | |
| No. of samples analysed | : 11 | | |



This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Metals, Burnaby, British Columbia |
| Delson Resende | Lab Assistant | Metals, Burnaby, British Columbia |
| Hamideh Moradi | Analyst | Metals, Burnaby, British Columbia |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |
| Kyle Chang | Lab Assistant | Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Inorganics, Burnaby, British Columbia |
| Owen Cheng | | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| - | No Unit |
| µg/L | micrograms per litre |
| µS/cm | Microsiemens per centimetre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLDS* | *Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.* |
| *DLM* | *Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).* |

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-02_2022-08-08 | SD_MH-04_2022-08-08 | SD_MH-11_2022-08-08 | SD_MH-12_2022-08-08 | SD_MH-13_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 09-Aug-2022 10:02 | 08-Aug-2022 15:45 | 10-Aug-2022 10:45 | 09-Aug-2022 11:45 | 09-Aug-2022 13:30 |
| | | | | | WR2200850-001 | WR2200850-002 | WR2200850-003 | WR2200850-004 | WR2200850-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 360 | 142 | 211 | 162 | 190 |
| conductivity | ---- | E100 | 2.0 | μS/cm | 1070 | 297 | 375 | 317 | 358 |
| hardness (as CaCO3), dissolved | ---- | EC100 | 0.60 | mg/L | 584 | 147 | 196 | 170 | 197 |
| hardness (as CaCO3), from total Ca/Mg | ---- | EC100A | 0.60 | mg/L | 564 | 144 | 187 | 160 | 185 |
| pH | ---- | E108 | 0.10 | pH units | 7.98 | 8.17 | 8.23 | 8.30 | 8.27 |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 781 | 170 | 201 | 177 | 192 |
| solids, total suspended [TSS] | ---- | E160-L | 1.0 | mg/L | 5.5 | <1.0 | <1.0 | 1.0 | 1.7 |
| **Anions and Nutrients** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | <0.0050 | 0.0089 | <0.0050 |
| bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.250 DLDS | <0.050 | <0.050 | <0.050 | <0.050 |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | <0.0250 DLDS | 0.134 | 0.0854 | 0.0412 | 0.0127 |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0050 DLDS | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 267 | 14.7 | 12.0 | 7.93 | 6.23 |
| **Total Metals** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0128 | 0.0048 | 0.0085 | 0.0093 | 0.0128 |
| antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | <0.00010 | 0.00012 | 0.00015 | 0.00022 | 0.00012 |
| arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00074 | 0.00042 | 0.00062 | 0.00087 | 0.00054 |
| barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.193 | 0.0210 | 0.0650 | 0.0738 | 0.155 |
| beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.000104 | 0.000261 | 0.0000691 | 0.0000410 | 0.0000250 |
| calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 198 | 52.9 | 62.4 | 54.6 | 53.6 |
| chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | 0.00100 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00290 |
| iron, total | 7439-89-6 | E420 | 0.010 | mg/L | 0.121 | <0.010 | 0.054 | 0.012 | 0.247 |
| lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000346 | 0.000239 | 0.000265 | 0.000281 | 0.000132 |
| lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | <0.0010 | 0.0014 | 0.0017 | 0.0015 | 0.0012 |
| magnesium, total | 7439-95-4 | E420 | 0.100 | mg/L | 17.0 | 3.00 | 7.58 | 5.66 | 12.5 |

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-02_2022-08-08 | SD_MH-04_2022-08-08 | SD_MH-11_2022-08-08 | SD_MH-12_2022-08-08 | SD_MH-13_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 09-Aug-2022 10:02 | 08-Aug-2022 15:45 | 10-Aug-2022 10:45 | 09-Aug-2022 11:45 | 09-Aug-2022 13:30 |
| | | | | | WR2200850-001 | WR2200850-002 | WR2200850-003 | WR2200850-004 | WR2200850-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| **manganese, total** | 7439-96-5 | E420 | 0.00010 | mg/L | 2.37 | 0.00075 | 0.00869 | 0.00163 | 0.0113 |
| **mercury, total** | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, total** | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00141 | 0.000665 | 0.000851 | 0.00120 | 0.00106 |
| **nickel, total** | 7440-02-0 | E420 | 0.00050 | mg/L | 0.00107 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, total** | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, total** | 7440-09-7 | E420 | 0.100 | mg/L | 2.21 | 0.379 | 0.355 | 0.422 | 0.293 |
| **selenium, total** | 7782-49-2 | E420 | 0.050 | µg/L | 0.088 | 0.734 | 0.532 | 0.579 | 0.512 |
| **silicon, total** | 7440-21-3 | E420 | 0.10 | mg/L | 6.14 | 3.33 | 3.79 | 4.32 | 3.38 |
| **silver, total** | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, total** | 7440-23-5 | E420 | 0.050 | mg/L | 11.0 | 0.785 | 1.04 | 0.950 | 0.875 |
| **strontium, total** | 7440-24-6 | E420 | 0.00020 | mg/L | 0.690 | 0.186 | 0.248 | 0.205 | 0.202 |
| **sulfur, total** | 7704-34-9 | E420 | 0.50 | mg/L | 100 | 5.12 | 4.38 | 2.69 | 2.32 |
| **thallium, total** | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, total** | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, total** | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, total** | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00140 | 0.000745 | 0.000952 | 0.000854 | 0.00116 |
| **vanadium, total** | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, total** | 7440-66-6 | E420 | 0.0030 | mg/L | 0.0145 | 0.0043 | 0.0058 | <0.0030 | <0.0030 |
| **zirconium, total** | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0024 | 0.0020 | 0.0069 | 0.0025 | 0.0029 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00010 | 0.00014 | 0.00016 | 0.00021 | 0.00011 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00071 | 0.00042 | 0.00062 | 0.00087 | 0.00050 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.184 | 0.0204 | 0.0617 | 0.0792 | 0.153 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000692 | 0.000261 | 0.0000576 | 0.0000416 | 0.0000149 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 205 | 53.7 | 65.4 | 58.2 | 56.7 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | 0.00099 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-02_2022-08-08 | SD_MH-04_2022-08-08 | SD_MH-11_2022-08-08 | SD_MH-12_2022-08-08 | SD_MH-13_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 09-Aug-2022 10:02 | 08-Aug-2022 15:45 | 10-Aug-2022 10:45 | 09-Aug-2022 11:45 | 09-Aug-2022 13:30 |
| | | | | | WR2200850-001 | WR2200850-002 | WR2200850-003 | WR2200850-004 | WR2200850-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00038 | 0.00048 | 0.00034 | 0.00033 | 0.00048 |
| iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | 0.070 | <0.010 | 0.034 | <0.010 | 0.108 |
| lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000080 | 0.000134 | 0.000114 | <0.000050 | <0.000050 |
| lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0010 | 0.0015 | 0.0018 | 0.0015 | 0.0012 |
| magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 17.6 | 3.09 | 7.84 | 6.01 | 13.4 |
| manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 2.51 | 0.00046 | 0.00745 | 0.00078 | 0.00727 |
| mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00147 | 0.000715 | 0.000930 | 0.00124 | 0.00106 |
| nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00108 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 2.27 | 0.399 | 0.366 | 0.446 | 0.325 |
| selenium, dissolved | 7782-49-2 | E421 | 0.050 | µg/L | 0.118 | 0.874 | 0.680 | 0.668 | 0.606 |
| silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 5.71 | 3.02 | 3.64 | 4.35 | 3.54 |
| silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 11.1 | 0.814 | 1.05 | 1.01 | 0.934 |
| strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.729 | 0.207 | 0.276 | 0.227 | 0.211 |
| sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 92.7 | 5.13 | 4.28 | 2.99 | 2.44 |
| thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00143 | 0.000765 | 0.000935 | 0.000910 | 0.00127 |
| vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0134 | 0.0045 | 0.0049 | 0.0015 | <0.0010 |
| zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| dissolved mercury filtration location | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| dissolved metals filtration location | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Speciated Metals** | | | | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| chromium, trivalent [Cr III], total | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-08-08 | SD_MH-22_2022-08-08 | SD_MH-29_2022-08-08 | SD_MH-FB_2022-08-08 | SD_MH-FD_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 09-Aug-2022 12:00 | 10-Aug-2022 14:20 | 10-Aug-2022 12:00 | 10-Aug-2022 | 09-Aug-2022 |
| | | | | | WR2200850-006 | WR2200850-007 | WR2200850-008 | WR2200850-009 | WR2200850-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 196 | 106 | 182 | <1.0 | 196 |
| conductivity | ---- | E100 | 2.0 | µS/cm | 360 | 273 | 337 | <2.0 | 359 |
| hardness (as CaCO3), dissolved | ---- | EC100 | 0.60 | mg/L | 199 | 135 | 182 | <0.60 | 198 |
| hardness (as CaCO3), from total Ca/Mg | ---- | EC100A | 0.60 | mg/L | 188 | 135 | 180 | <0.60 | 201 |
| pH | ---- | E108 | 0.10 | pH units | 8.23 | 7.93 | 8.25 | 5.23 | 8.23 |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 196 | 158 | 193 | <10 | 190 |
| solids, total suspended [TSS] | ---- | E160-L | 1.0 | mg/L | 1.3 | <1.0 | <1.0 | <1.0 | 1.3 |
| **Anions and Nutrients** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0056 | <0.0050 | <0.0050 | <0.0050 | 0.0059 |
| bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.0076 | 0.117 | 0.0398 | <0.0050 | 0.0076 |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 2.64 | 33.3 | 2.79 | <0.30 | 2.64 |
| **Total Metals** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0101 | <0.0030 | 0.0066 | <0.0030 | 0.0082 |
| antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00011 | 0.00231 | 0.00018 | <0.00010 | 0.00011 |
| arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00048 | 0.00383 | 0.00082 | <0.00010 | 0.00052 |
| barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.194 | 0.0159 | 0.0518 | <0.00010 | 0.196 |
| beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000155 | 0.00316 | 0.0000609 | <0.0000050 | 0.0000086 |
| calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 54.6 | 44.1 | 63.2 | <0.050 | 59.6 |
| chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0.00062 | <0.00050 | <0.00050 |
| iron, total | 7439-89-6 | E420 | 0.010 | mg/L | 0.172 | <0.010 | 0.014 | <0.010 | 0.163 |
| lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | 0.000223 | <0.000050 | <0.000050 | <0.000050 |
| lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0012 | 0.0052 | 0.0016 | <0.0010 | 0.0012 |
| magnesium, total | 7439-95-4 | E420 | 0.100 | mg/L | 12.5 | 5.97 | 5.42 | <0.100 | 12.7 |
| manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.0128 | 0.00038 | 0.00395 | <0.00010 | 0.0125 |

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| | | | | Client sample ID | SD_MH-15_2022-08-08 | SD_MH-22_2022-08-08 | SD_MH-29_2022-08-08 | SD_MH-FB_2022-08-08 | SD_MH-FD_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 09-Aug-2022 12:00 | 10-Aug-2022 14:20 | 10-Aug-2022 12:00 | 10-Aug-2022 | 09-Aug-2022 |
| Analyte | CAS Number | Method | LOR | Unit | WR2200850-006 | WR2200850-007 | WR2200850-008 | WR2200850-009 | WR2200850-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| **mercury, total** | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, total** | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00182 | 0.00876 | 0.000655 | <0.000050 | 0.00183 |
| **nickel, total** | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | 0.00333 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, total** | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, total** | 7440-09-7 | E420 | 0.100 | mg/L | 0.300 | 0.545 | 0.254 | <0.100 | 0.279 |
| **selenium, total** | 7782-49-2 | E420 | 0.050 | µg/L | 0.427 | 11.5 | 0.497 | <0.050 | 0.409 |
| **silicon, total** | 7440-21-3 | E420 | 0.10 | mg/L | 3.91 | 4.51 | 4.05 | <0.10 | 3.83 |
| **silver, total** | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, total** | 7440-23-5 | E420 | 0.050 | mg/L | 0.975 | 0.834 | 0.893 | <0.050 | 0.985 |
| **strontium, total** | 7440-24-6 | E420 | 0.00020 | mg/L | 0.176 | 0.201 | 0.220 | <0.00020 | 0.184 |
| **sulfur, total** | 7704-34-9 | E420 | 0.50 | mg/L | 0.89 | 11.9 | 1.22 | <0.50 | 1.37 |
| **thallium, total** | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | 0.000016 | <0.000010 | <0.000010 | <0.000010 |
| **tin, total** | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, total** | 7440-32-6 | E420 | 0.00030 | mg/L | 0.00042 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, total** | 7440-61-1 | E420 | 0.000010 | mg/L | 0.000688 | 0.00286 | 0.000557 | <0.000010 | 0.000685 |
| **vanadium, total** | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, total** | 7440-66-6 | E420 | 0.0030 | mg/L | <0.0030 | 0.424 | <0.0030 | <0.0030 | <0.0030 |
| **zirconium, total** | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0029 | <0.0010 | 0.0022 | <0.0010 | 0.0026 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00010 | 0.00234 | 0.00017 | <0.00010 | <0.00010 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00046 | 0.00378 | 0.00081 | <0.00010 | 0.00042 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.195 | 0.0161 | 0.0540 | <0.00010 | 0.203 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000092 | 0.00329 | 0.0000646 | <0.0000050 | 0.0000051 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 57.7 | 44.2 | 63.9 | <0.050 | 57.6 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00024 | 0.00037 | 0.00037 | <0.00020 | 0.00024 |

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-08-08 | SD_MH-22_2022-08-08 | SD_MH-29_2022-08-08 | SD_MH-FB_2022-08-08 | SD_MH-FD_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 09-Aug-2022 12:00 | 10-Aug-2022 14:20 | 10-Aug-2022 12:00 | 10-Aug-2022 | 09-Aug-2022 |
| | | | | | WR2200850-006 | WR2200850-007 | WR2200850-008 | WR2200850-009 | WR2200850-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | 0.088 | <0.010 | <0.010 | <0.010 | 0.087 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | 0.000189 | <0.000050 | <0.000050 | <0.000050 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0012 | 0.0052 | 0.0015 | <0.0010 | 0.0012 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 13.3 | 6.08 | 5.52 | <0.100 | 13.2 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00549 | 0.00036 | 0.00320 | <0.00010 | 0.00553 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00184 | 0.00886 | 0.000633 | <0.000050 | 0.00178 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | 0.00326 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.302 | 0.557 | 0.270 | <0.100 | 0.289 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.457 | 12.0 | 0.456 | <0.050 | 0.421 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 3.88 | 4.63 | 4.16 | <0.050 | 3.87 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 0.979 | 0.813 | 0.888 | <0.050 | 0.966 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.189 | 0.217 | 0.218 | <0.00020 | 0.186 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 0.92 | 11.8 | 1.05 | <0.50 | 1.17 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | 0.000018 | <0.000010 | <0.000010 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000695 | 0.00294 | 0.000589 | <0.000010 | 0.000706 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | 0.454 | <0.0010 | <0.0010 | <0.0010 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Speciated Metals** | | | | | | | | | |
| **chromium, hexavalent [Cr VI], total** | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| | | | | Client sample ID | SD_MH-TB_2022-08-08 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 11-Aug-2022 | ---- | ---- | ---- | ---- |
| Analyte | CAS Number | Method | LOR | Unit | WR2200850-011 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | <1.0 | ---- | ---- | ---- | ---- |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | <2.0 | ---- | ---- | ---- | ---- |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | <0.60 | ---- | ---- | ---- | ---- |
| **pH** | ---- | E108 | 0.10 | pH units | 5.23 | ---- | ---- | ---- | ---- |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | <10 | ---- | ---- | ---- | ---- |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | <1.0 | ---- | ---- | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | <0.30 | ---- | ---- | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | <0.0030 | ---- | ---- | ---- | ---- |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | ---- | ---- | ---- | ---- |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | <0.0000050 | ---- | ---- | ---- | ---- |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **lithium, total** | 7439-93-2 | E420 | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| **magnesium, total** | 7439-95-4 | E420 | 0.100 | mg/L | <0.100 | ---- | ---- | ---- | ---- |
| **manganese, total** | 7439-96-5 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **mercury, total** | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | ---- | ---- | ---- | ---- |
| **molybdenum, total** | 7439-98-7 | E420 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| | | | | Client sample ID | SD_MH-TB_2022-08-08 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 11-Aug-2022 | ---- | ---- | ---- | ---- |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | WR2200850-011 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **nickel, total** | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **phosphorus, total** | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **potassium, total** | 7440-09-7 | E420 | 0.100 | mg/L | <0.100 | ---- | ---- | ---- | ---- |
| **selenium, total** | 7782-49-2 | E420 | 0.050 | µg/L | <0.050 | ---- | ---- | ---- | ---- |
| **silicon, total** | 7440-21-3 | E420 | 0.10 | mg/L | <0.10 | ---- | ---- | ---- | ---- |
| **silver, total** | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **sodium, total** | 7440-23-5 | E420 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **strontium, total** | 7440-24-6 | E420 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |
| **sulfur, total** | 7704-34-9 | E420 | 0.50 | mg/L | <0.50 | ---- | ---- | ---- | ---- |
| **thallium, total** | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **tin, total** | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **titanium, total** | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | ---- | ---- | ---- | ---- |
| **uranium, total** | 7440-61-1 | E420 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **vanadium, total** | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **zinc, total** | 7440-66-6 | E420 | 0.0030 | mg/L | <0.0030 | ---- | ---- | ---- | ---- |
| **zirconium, total** | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200850-AA** | Page | : 1 of 22 |
| Client | : Teck Metals Ltd | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Aug-2022 16:45 |
| PO | : 10289 | Date Analysis Commenced | : 15-Aug-2022 |
| C-O-C number | : ---- | Issue Date | : 23-Aug-2022 14:11 |
| Sampler | : ---- | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 11 | | |
| No. of samples analysed | : 11 | | |



This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Vancouver Metals, Burnaby, British Columbia |
| Delson Resende | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |
| Hamideh Moradi | Analyst | Vancouver Metals, Burnaby, British Columbia |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Vancouver Metals, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Vancouver Metals, Burnaby, British Columbia |
| Kyle Chang | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Vancouver Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Vancouver Inorganics, Burnaby, British Columbia |
| Owen Cheng | | Vancouver Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests (QC Lot: 603737)** | | | | | | | | | | | |
| WR2200850-003 | SD_MH-11_2022-08-08 | pH | ---- | E108 | 0.10 | pH units | 8.23 | 8.24 | 0.121% | 4% | ---- |
| **Physical Tests (QC Lot: 603738)** | | | | | | | | | | | |
| WR2200850-003 | SD_MH-11_2022-08-08 | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 211 | 180 | 16.0% | 20% | ---- |
| **Physical Tests (QC Lot: 603739)** | | | | | | | | | | | |
| WR2200850-003 | SD_MH-11_2022-08-08 | conductivity | ---- | E100 | 2.0 | µS/cm | 375 | 341 | 9.50% | 10% | ---- |
| **Physical Tests (QC Lot: 604409)** | | | | | | | | | | | |
| WR2200849-008 | Anonymous | solids, total dissolved [TDS] | ---- | E162 | 20 | mg/L | 264 | 266 | 0.566% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 603782)** | | | | | | | | | | | |
| WR2200850-001 | SD_MH-02_2022-08-08 | ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 603794)** | | | | | | | | | | | |
| WR2200850-007 | SD_MH-22_2022-08-08 | aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | <0.0030 | <0.0030 | 0 | Diff <2x LOR | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00231 | 0.00238 | 2.91% | 20% | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00383 | 0.00387 | 0.904% | 20% | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.0159 | 0.0155 | 2.26% | 20% | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.00316 | 0.00325 | 2.69% | 20% | ---- |
| | | calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 44.1 | 44.5 | 1.00% | 20% | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | iron, total | 7439-89-6 | E420 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000223 | 0.000226 | 0.000004 | Diff <2x LOR | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0052 | 0.0053 | 0.00006 | Diff <2x LOR | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 0.100 | mg/L | 5.97 | 5.93 | 0.741% | 20% | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.00038 | 0.00036 | 0.00002 | Diff <2x LOR | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00876 | 0.00919 | 4.85% | 20% | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | 0.00333 | 0.00332 | 0.000007 | Diff <2x LOR | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, total | 7440-09-7 | E420 | 0.100 | mg/L | 0.545 | 0.543 | 0.002 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

**Laboratory Duplicate (DUP) Report**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QC Lot: 603794) - continued** | | | | | | | | | | | |
| WR2200850-007 | SD_MH-22_2022-08-08 | selenium, total | 7782-49-2 | E420 | 0.000050 | mg/L | 11.5 µg/L | 0.0119 | 3.29% | 20% | ---- |
| | | silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 4.51 | 4.54 | 0.501% | 20% | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 0.834 | 0.837 | 0.274% | 20% | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.201 | 0.209 | 3.77% | 20% | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 11.9 | 11.8 | 0.758% | 20% | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | 0.000016 | 0.000016 | 0.0000008 | Diff <2x LOR | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00286 | 0.00290 | 1.25% | 20% | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | 0.424 | 0.429 | 1.15% | 20% | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 603802)** | | | | | | | | | | | |
| VA22B8907-021 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.0150 | mg/L | 1.21 | 1.45 | 18.2% | 20% | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.00050 | mg/L | 0.00106 | 0.00113 | 0.00006 | Diff <2x LOR | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.00050 | mg/L | 0.0416 | 0.0417 | 0.220% | 20% | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.00050 | mg/L | 0.0395 | 0.0398 | 0.733% | 20% | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.000100 | mg/L | 0.000200 | 0.000207 | 0.000007 | Diff <2x LOR | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.000250 | mg/L | <0.000250 | <0.000250 | 0 | Diff <2x LOR | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.050 | mg/L | 1.41 | 1.44 | 2.03% | 20% | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.0000250 | mg/L | <0.0000250 | <0.0000250 | 0 | Diff <2x LOR | ---- |
| | | calcium, total | 7440-70-2 | E420 | 0.250 | mg/L | 796 | 834 | 4.59% | 20% | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | 0.00102 | 0.00102 | 0.000006 | Diff <2x LOR | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.00050 | mg/L | 0.00501 | 0.00510 | 1.79% | 20% | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.00250 | mg/L | <0.00250 | <0.00250 | 0 | Diff <2x LOR | ---- |
| | | iron, total | 7439-89-6 | E420 | 0.050 | mg/L | 1.01 | 1.17 | 14.2% | 20% | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.000250 | mg/L | 0.00112 | 0.00120 | 0.000079 | Diff <2x LOR | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0050 | mg/L | 0.0970 | 0.102 | 5.43% | 20% | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 0.0250 | mg/L | 71.0 | 73.2 | 3.05% | 20% | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.00050 | mg/L | 0.0318 | 0.0347 | 8.73% | 20% | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.000250 | mg/L | 0.00172 | 0.00182 | 0.000109 | Diff <2x LOR | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.00250 | mg/L | <0.00250 | <0.00250 | 0 | Diff <2x LOR | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 0.250 | mg/L | 0.346 | 0.327 | 0.019 | Diff <2x LOR | ---- |
| | | potassium, total | 7440-09-7 | E420 | 0.250 | mg/L | 3.69 | 3.71 | 0.418% | 20% | ---- |

Sub-Matrix: **Water**

**Laboratory Duplicate (DUP) Report**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QC Lot: 603802) - continued** | | | | | | | | | | | |
| VA22B8907-021 | Anonymous | selenium, total | 7782-49-2 | E420 | 0.000250 | mg/L | 0.0124 | 0.0128 | 2.95% | 20% | ---- |
| | | silicon, total | 7440-21-3 | E420 | 0.50 | mg/L | 26.0 | 26.5 | 2.03% | 20% | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.000050 | mg/L | 0.000086 | 0.000097 | 0.000011 | Diff <2x LOR | ---- |
| | | sodium, total | 7440-23-5 | E420 | 0.250 | mg/L | 351 | 357 | 1.56% | 20% | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.00100 | mg/L | 9.74 | 9.86 | 1.28% | 20% | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 2.50 | mg/L | 599 | 598 | 0.112% | 20% | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.000050 | mg/L | 0.000180 | 0.000193 | 0.000013 | Diff <2x LOR | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.00150 | mg/L | 0.0104 | 0.0119 | 0.00151 | Diff <2x LOR | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.000050 | mg/L | 0.0137 | 0.0141 | 3.44% | 20% | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.00250 | mg/L | 0.0254 | 0.0254 | 0.124% | 20% | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.0150 | mg/L | <0.0150 | <0.0150 | 0 | Diff <2x LOR | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.00100 | mg/L | 0.00229 | 0.00212 | 0.00017 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 610976)** | | | | | | | | | | | |
| WR2200830-005 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 603752)** | | | | | | | | | | | |
| VA22B8907-014 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0048 | 0.0048 | 0.00002 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.0100 | 0.00991 | 1.35% | 20% | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.138 | 0.140 | 1.20% | 20% | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0399 | 0.0404 | 1.22% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000100 | mg/L | <0.000100 | <0.000100 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | 0.234 | 0.237 | 0.900% | 20% | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000158 | 0.0000137 | 0.0000021 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 54.7 | 54.4 | 0.432% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | 0.00098 | 0.00096 | 0.00002 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00068 | 0.00067 | 0.00001 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000365 | 0.000370 | 0.000005 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0884 | 0.0829 | 6.40% | 20% | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.0050 | mg/L | 9.71 | 9.81 | 1.02% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00163 | 0.00171 | 4.73% | 20% | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.0107 | 0.0104 | 2.76% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Dissolved Metals (QC Lot: 603752) - continued** | | | | | | | | | | | |
| VA22B8907-014 | Anonymous | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | 0.535 | 0.588 | 9.34% | 20% | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.050 | mg/L | 4.01 | 4.07 | 1.53% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | 0.00424 | 0.00429 | 1.02% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 10.7 | 10.8 | 0.368% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 75.0 | 75.2 | 0.264% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 1.24 | 1.18 | 4.58% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 45.8 | 45.4 | 0.829% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | 0.000016 | 0.000014 | 0.000002 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | 0.00639 | 0.00645 | 0.985% | 20% | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00251 | 0.00253 | 0.554% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | 0.0105 | 0.0105 | 0.572% | 20% | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0180 | 0.0190 | 5.74% | 20% | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 603753)** | | | | | | | | | | | |
| WR2200850-004 | SD_MH-12_2022-08-08 | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0025 | 0.0025 | 0.00003 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00021 | 0.00021 | 0.000003 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00087 | 0.00089 | 0.00002 | Diff <2x LOR | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0792 | 0.0734 | 7.61% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000416 | 0.0000468 | 0.0000052 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 58.2 | 58.3 | 0.113% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00033 | 0.00033 | 0.000002 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0015 | 0.0014 | 0.00004 | Diff <2x LOR | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 6.01 | 6.13 | 1.85% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00078 | 0.00082 | 0.00004 | Diff <2x LOR | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00124 | 0.00119 | 4.25% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Dissolved Metals (QC Lot: 603753) - continued** | | | | | | | | | | | |
| WR2200850-004 | SD_MH-12_2022-08-08 | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 0.446 | 0.439 | 0.007 | Diff <2x LOR | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | 0.668 µg/L | 0.000680 | 1.70% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 4.35 | 4.34 | 0.164% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 1.01 | 0.984 | 2.50% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.227 | 0.222 | 2.41% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 2.99 | 3.26 | 0.27 | Diff <2x LOR | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000910 | 0.000911 | 0.0904% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0015 | 0.0016 | 0.00007 | Diff <2x LOR | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 610979)** | | | | | | | | | | | |
| WR2200829-002 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Speciated Metals (QC Lot: 604157)** | | | | | | | | | | | |
| KS2202967-008 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| **Speciated Metals (QC Lot: 605956)** | | | | | | | | | | | |
| VA22B8954-021 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.00050 | mg/L | 0.00060 | 0.00060 | 0 | Diff <2x LOR | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Physical Tests (QCLot: 603738)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 603739)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | <1.0 | ---- |
| **Physical Tests (QCLot: 604403)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 604409)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Anions and Nutrients (QCLot: 603740)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 603741)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 603742)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 603743)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 603782)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Total Metals (QCLot: 603794)** | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | <0.050 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | <0.010 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | <0.0010 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 603794) - continued** | | | | | | |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | <0.050 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | <0.050 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | <0.10 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | <0.050 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | <0.50 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| **Total Metals (QCLot: 603802)** | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | <0.050 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | <0.010 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | <0.0050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 603802) - continued** | | | | | | |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | <0.050 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | <0.050 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | <0.10 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | <0.050 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | <0.50 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| **Total Metals (QCLot: 610976)** | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 603752)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 603752) - continued** | | | | | | |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 603753)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 603753) - continued** | | | | | | |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 610979)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Speciated Metals (QCLot: 604157)** | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | <0.00050 | ---- |
| **Speciated Metals (QCLot: 605956)** | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | <0.00050 | ---- |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 603737)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 100 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 603738)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 109 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 603739)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 99.2 | 90.0 | 110 | ---- |
| **Physical Tests (QCLot: 604403)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 106 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 604409)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 106 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 603740)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 101 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 603741)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 98.8 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 603742)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 99.8 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 603743)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 99.8 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 603782)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 102 | 85.0 | 115 | ---- |
| **Total Metals (QCLot: 603794)** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | 2 mg/L | 103 | 80.0 | 120 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | 1 mg/L | 103 | 80.0 | 120 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | 0.25 mg/L | 106 | 80.0 | 120 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | 0.1 mg/L | 102 | 80.0 | 120 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | 1 mg/L | 100 | 80.0 | 120 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | 0.1 mg/L | 101 | 80.0 | 120 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | 0.25 mg/L | 101 | 80.0 | 120 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | 0.25 mg/L | 99.9 | 80.0 | 120 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | 0.25 mg/L | 98.8 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Total Metals (QCLot: 603794) - continued** | | | | | | | | | |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | 0.5 mg/L | 103 | 80.0 | 120 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | 0.25 mg/L | 105 | 80.0 | 120 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | 10 mg/L | 97.9 | 80.0 | 120 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | 50 mg/L | 107 | 80.0 | 120 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | 10 mg/L | 109 | 80.0 | 120 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | 0.1 mg/L | 95.6 | 80.0 | 120 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | 50 mg/L | 109 | 80.0 | 120 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | 0.25 mg/L | 101 | 80.0 | 120 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | 1 mg/L | 103 | 80.0 | 120 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | 0.5 mg/L | 102 | 80.0 | 120 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | 0.25 mg/L | 100.0 | 80.0 | 120 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | 0.005 mg/L | 102 | 80.0 | 120 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | 0.5 mg/L | 103 | 80.0 | 120 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | 0.5 mg/L | 100 | 80.0 | 120 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | 0.1 mg/L | 97.8 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 603802)** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | 2 mg/L | 96.6 | 80.0 | 120 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | 1 mg/L | 97.8 | 80.0 | 120 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | 1 mg/L | 95.4 | 80.0 | 120 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | 0.25 mg/L | 98.9 | 80.0 | 120 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | 0.1 mg/L | 97.8 | 80.0 | 120 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | 1 mg/L | 92.4 | 80.0 | 120 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | 1 mg/L | 88.8 | 80.0 | 120 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | 0.1 mg/L | 94.8 | 80.0 | 120 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | 50 mg/L | 96.0 | 80.0 | 120 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | 0.25 mg/L | 91.6 | 80.0 | 120 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | 0.25 mg/L | 94.7 | 80.0 | 120 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | 0.25 mg/L | 93.1 | 80.0 | 120 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | 1 mg/L | 97.8 | 80.0 | 120 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | 0.5 mg/L | 92.6 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 603802) - continued** | | | | | | | | | |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | 0.25 mg/L | 97.5 | 80.0 | 120 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | 50 mg/L | 95.8 | 80.0 | 120 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | 0.25 mg/L | 93.2 | 80.0 | 120 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | 0.25 mg/L | 95.1 | 80.0 | 120 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | 0.5 mg/L | 93.3 | 80.0 | 120 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | 10 mg/L | 89.0 | 80.0 | 120 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | 50 mg/L | 98.0 | 80.0 | 120 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | 1 mg/L | 95.7 | 80.0 | 120 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | 10 mg/L | 103 | 80.0 | 120 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | 0.1 mg/L | 87.5 | 80.0 | 120 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | 50 mg/L | 94.9 | 80.0 | 120 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | 0.25 mg/L | 98.9 | 80.0 | 120 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | 50 mg/L | 86.3 | 80.0 | 120 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | 1 mg/L | 94.2 | 80.0 | 120 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | 0.5 mg/L | 93.8 | 80.0 | 120 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | 0.25 mg/L | 93.2 | 80.0 | 120 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | 0.005 mg/L | 97.0 | 80.0 | 120 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | 0.5 mg/L | 95.6 | 80.0 | 120 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | 0.5 mg/L | 94.8 | 80.0 | 120 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | 0.1 mg/L | 93.7 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 610976)** | | | | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | 0.0001 mg/L | 102 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 603752)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 97.2 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 100 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 95.9 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 95.7 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 98.2 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 89.3 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 93.2 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 93.3 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 94.5 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 93.4 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 94.0 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 96.2 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 97.1 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 603752) - continued** | | | | | | | | | |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 93.5 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 97.3 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 98.7 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 96.0 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 104 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 94.4 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 101 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 98.3 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 92.0 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 94.2 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 92.7 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 95.0 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 94.8 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 94.0 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 93.3 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 93.3 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 94.9 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 96.0 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 94.1 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 98.0 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 603753)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 94.9 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 96.4 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 93.6 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 93.3 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 92.4 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 97.8 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 90.4 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 97.6 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 94.4 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 92.4 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 93.6 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 94.1 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 106 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 93.7 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 91.9 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 603753) - continued** | | | | | | | | | |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 95.8 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 96.3 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 94.2 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 95.4 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 95.0 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 94.9 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 96.4 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 103 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 87.9 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 94.7 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 96.2 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 84.2 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 93.5 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 91.4 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 91.0 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 100 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 95.1 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 97.2 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 92.2 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 103 | 80.0 | 120 | ---- |
| **Speciated Metals (QCLot: 604157)** | | | | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | 0.25 mg/L | 99.3 | 90.0 | 110 | ---- |
| **Speciated Metals (QCLot: 605956)** | | | | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | 0.25 mg/L | 99.8 | 90.0 | 110 | ---- |

## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 603740)** | | | | | | | | | | |
| WR2200853-002 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.482 mg/L | 0.5 mg/L | 96.3 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 603741)** | | | | | | | | | | |
| WR2200853-002 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 2.34 mg/L | 2.5 mg/L | 93.6 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 603742)** | | | | | | | | | | |
| WR2200853-002 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.472 mg/L | 0.5 mg/L | 94.3 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 603743)** | | | | | | | | | | |
| WR2200853-002 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 94.8 mg/L | 100 mg/L | 94.8 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 603782)** | | | | | | | | | | |
| WR2200850-002 | SD_MH-04_2022-08-08 | ammonia, total (as N) | 7664-41-7 | E298 | 0.103 mg/L | 0.1 mg/L | 103 | 75.0 | 125 | ---- |
| **Total Metals (QCLot: 603794)** | | | | | | | | | | |
| WR2200850-008 | SD_MH-29_2022-08-08 | aluminum, total | 7429-90-5 | E420 | 0.190 mg/L | 0.2 mg/L | 94.9 | 70.0 | 130 | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.0194 mg/L | 0.02 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.0202 mg/L | 0.02 mg/L | 101 | 70.0 | 130 | ---- |
| | | barium, total | 7440-39-3 | E420 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.0387 mg/L | 0.04 mg/L | 96.8 | 70.0 | 130 | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.00936 mg/L | 0.01 mg/L | 93.6 | 70.0 | 130 | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.100 mg/L | 0.1 mg/L | 99.6 | 70.0 | 130 | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.00388 mg/L | 0.004 mg/L | 96.9 | 70.0 | 130 | ---- |
| | | calcium, total | 7440-70-2 | E420 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.0388 mg/L | 0.04 mg/L | 97.1 | 70.0 | 130 | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.0193 mg/L | 0.02 mg/L | 96.4 | 70.0 | 130 | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.0189 mg/L | 0.02 mg/L | 94.4 | 70.0 | 130 | ---- |
| | | iron, total | 7439-89-6 | E420 | 1.91 mg/L | 2 mg/L | 95.7 | 70.0 | 130 | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.0187 mg/L | 0.02 mg/L | 93.5 | 70.0 | 130 | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0978 mg/L | 0.1 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | magnesium, total | 7439-95-4 | E420 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.0195 mg/L | 0.02 mg/L | 97.4 | 70.0 | 130 | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.0199 mg/L | 0.02 mg/L | 99.5 | 70.0 | 130 | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.0378 mg/L | 0.04 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 9.41 mg/L | 10 mg/L | 94.1 | 70.0 | 130 | ---- |
| | | potassium, total | 7440-09-7 | E420 | 4.07 mg/L | 4 mg/L | 102 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| | | | | | Concentration | Target | MS | Low | High | Qualifier |
| **Total Metals (QCLot: 603794) - continued** | | | | | | | | | | |
| WR2200850-008 | SD_MH-29_2022-08-08 | selenium, total | 7782-49-2 | E420 | 0.0432 mg/L | 0.04 mg/L | 108 | 70.0 | 130 | ---- |
| | | silicon, total | 7440-21-3 | E420 | 9.54 mg/L | 10 mg/L | 95.4 | 70.0 | 130 | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.00372 mg/L | 0.004 mg/L | 93.1 | 70.0 | 130 | ---- |
| | | sodium, total | 7440-23-5 | E420 | 1.98 mg/L | 2 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | strontium, total | 7440-24-6 | E420 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 21.2 mg/L | 20 mg/L | 106 | 70.0 | 130 | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.00364 mg/L | 0.004 mg/L | 91.0 | 70.0 | 130 | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.0194 mg/L | 0.02 mg/L | 97.1 | 70.0 | 130 | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.0389 mg/L | 0.04 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.00369 mg/L | 0.004 mg/L | 92.3 | 70.0 | 130 | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.0983 mg/L | 0.1 mg/L | 98.3 | 70.0 | 130 | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.375 mg/L | 0.4 mg/L | 93.7 | 70.0 | 130 | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.0385 mg/L | 0.04 mg/L | 96.4 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 603802)** | | | | | | | | | | |
| VA22B8907-022 | Anonymous | aluminum, total | 7429-90-5 | E420 | ND mg/L | 0.4 mg/L | ND | 70.0 | 130 | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.0404 mg/L | 0.04 mg/L | 101 | 70.0 | 130 | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.0406 mg/L | 0.04 mg/L | 102 | 70.0 | 130 | ---- |
| | | barium, total | 7440-39-3 | E420 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.0780 mg/L | 0.08 mg/L | 97.5 | 70.0 | 130 | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.0184 mg/L | 0.02 mg/L | 92.3 | 70.0 | 130 | ---- |
| | | boron, total | 7440-42-8 | E420 | ND mg/L | 0.2 mg/L | ND | 70.0 | 130 | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.00778 mg/L | 0.008 mg/L | 97.3 | 70.0 | 130 | ---- |
| | | calcium, total | 7440-70-2 | E420 | ND mg/L | 8 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.0762 mg/L | 0.08 mg/L | 95.3 | 70.0 | 130 | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.0386 mg/L | 0.04 mg/L | 96.5 | 70.0 | 130 | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.0366 mg/L | 0.04 mg/L | 91.5 | 70.0 | 130 | ---- |
| | | iron, total | 7439-89-6 | E420 | 3.80 mg/L | 4 mg/L | 95.0 | 70.0 | 130 | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.0359 mg/L | 0.04 mg/L | 89.6 | 70.0 | 130 | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.191 mg/L | 0.2 mg/L | 95.5 | 70.0 | 130 | ---- |
| | | magnesium, total | 7439-95-4 | E420 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.0387 mg/L | 0.04 mg/L | 96.7 | 70.0 | 130 | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.0418 mg/L | 0.04 mg/L | 105 | 70.0 | 130 | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.0752 mg/L | 0.08 mg/L | 94.0 | 70.0 | 130 | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 20.6 mg/L | 20 mg/L | 103 | 70.0 | 130 | ---- |
| | | potassium, total | 7440-09-7 | E420 | 7.75 mg/L | 8 mg/L | 96.9 | 70.0 | 130 | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.0854 mg/L | 0.08 mg/L | 107 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Total Metals (QCLot: 603802) - continued** | | | | | | | | | | |
| VA22B8907-022 | Anonymous | silicon, total | 7440-21-3 | E420 | 19.2 mg/L | 20 mg/L | 95.9 | 70.0 | 130 | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.00754 mg/L | 0.008 mg/L | 94.3 | 70.0 | 130 | ---- |
| | | sodium, total | 7440-23-5 | E420 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, total | 7440-24-6 | E420 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, total | 7704-34-9 | E420 | ND mg/L | 40 mg/L | ND | 70.0 | 130 | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.00714 mg/L | 0.008 mg/L | 89.2 | 70.0 | 130 | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.0405 mg/L | 0.04 mg/L | 101 | 70.0 | 130 | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.0816 mg/L | 0.08 mg/L | 102 | 70.0 | 130 | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.00876 mg/L | 0.008 mg/L | 109 | 70.0 | 130 | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.204 mg/L | 0.2 mg/L | 102 | 70.0 | 130 | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.736 mg/L | 0.8 mg/L | 92.1 | 70.0 | 130 | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.0799 mg/L | 0.08 mg/L | 99.8 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 610976)** | | | | | | | | | | |
| WR2200850-001 | SD_MH-02_2022-08-08 | mercury, total | 7439-97-6 | E508 | 0.000103 mg/L | 0.0001 mg/L | 103 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 603752)** | | | | | | | | | | |
| VA22B8907-015 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | ND mg/L | 0.2 mg/L | ND | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0198 mg/L | 0.02 mg/L | 99.2 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0423 mg/L | 0.04 mg/L | 106 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00843 mg/L | 0.01 mg/L | 84.3 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | ND mg/L | 0.1 mg/L | ND | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00385 mg/L | 0.004 mg/L | 96.3 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0361 mg/L | 0.04 mg/L | 90.4 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0193 mg/L | 0.02 mg/L | 96.6 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0187 mg/L | 0.02 mg/L | 93.5 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.90 mg/L | 2 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0188 mg/L | 0.02 mg/L | 93.9 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.104 mg/L | 0.1 mg/L | 104 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 1.03 mg/L | 1 mg/L | 103 | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0196 mg/L | 0.02 mg/L | 98.1 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0378 mg/L | 0.04 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 11.2 mg/L | 10 mg/L | 112 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 603752) - continued** | | | | | | | | | | |
| VA22B8907-015 | Anonymous | selenium, dissolved | 7782-49-2 | E421 | 0.0408 mg/L | 0.04 mg/L | 102 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 9.88 mg/L | 10 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00403 mg/L | 0.004 mg/L | 101 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | ND mg/L | 20 mg/L | ND | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00378 mg/L | 0.004 mg/L | 94.5 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0419 mg/L | 0.04 mg/L | 105 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.00391 mg/L | 0.004 mg/L | 97.7 | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.100 mg/L | 0.1 mg/L | 100 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.392 mg/L | 0.4 mg/L | 98.0 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0440 mg/L | 0.04 mg/L | 110 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 603753)** | | | | | | | | | | |
| WR2200850-005 | SD_MH-13_2022-08-08 | aluminum, dissolved | 7429-90-5 | E421 | 0.202 mg/L | 0.2 mg/L | 101 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0194 mg/L | 0.02 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0205 mg/L | 0.02 mg/L | 103 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0404 mg/L | 0.04 mg/L | 101 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00889 mg/L | 0.01 mg/L | 88.9 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.097 mg/L | 0.1 mg/L | 96.9 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00412 mg/L | 0.004 mg/L | 103 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0395 mg/L | 0.04 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0192 mg/L | 0.02 mg/L | 95.8 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0187 mg/L | 0.02 mg/L | 93.6 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.96 mg/L | 2 mg/L | 97.9 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0189 mg/L | 0.02 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0998 mg/L | 0.1 mg/L | 99.8 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0198 mg/L | 0.02 mg/L | 98.9 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0196 mg/L | 0.02 mg/L | 98.1 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0384 mg/L | 0.04 mg/L | 96.0 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 10.0 mg/L | 10 mg/L | 100 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 3.93 mg/L | 4 mg/L | 98.3 | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0437 mg/L | 0.04 mg/L | 109 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Spike Concentration | Spike Target | Recovery (%) MS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 603753) - continued** | | | | | | | | | | |
| WR2200850-005 | SD_MH-13_2022-08-08 | silicon, dissolved | 7440-21-3 | E421 | 9.78 mg/L | 10 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00381 mg/L | 0.004 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 1.91 mg/L | 2 mg/L | 95.5 | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 22.0 mg/L | 20 mg/L | 110 | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00370 mg/L | 0.004 mg/L | 92.5 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0189 mg/L | 0.02 mg/L | 94.5 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0415 mg/L | 0.04 mg/L | 104 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.00402 mg/L | 0.004 mg/L | 100 | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.100 mg/L | 0.1 mg/L | 100 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.392 mg/L | 0.4 mg/L | 98.1 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0412 mg/L | 0.04 mg/L | 103 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 610979)** | | | | | | | | | | |
| WR2200829-003 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.000103 mg/L | 0.0001 mg/L | 103 | 70.0 | 130 | ---- |
| **Speciated Metals (QCLot: 604157)** | | | | | | | | | | |
| VA22B8762-001 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.256 mg/L | 0.25 mg/L | 102 | 85.0 | 115 | ---- |
| **Speciated Metals (QCLot: 605956)** | | | | | | | | | | |
| VA22B8954-022 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.256 mg/L | 0.25 mg/L | 102 | 85.0 | 115 | ---- |

# CERTIFICATE OF ANALYSIS

| | | | | | |
|---|---|---|---|---|---|
| **Work Order** | : | **WR2200850-AB** | Page | : | 1 of 4 |
| Client | : | **Teck Metals Ltd** | Laboratory | : | Whitehorse - Environmental |
| Contact | : | Michelle Unger | Account Manager | : | Can Dang |
| Address | : | 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : | #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : | 250 427 8404 | Telephone | : | +1 867 668 6689 |
| Project | : | Sa Dena Hes | Date Samples Received | : | 11-Aug-2022 16:45 |
| PO | : | 10289 | Date Analysis Commenced | : | 19-Aug-2022 |
| C-O-C number | : | ---- | Issue Date | : | 23-Aug-2022 14:11 |
| Sampler | : | ---- | | | |
| Site | : | ECA22YT00199 | | | |
| Quote number | : | VA22-TECK150-001 | | | |
| No. of samples received | : | 5 | | | |
| No. of samples analysed | : | 5 | | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Hamideh Moradi | Analyst | Metals, Burnaby, British Columbia |
| Hedy Lai | Team Leader - Inorganics | Inorganics, Saskatoon, Saskatchewan |
| Janice Leung | Supervisor - Organics Instrumentation | Organics, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| % | percent |
| mg/kg | milligrams per kilogram |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLDS* | *Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.* |
| *DLM* | *Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).* |

## Analytical Results

Sub-Matrix: **Sediment**
(Matrix: **Soil/Solid)**

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-04_2022-08-08 | SD_MH-11_2022-08-08 | SD_MH-12_2022-08-08 | SD_MH-13_2022-08-08 | SD_MH-29_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 08-Aug-2022 | 10-Aug-2022 | 09-Aug-2022 | 10-Aug-2022 | 10-Aug-2022 |
| | | | | | WR2200850-012 | WR2200850-013 | WR2200850-014 | WR2200850-015 | WR2200850-016 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **pH (1:2 soil:water)** | ---- | E108 | 0.10 | pH units | 8.25 | 8.55 | 8.83 | 8.30 | 8.50 |
| **Particle Size** | | | | | | | | | |
| **clay (<0.004mm)** | ---- | EC184E | 1.0 | % | 1.6 | <1.0 | <1.0 | 3.0 | 1.0 |
| **silt (0.063mm - 0.004mm)** | ---- | EC184E | 1.0 | % | 10.3 | 5.2 | 8.9 | 16.4 | 4.8 |
| **sand (2.0mm - 0.063mm)** | ---- | EC184E | 1.0 | % | 72.4 | 76.0 | 74.1 | 67.0 | 81.0 |
| **gravel (>2mm)** | ---- | EC184E | 1.0 | % | 15.7 | 18.8 | 17.0 | 13.6 | 13.2 |
| **Organic / Inorganic Carbon** | | | | | | | | | |
| **carbon, total organic [TOC]** | ---- | EC356 | 0.050 | % | 1.12 | 0.422 | 0.400 | 1.67 | 0.563 |
| **Metals** | | | | | | | | | |
| **aluminum** | 7429-90-5 | E440 | 50 | mg/kg | 15200 | 11700 | 9950 | 7540 | 11400 |
| **antimony** | 7440-36-0 | E440 | 0.10 | mg/kg | 1.60 | 1.13 | 1.76 | 1.25 | 0.79 |
| **arsenic** | 7440-38-2 | E440 | 0.10 | mg/kg | 18.7 | 14.8 | 14.1 | 17.1 | 18.0 |
| **barium** | 7440-39-3 | E440 | 0.50 | mg/kg | 66.8 | 118 | 108 | 350 | 125 |
| **beryllium** | 7440-41-7 | E440 | 0.10 | mg/kg | 0.56 | 0.32 | 0.39 | 0.38 | 0.30 |
| **bismuth** | 7440-69-9 | E440 | 0.20 | mg/kg | 0.21 | <0.20 | <0.20 | <0.20 | <0.20 |
| **boron** | 7440-42-8 | E440 | 5.0 | mg/kg | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 |
| **cadmium** | 7440-43-9 | E440 | 0.020 | mg/kg | 4.51 | 1.82 | 1.09 | 1.68 | 2.66 |
| **calcium** | 7440-70-2 | E440 | 50 | mg/kg | 6100 | 12900 | 8130 | 8550 | 8230 |
| **chromium** | 7440-47-3 | E440 | 0.50 | mg/kg | 28.4 | 18.2 | 21.1 | 19.1 | 17.4 |
| **cobalt** | 7440-48-4 | E440 | 0.10 | mg/kg | 11.5 | 8.04 | 7.03 | 8.84 | 9.06 |
| **copper** | 7440-50-8 | E440 | 0.50 | mg/kg | 18.8 | 13.4 | 15.8 | 18.4 | 9.39 |
| **iron** | 7439-89-6 | E440 | 50 | mg/kg | 28000 | 22100 | 19500 | 25200 | 24100 |
| **lead** | 7439-92-1 | E440 | 0.50 | mg/kg | 158 | 233 | 77.8 | 37.5 | 31.5 |
| **lithium** | 7439-93-2 | E440 | 2.0 | mg/kg | 34.6 | 23.8 | 20.7 | 12.1 | 24.1 |
| **magnesium** | 7439-95-4 | E440 | 20 | mg/kg | 9910 | 7740 | 6620 | 4520 | 8210 |
| **manganese** | 7439-96-5 | E440 | 1.0 | mg/kg | 550 | 862 | 296 | 1170 | 1180 |
| **mercury** | 7439-97-6 | E510 | 0.0050 | mg/kg | 0.0143 | 0.0140 | 0.0101 | 0.0549 | 0.0162 |
| **molybdenum** | 7439-98-7 | E440 | 0.10 | mg/kg | 1.09 | 1.11 | 2.16 | 1.80 | 1.04 |
| **nickel** | 7440-02-0 | E440 | 0.50 | mg/kg | 27.6 | 21.5 | 24.1 | 28.9 | 21.3 |
| **phosphorus** | 7723-14-0 | E440 | 50 | mg/kg | 594 | 796 | 1050 | 1440 | 733 |
| **potassium** | 7440-09-7 | E440 | 100 | mg/kg | 580 | 450 | 540 | 700 | 330 |

## Analytical Results

Sub-Matrix: **Sediment**

(Matrix: **Soil/Solid**)

| | | | | Client sample ID | SD_MH-04_2022-08-08 | SD_MH-11_2022-08-08 | SD_MH-12_2022-08-08 | SD_MH-13_2022-08-08 | SD_MH-29_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 08-Aug-2022 | 10-Aug-2022 | 09-Aug-2022 | 10-Aug-2022 | 10-Aug-2022 |
| Analyte | CAS Number | Method | LOR | Unit | WR2200850-012 | WR2200850-013 | WR2200850-014 | WR2200850-015 | WR2200850-016 |
| | | | | | Result | Result | Result | Result | Result |
| **Metals** | | | | | | | | | |
| **selenium** | 7782-49-2 | E440 | 0.20 | mg/kg | 0.37 | 0.30 | 0.39 | 1.59 | 0.32 |
| **silver** | 7440-22-4 | E440 | 0.10 | mg/kg | 0.15 | 0.11 | 0.33 | 0.28 | 0.17 |
| **sodium** | 7440-23-5 | E440 | 50 | mg/kg | 68 | <50 | 58 | 52 | <50 |
| **strontium** | 7440-24-6 | E440 | 0.50 | mg/kg | 29.3 | 59.3 | 38.1 | 47.4 | 33.0 |
| **sulfur** | 7704-34-9 | E440 | 1000 | mg/kg | <1000 | <1000 | <1000 | <1000 | <1000 |
| **thallium** | 7440-28-0 | E440 | 0.050 | mg/kg | 0.105 | 0.063 | 0.092 | 0.105 | <0.050 |
| **tin** | 7440-31-5 | E440 | 2.0 | mg/kg | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **titanium** | 7440-32-6 | E440 | 1.0 | mg/kg | 469 | 352 | 409 | 81.1 | 182 |
| **tungsten** | 7440-33-7 | E440 | 0.50 | mg/kg | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **uranium** | 7440-61-1 | E440 | 0.050 | mg/kg | 0.562 | 0.584 | 0.898 | 1.26 | 0.459 |
| **vanadium** | 7440-62-2 | E440 | 0.20 | mg/kg | 30.2 | 25.6 | 36.3 | 29.1 | 20.0 |
| **zinc** | 7440-66-6 | E440 | 2.0 | mg/kg | 358 | 311 | 187 | 188 | 145 |
| **zirconium** | 7440-67-7 | E440 | 1.0 | mg/kg | <2.0 DLM | 2.0 | 2.0 | 1.3 | 1.7 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200850-AB** | Page | : 1 of 10 |
| Client | : Teck Metals Ltd | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Aug-2022 16:45 |
| PO | : 10289 | Date Analysis Commenced | : 19-Aug-2022 |
| C-O-C number | : ---- | Issue Date | : 23-Aug-2022 14:11 |
| Sampler | : ---- | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 5 | | |
| No. of samples analysed | : 5 | | |



This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Hamideh Moradi | Analyst | Vancouver Metals, Burnaby, British Columbia |
| Hedy Lai | Team Leader - Inorganics | Saskatoon Inorganics, Saskatoon, Saskatchewan |
| Janice Leung | Supervisor - Organics Instrumentation | Vancouver Organics, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Vancouver Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## *Laboratory Duplicate (DUP) Report*

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Physical Tests (QC Lot: 608356)** | | | | | | | | | | | |
| WR2200850-012 | SD_MH-04_2022-08-08 | pH (1:2 soil:water) | ---- | E108 | 0.10 | pH units | 8.25 | 8.25 | 0.0% | 5% | ---- |
| **Metals (QC Lot: 608354)** | | | | | | | | | | | |
| WR2200850-012 | SD_MH-04_2022-08-08 | mercury | 7439-97-6 | E510 | 0.0050 | mg/kg | 0.0143 | 0.0146 | 0.0002 | Diff <2x LOR | ---- |
| **Metals (QC Lot: 608355)** | | | | | | | | | | | |
| WR2200850-012 | SD_MH-04_2022-08-08 | aluminum | 7429-90-5 | E440 | 50 | mg/kg | 15200 | 15100 | 0.532% | 40% | ---- |
| | | antimony | 7440-36-0 | E440 | 0.10 | mg/kg | 1.60 | 1.51 | 6.07% | 30% | ---- |
| | | arsenic | 7440-38-2 | E440 | 0.10 | mg/kg | 18.7 | 14.7 | 23.7% | 30% | ---- |
| | | barium | 7440-39-3 | E440 | 0.50 | mg/kg | 66.8 | 70.3 | 5.15% | 40% | ---- |
| | | beryllium | 7440-41-7 | E440 | 0.10 | mg/kg | 0.56 | 0.56 | 0.006 | Diff <2x LOR | ---- |
| | | bismuth | 7440-69-9 | E440 | 0.20 | mg/kg | 0.21 | <0.20 | 0.009 | Diff <2x LOR | ---- |
| | | boron | 7440-42-8 | E440 | 5.0 | mg/kg | <5.0 | <5.0 | 0 | Diff <2x LOR | ---- |
| | | cadmium | 7440-43-9 | E440 | 0.020 | mg/kg | 4.51 | 4.41 | 2.16% | 30% | ---- |
| | | calcium | 7440-70-2 | E440 | 50 | mg/kg | 6100 | 6080 | 0.316% | 30% | ---- |
| | | chromium | 7440-47-3 | E440 | 0.50 | mg/kg | 28.4 | 30.0 | 5.45% | 30% | ---- |
| | | cobalt | 7440-48-4 | E440 | 0.10 | mg/kg | 11.5 | 10.2 | 12.4% | 30% | ---- |
| | | copper | 7440-50-8 | E440 | 0.50 | mg/kg | 18.8 | 15.5 | 19.3% | 30% | ---- |
| | | iron | 7439-89-6 | E440 | 50 | mg/kg | 28000 | 25900 | 7.94% | 30% | ---- |
| | | lead | 7439-92-1 | E440 | 0.50 | mg/kg | 158 | 169 | 6.42% | 40% | ---- |
| | | lithium | 7439-93-2 | E440 | 2.0 | mg/kg | 34.6 | 35.5 | 2.58% | 30% | ---- |
| | | magnesium | 7439-95-4 | E440 | 20 | mg/kg | 9910 | 9390 | 5.40% | 30% | ---- |
| | | manganese | 7439-96-5 | E440 | 1.0 | mg/kg | 550 | 470 | 15.5% | 30% | ---- |
| | | molybdenum | 7439-98-7 | E440 | 0.10 | mg/kg | 1.09 | 1.02 | 6.89% | 40% | ---- |
| | | nickel | 7440-02-0 | E440 | 0.50 | mg/kg | 27.6 | 27.5 | 0.0479% | 30% | ---- |
| | | phosphorus | 7723-14-0 | E440 | 50 | mg/kg | 594 | 706 | 17.3% | 30% | ---- |
| | | potassium | 7440-09-7 | E440 | 100 | mg/kg | 580 | 540 | 6.87% | 40% | ---- |
| | | selenium | 7782-49-2 | E440 | 0.20 | mg/kg | 0.37 | 0.37 | 0.001 | Diff <2x LOR | ---- |
| | | silver | 7440-22-4 | E440 | 0.10 | mg/kg | 0.15 | 0.16 | 0.007 | Diff <2x LOR | ---- |
| | | sodium | 7440-23-5 | E440 | 50 | mg/kg | 68 | 56 | 12 | Diff <2x LOR | ---- |
| | | strontium | 7440-24-6 | E440 | 0.50 | mg/kg | 29.3 | 29.6 | 0.733% | 40% | ---- |
| | | sulfur | 7704-34-9 | E440 | 1000 | mg/kg | <1000 | <1000 | 0 | Diff <2x LOR | ---- |
| | | thallium | 7440-28-0 | E440 | 0.050 | mg/kg | 0.105 | 0.104 | 0.002 | Diff <2x LOR | ---- |

Sub-Matrix: **Soil/Solid**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Metals (QC Lot: 608355) - continued** | | | | | | | | | | | |
| WR2200850-012 | SD_MH-04_2022-08-08 | tin | 7440-31-5 | E440 | 2.0 | mg/kg | <2.0 | <2.0 | 0 | Diff <2x LOR | ---- |
| | | titanium | 7440-32-6 | E440 | 1.0 | mg/kg | 469 | 496 | 5.61% | 40% | ---- |
| | | tungsten | 7440-33-7 | E440 | 0.50 | mg/kg | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | uranium | 7440-61-1 | E440 | 0.050 | mg/kg | 0.562 | 0.615 | 9.10% | 30% | ---- |
| | | vanadium | 7440-62-2 | E440 | 0.20 | mg/kg | 30.2 | 30.0 | 0.920% | 30% | ---- |
| | | zinc | 7440-66-6 | E440 | 2.0 | mg/kg | 358 | 358 | 0.226% | 30% | ---- |
| | | zirconium | 7440-67-7 | E440 | 2.0 | mg/kg | <2.0 | <2.0 | 0 | Diff <2x LOR | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Metals (QCLot: 608354)** | | | | | | |
| mercury | 7439-97-6 | E510 | 0.005 | mg/kg | <0.0050 | ---- |
| **Metals (QCLot: 608355)** | | | | | | |
| aluminum | 7429-90-5 | E440 | 50 | mg/kg | <50 | ---- |
| antimony | 7440-36-0 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| arsenic | 7440-38-2 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| barium | 7440-39-3 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| beryllium | 7440-41-7 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| bismuth | 7440-69-9 | E440 | 0.2 | mg/kg | <0.20 | ---- |
| boron | 7440-42-8 | E440 | 5 | mg/kg | <5.0 | ---- |
| cadmium | 7440-43-9 | E440 | 0.02 | mg/kg | <0.020 | ---- |
| calcium | 7440-70-2 | E440 | 50 | mg/kg | <50 | ---- |
| chromium | 7440-47-3 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| cobalt | 7440-48-4 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| copper | 7440-50-8 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| iron | 7439-89-6 | E440 | 50 | mg/kg | <50 | ---- |
| lead | 7439-92-1 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| lithium | 7439-93-2 | E440 | 2 | mg/kg | <2.0 | ---- |
| magnesium | 7439-95-4 | E440 | 20 | mg/kg | <20 | ---- |
| manganese | 7439-96-5 | E440 | 1 | mg/kg | <1.0 | ---- |
| molybdenum | 7439-98-7 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| nickel | 7440-02-0 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| phosphorus | 7723-14-0 | E440 | 50 | mg/kg | <50 | ---- |
| potassium | 7440-09-7 | E440 | 100 | mg/kg | <100 | ---- |
| selenium | 7782-49-2 | E440 | 0.2 | mg/kg | <0.20 | ---- |
| silver | 7440-22-4 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| sodium | 7440-23-5 | E440 | 50 | mg/kg | <50 | ---- |
| strontium | 7440-24-6 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| sulfur | 7704-34-9 | E440 | 1000 | mg/kg | <1000 | ---- |
| thallium | 7440-28-0 | E440 | 0.05 | mg/kg | <0.050 | ---- |
| tin | 7440-31-5 | E440 | 2 | mg/kg | <2.0 | ---- |
| titanium | 7440-32-6 | E440 | 1 | mg/kg | <1.0 | ---- |
| tungsten | 7440-33-7 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| uranium | 7440-61-1 | E440 | 0.05 | mg/kg | <0.050 | ---- |

Sub-Matrix: **Soil/Solid**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Metals (QCLot: 608355) - continued** | | | | | | |
| vanadium | 7440-62-2 | E440 | 0.2 | mg/kg | <0.20 | ---- |
| zinc | 7440-66-6 | E440 | 2 | mg/kg | <2.0 | ---- |
| zirconium | 7440-67-7 | E440 | 1 | mg/kg | <1.0 | ---- |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 608356)** | | | | | | | | | |
| pH (1:2 soil:water) | ---- | E108 | ---- | pH units | 6 pH units | 100 | 95.0 | 105 | ---- |
| **Metals (QCLot: 608354)** | | | | | | | | | |
| mercury | 7439-97-6 | E510 | 0.005 | mg/kg | 0.1 mg/kg | 105 | 80.0 | 120 | ---- |
| **Metals (QCLot: 608355)** | | | | | | | | | |
| aluminum | 7429-90-5 | E440 | 50 | mg/kg | 200 mg/kg | 101 | 80.0 | 120 | ---- |
| antimony | 7440-36-0 | E440 | 0.1 | mg/kg | 100 mg/kg | 111 | 80.0 | 120 | ---- |
| arsenic | 7440-38-2 | E440 | 0.1 | mg/kg | 100 mg/kg | 103 | 80.0 | 120 | ---- |
| barium | 7440-39-3 | E440 | 0.5 | mg/kg | 25 mg/kg | 107 | 80.0 | 120 | ---- |
| beryllium | 7440-41-7 | E440 | 0.1 | mg/kg | 10 mg/kg | 102 | 80.0 | 120 | ---- |
| bismuth | 7440-69-9 | E440 | 0.2 | mg/kg | 100 mg/kg | 104 | 80.0 | 120 | ---- |
| boron | 7440-42-8 | E440 | 5 | mg/kg | 100 mg/kg | 101 | 80.0 | 120 | ---- |
| cadmium | 7440-43-9 | E440 | 0.02 | mg/kg | 10 mg/kg | 101 | 80.0 | 120 | ---- |
| calcium | 7440-70-2 | E440 | 50 | mg/kg | 5000 mg/kg | 106 | 80.0 | 120 | ---- |
| chromium | 7440-47-3 | E440 | 0.5 | mg/kg | 25 mg/kg | 103 | 80.0 | 120 | ---- |
| cobalt | 7440-48-4 | E440 | 0.1 | mg/kg | 25 mg/kg | 99.5 | 80.0 | 120 | ---- |
| copper | 7440-50-8 | E440 | 0.5 | mg/kg | 25 mg/kg | 98.0 | 80.0 | 120 | ---- |
| iron | 7439-89-6 | E440 | 50 | mg/kg | 100 mg/kg | 102 | 80.0 | 120 | ---- |
| lead | 7439-92-1 | E440 | 0.5 | mg/kg | 50 mg/kg | 113 | 80.0 | 120 | ---- |
| lithium | 7439-93-2 | E440 | 2 | mg/kg | 25 mg/kg | 96.3 | 80.0 | 120 | ---- |
| magnesium | 7439-95-4 | E440 | 20 | mg/kg | 5000 mg/kg | 106 | 80.0 | 120 | ---- |
| manganese | 7439-96-5 | E440 | 1 | mg/kg | 25 mg/kg | 95.8 | 80.0 | 120 | ---- |
| molybdenum | 7439-98-7 | E440 | 0.1 | mg/kg | 25 mg/kg | 104 | 80.0 | 120 | ---- |
| nickel | 7440-02-0 | E440 | 0.5 | mg/kg | 50 mg/kg | 99.9 | 80.0 | 120 | ---- |
| phosphorus | 7723-14-0 | E440 | 50 | mg/kg | 1000 mg/kg | 104 | 80.0 | 120 | ---- |
| potassium | 7440-09-7 | E440 | 100 | mg/kg | 5000 mg/kg | 98.4 | 80.0 | 120 | ---- |
| selenium | 7782-49-2 | E440 | 0.2 | mg/kg | 100 mg/kg | 104 | 80.0 | 120 | ---- |
| silver | 7440-22-4 | E440 | 0.1 | mg/kg | 10 mg/kg | 86.8 | 80.0 | 120 | ---- |
| sodium | 7440-23-5 | E440 | 50 | mg/kg | 5000 mg/kg | 103 | 80.0 | 120 | ---- |
| strontium | 7440-24-6 | E440 | 0.5 | mg/kg | 25 mg/kg | 96.2 | 80.0 | 120 | ---- |
| sulfur | 7704-34-9 | E440 | 1000 | mg/kg | 5000 mg/kg | 98.5 | 80.0 | 120 | ---- |
| thallium | 7440-28-0 | E440 | 0.05 | mg/kg | 100 mg/kg | 110 | 80.0 | 120 | ---- |
| tin | 7440-31-5 | E440 | 2 | mg/kg | 50 mg/kg | 99.4 | 80.0 | 120 | ---- |
| titanium | 7440-32-6 | E440 | 1 | mg/kg | 25 mg/kg | 95.8 | 80.0 | 120 | ---- |

Sub-Matrix: **Soil/Solid**

| Analyte | CAS Number | Method | LOR | Unit | Laboratory Control Sample (LCS) Report: Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Metals (QCLot: 608355) - continued** | | | | | | | | | |
| tungsten | 7440-33-7 | E440 | 0.5 | mg/kg | 10 mg/kg | 101 | 80.0 | 120 | ---- |
| uranium | 7440-61-1 | E440 | 0.05 | mg/kg | 0.5 mg/kg | 105 | 80.0 | 120 | ---- |
| vanadium | 7440-62-2 | E440 | 0.2 | mg/kg | 50 mg/kg | 103 | 80.0 | 120 | ---- |
| zinc | 7440-66-6 | E440 | 2 | mg/kg | 50 mg/kg | 103 | 80.0 | 120 | ---- |
| zirconium | 7440-67-7 | E440 | 1 | mg/kg | 10 mg/kg | 96.5 | 80.0 | 120 | ---- |

## Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

| Laboratory sample ID | Reference Material ID | Analyte | CAS Number | Method | RM Target Concentration | Recovery (%) RM | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Metals (QCLot: 608354)** | | | | | | | | | |
| | SCP SS-2 | mercury | 7439-97-6 | E510 | 0.059 mg/kg | 102 | 70.0 | 130 | ---- |
| **Metals (QCLot: 608355)** | | | | | | | | | |
| | SCP SS-2 | aluminum | 7429-90-5 | E440 | 9817 mg/kg | 106 | 70.0 | 130 | ---- |
| | SCP SS-2 | antimony | 7440-36-0 | E440 | 3.99 mg/kg | 99.4 | 70.0 | 130 | ---- |
| | SCP SS-2 | arsenic | 7440-38-2 | E440 | 3.73 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | barium | 7440-39-3 | E440 | 105 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | beryllium | 7440-41-7 | E440 | 0.349 mg/kg | 109 | 70.0 | 130 | ---- |
| | SCP SS-2 | boron | 7440-42-8 | E440 | 8.5 mg/kg | 115 | 40.0 | 160 | ---- |
| | SCP SS-2 | cadmium | 7440-43-9 | E440 | 0.91 mg/kg | 103 | 70.0 | 130 | ---- |
| | SCP SS-2 | calcium | 7440-70-2 | E440 | 31082 mg/kg | 111 | 70.0 | 130 | ---- |
| | SCP SS-2 | chromium | 7440-47-3 | E440 | 101 mg/kg | 108 | 70.0 | 130 | ---- |
| | SCP SS-2 | cobalt | 7440-48-4 | E440 | 6.9 mg/kg | 102 | 70.0 | 130 | ---- |
| | SCP SS-2 | copper | 7440-50-8 | E440 | 123 mg/kg | 101 | 70.0 | 130 | ---- |
| | SCP SS-2 | iron | 7439-89-6 | E440 | 23558 mg/kg | 101 | 70.0 | 130 | ---- |
| | SCP SS-2 | lead | 7439-92-1 | E440 | 267 mg/kg | 111 | 70.0 | 130 | ---- |
| | SCP SS-2 | lithium | 7439-93-2 | E440 | 9.5 mg/kg | 99.7 | 70.0 | 130 | ---- |
| | SCP SS-2 | magnesium | 7439-95-4 | E440 | 5509 mg/kg | 101 | 70.0 | 130 | ---- |
| | SCP SS-2 | manganese | 7439-96-5 | E440 | 269 mg/kg | 99.7 | 70.0 | 130 | ---- |
| | SCP SS-2 | molybdenum | 7439-98-7 | E440 | 1.03 mg/kg | 103 | 70.0 | 130 | ---- |
| | SCP SS-2 | nickel | 7440-02-0 | E440 | 26.7 mg/kg | 102 | 70.0 | 130 | ---- |
| | SCP SS-2 | phosphorus | 7723-14-0 | E440 | 752 mg/kg | 97.4 | 70.0 | 130 | ---- |
| | SCP SS-2 | potassium | 7440-09-7 | E440 | 1587 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | sodium | 7440-23-5 | E440 | 797 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | strontium | 7440-24-6 | E440 | 86.1 mg/kg | 103 | 70.0 | 130 | ---- |
| | SCP SS-2 | thallium | 7440-28-0 | E440 | 0.0786 mg/kg | 106 | 40.0 | 160 | ---- |
| | SCP SS-2 | tin | 7440-31-5 | E440 | 10.6 mg/kg | 98.6 | 70.0 | 130 | ---- |
| | SCP SS-2 | titanium | 7440-32-6 | E440 | 839 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | uranium | 7440-61-1 | E440 | 0.52 mg/kg | 105 | 70.0 | 130 | ---- |
| | SCP SS-2 | vanadium | 7440-62-2 | E440 | 32.7 mg/kg | 104 | 70.0 | 130 | ---- |

Sub-Matrix:

| Laboratory sample ID | Reference Material ID | Analyte | CAS Number | Method | Reference Material (RM) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | RM Target Concentration | Recovery (%) RM | Recovery Limits (%) Low | High | Qualifier |
| **Metals (QCLot: 608355) - continued** | | | | | | | | | |
| | SCP SS-2 | zinc | 7440-66-6 | E440 | 297 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | zirconium | 7440-67-7 | E440 | 5.73 mg/kg | 84.5 | 70.0 | 130 | ---- |

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2201401** | Page | : 1 of 14 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 31-Oct-2022 12:30 |
| PO | : PO# 10289 | Date Analysis Commenced | : 02-Nov-2022 |
| C-O-C number | : ---- | Issue Date | : 09-Nov-2022 14:41 |
| Sampler | : Finley Sparling | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 15 | | |
| No. of samples analysed | : 14 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Cindy Tang | Team Leader - Inorganics | Inorganics, Burnaby, British Columbia |
| Delson Resende | Lab Assistant | Metals, Burnaby, British Columbia |
| Janice Leung | Supervisor - Organics Instrumentation | Organics, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |
| Qammar Almas | Lab Assistant | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| - | No Unit |
| µg/L | micrograms per litre |
| µS/cm | Microsiemens per centimetre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLDS* | *Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.* |

## Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-01_2022-10-24 | SD_MW13-06_2022-10-24 | SD_MW13-07_2022-10-24 | SD_MW13-08_2022-10-24 | SD_MW13-10_2022-10-24 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 28-Oct-2022 15:40 | 25-Oct-2022 14:00 | 26-Oct-2022 14:45 | 28-Oct-2022 13:50 | 28-Oct-2022 11:45 |
| | | | | | WR2201401-001 | WR2201401-002 | WR2201401-003 | WR2201401-004 | WR2201401-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 139 | 164 | 206 | 281 | 205 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 288 | 805 | 443 | 552 | 440 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 154 | 453 | 244 | 318 | 239 |
| **pH** | ---- | E108 | 0.10 | pH units | 7.93 | 7.72 | 8.07 | 7.74 | 8.17 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0064 | 0.0174 | 0.151 | 0.0084 | 0.0097 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.250 DLDS | <0.050 | <0.050 | <0.050 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.245 | <0.0250 DLDS | <0.0050 | 0.0753 | 0.506 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0050 DLDS | <0.0010 | <0.0010 | <0.0010 |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 10.8 | 299 | 31.0 | 16.9 | 36.6 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0016 | 0.0020 | 0.0071 | 0.0018 | 0.0051 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00011 | 0.00015 | <0.00010 | 0.00015 | 0.00011 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00032 | 0.0456 | 0.00155 | 0.00027 | 0.00116 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0190 | 0.0250 | 0.0412 | 0.242 | 0.00802 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | 0.012 | 0.021 | <0.010 | <0.010 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.000570 | 0.0000671 | <0.0000050 | 0.0000562 | 0.0000186 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 56.2 | 161 | 70.0 | 109 | 81.9 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00051 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | 0.00256 | <0.00010 | <0.00010 | <0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | 0.00021 | 0.00056 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | 0.500 | 0.561 | <0.010 | 0.010 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.00100 | 0.000086 | <0.000050 | <0.000050 | 0.000120 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0013 | 0.0076 | 0.0090 | 0.0019 | 0.0016 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 3.42 | 12.3 | 16.7 | 11.2 | 8.32 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00018 | 0.315 | 0.0664 | 0.00016 | 0.00037 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |

## Analytical Results

| Sub-Matrix: Groundwater (Matrix: Water) | | | | Client sample ID | SD_MW13-01_ 2022-10-24 | SD_MW13-06_ 2022-10-24 | SD_MW13-07_ 2022-10-24 | SD_MW13-08_ 2022-10-24 | SD_MW13-10_ 2022-10-24 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 28-Oct-2022 15:40 | 25-Oct-2022 14:00 | 26-Oct-2022 14:45 | 28-Oct-2022 13:50 | 28-Oct-2022 11:45 |
| Analyte | CAS Number | Method | LOR | Unit | WR2201401-001 | WR2201401-002 | WR2201401-003 | WR2201401-004 | WR2201401-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000699 | 0.0333 | 0.00288 | 0.00111 | 0.00183 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | 0.0294 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | 0.159 | <0.050 | <0.050 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.585 | 2.05 | 2.81 | 0.704 | 1.06 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 1.17 | <0.050 | <0.050 | 1.37 | 1.78 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 3.15 | 14.0 | 7.28 | 4.19 | 3.93 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 0.693 | 5.15 | 4.39 | 1.24 | 1.89 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.151 | 0.545 | 0.515 | 0.354 | 0.356 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 3.36 | 95.6 | 9.85 | 5.91 | 12.3 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | 0.000014 | <0.000010 | <0.000010 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00035 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000941 | 0.0122 | 0.00697 | 0.00182 | 0.00298 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0209 | 0.116 | <0.0010 | <0.0010 | 0.0026 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| **benzene** | 71-43-2 | E611A | 0.50 | µg/L | ---- | ---- | <0.50 | ---- | <0.50 |
| **ethylbenzene** | 100-41-4 | E611A | 0.50 | µg/L | ---- | ---- | <0.50 | ---- | <0.50 |
| **methyl-tert-butyl ether [MTBE]** | 1634-04-4 | E611A | 0.50 | µg/L | ---- | ---- | <0.50 | ---- | <0.50 |
| **styrene** | 100-42-5 | E611A | 0.50 | µg/L | ---- | ---- | <0.50 | ---- | <0.50 |
| **toluene** | 108-88-3 | E611A | 0.50 | µg/L | ---- | ---- | <0.50 | ---- | <0.50 |
| **xylene, m+p-** | 179601-23-1 | E611A | 0.40 | µg/L | ---- | ---- | <0.40 | ---- | <0.40 |
| **xylene, o-** | 95-47-6 | E611A | 0.30 | µg/L | ---- | ---- | <0.30 | ---- | <0.30 |
| **xylenes, total** | 1330-20-7 | E611A | 0.50 | µg/L | ---- | ---- | <0.50 | ---- | <0.50 |
| **Hydrocarbons** | | | | | | | | | |
| **EPH (C10-C19)** | ---- | E601A | 250 | µg/L | ---- | ---- | <250 | ---- | <250 |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW13-01_ 2022-10-24 | SD_MW13-06_ 2022-10-24 | SD_MW13-07_ 2022-10-24 | SD_MW13-08_ 2022-10-24 | SD_MW13-10_ 2022-10-24 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 28-Oct-2022 15:40 | 25-Oct-2022 14:00 | 26-Oct-2022 14:45 | 28-Oct-2022 13:50 | 28-Oct-2022 11:45 |
| | | | | | WR2201401-001 | WR2201401-002 | WR2201401-003 | WR2201401-004 | WR2201401-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Hydrocarbons** | | | | | | | | | |
| **EPH (C19-C32)** | ---- | E601A | 250 | µg/L | ---- | ---- | <250 | ---- | <250 |
| **VHw (C6-C10)** | ---- | E581.VH+F1 | 100 | µg/L | ---- | ---- | <100 | ---- | <100 |
| **HEPHw** | ---- | EC600A | 250 | µg/L | ---- | ---- | <250 | ---- | <250 |
| **LEPHw** | ---- | EC600A | 250 | µg/L | ---- | ---- | <250 | ---- | <250 |
| **VPHw** | ---- | EC580A | 100 | µg/L | ---- | ---- | <100 | ---- | <100 |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| **bromobenzotrifluoride, 2- (EPH surr)** | 392-83-6 | E601A | 1.0 | % | ---- | ---- | 77.7 | ---- | 83.8 |
| **dichlorotoluene, 3,4-** | 97-75-0 | E581.VH+F1 | 1.0 | % | ---- | ---- | 97.3 | ---- | 104 |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| **bromofluorobenzene, 4-** | 460-00-4 | E611A | 1.0 | % | ---- | ---- | 72.3 | ---- | 74.4 |
| **difluorobenzene, 1,4-** | 540-36-3 | E611A | 1.0 | % | ---- | ---- | 97.4 | ---- | 97.8 |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **acenaphthene** | 83-32-9 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **acenaphthylene** | 208-96-8 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **acridine** | 260-94-6 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **anthracene** | 120-12-7 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **benz(a)anthracene** | 56-55-3 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **benzo(a)pyrene** | 50-32-8 | E641A | 0.0050 | µg/L | ---- | ---- | <0.0050 | ---- | <0.0050 |
| **benzo(b+j)fluoranthene** | n/a | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **benzo(b+j+k)fluoranthene** | n/a | E641A | 0.015 | µg/L | ---- | ---- | <0.015 | ---- | <0.015 |
| **benzo(g,h,i)perylene** | 191-24-2 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **benzo(k)fluoranthene** | 207-08-9 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **chrysene** | 218-01-9 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **dibenz(a,h)anthracene** | 53-70-3 | E641A | 0.0050 | µg/L | ---- | ---- | <0.0050 | ---- | <0.0050 |
| **fluoranthene** | 206-44-0 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **fluorene** | 86-73-7 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **indeno(1,2,3-c,d)pyrene** | 193-39-5 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **methylnaphthalene, 1-** | 90-12-0 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **methylnaphthalene, 2-** | 91-57-6 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **naphthalene** | 91-20-3 | E641A | 0.050 | µg/L | ---- | ---- | <0.050 | ---- | <0.050 |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| | | | | Client sample ID | SD_MW13-01_ 2022-10-24 | SD_MW13-06_ 2022-10-24 | SD_MW13-07_ 2022-10-24 | SD_MW13-08_ 2022-10-24 | SD_MW13-10_ 2022-10-24 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 28-Oct-2022 15:40 | 25-Oct-2022 14:00 | 26-Oct-2022 14:45 | 28-Oct-2022 13:50 | 28-Oct-2022 11:45 |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | **WR2201401-001** | **WR2201401-002** | **WR2201401-003** | **WR2201401-004** | **WR2201401-005** |
| | | | | | Result | Result | Result | Result | Result |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **phenanthrene** | 85-01-8 | E641A | 0.020 | µg/L | ---- | ---- | <0.020 | ---- | <0.020 |
| **pyrene** | 129-00-0 | E641A | 0.010 | µg/L | ---- | ---- | <0.010 | ---- | <0.010 |
| **quinoline** | 91-22-5 | E641A | 0.050 | µg/L | ---- | ---- | <0.050 | ---- | <0.050 |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| **chrysene-d12** | 1719-03-5 | E641A | 0.1 | % | ---- | ---- | 108 | ---- | 110 |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | ---- | ---- | 85.7 | ---- | 89.2 |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | ---- | ---- | 104 | ---- | 108 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD-MW13-13_2022-10-24 | SD_MW14-01_2022-10-24 | SD_MW14-02_2022-10-24 | SD_MW14-03_2022-10-24 | SD_MW14-04_2022-10-24 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 25-Oct-2022 11:50 | 26-Oct-2022 13:10 | 25-Oct-2022 18:25 | 24-Oct-2022 12:15 | 25-Oct-2022 17:30 |
| | | | | | WR2201401-006 | WR2201401-007 | WR2201401-008 | WR2201401-009 | WR2201401-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 105 | 212 | 245 | 270 | 167 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 248 | 389 | 351 | 564 | 307 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 128 | 217 | 208 | 319 | 171 |
| **pH** | ---- | E108 | 0.10 | pH units | 7.84 | 7.99 | 8.11 | 7.74 | 8.25 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | 0.221 | 0.0165 | 0.0350 | 0.0149 | 0.0170 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.552 | 0.175 | 0.124 | 0.154 | 0.219 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | 0.0123 | <0.0010 | 0.0012 | 0.0034 | 0.0051 |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 24.6 | 3.28 | 4.84 | 19.8 | 7.29 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0240 | 0.0053 | 0.0062 | 0.0076 | 0.0046 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00014 | 0.00014 | 0.00020 | 0.00028 | 0.00016 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00055 | 0.00025 | 0.00060 | 0.00014 | 0.00038 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0148 | 0.161 | 0.313 | 0.114 | 0.102 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | 0.173 | <0.010 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.000955 | 0.0000320 | 0.0000279 | 0.000256 | 0.0000376 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 48.0 | 70.7 | 67.7 | 111 | 58.5 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | 0.00066 | 0.00134 | 0.00054 | 0.00145 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00235 | 0.00044 | 0.00046 | 0.00082 | 0.00109 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | 0.033 | <0.010 | 0.011 | <0.010 | <0.010 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000737 | 0.000086 | 0.000090 | 0.000100 | 0.000068 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0010 | 0.0011 | 0.0014 | 0.0012 | 0.0012 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 1.92 | 9.79 | 9.49 | 10.1 | 6.10 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00133 | 0.00044 | 0.00051 | 0.00087 | 0.00056 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000346 | 0.00191 | 0.000751 | 0.000669 | 0.000714 |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD-MW13-13_2022-10-24 | SD_MW14-01_2022-10-24 | SD_MW14-02_2022-10-24 | SD_MW14-03_2022-10-24 | SD_MW14-04_2022-10-24 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 25-Oct-2022 11:50 | 26-Oct-2022 13:10 | 25-Oct-2022 18:25 | 24-Oct-2022 12:15 | 25-Oct-2022 17:30 |
| | | | | | WR2201401-006 | WR2201401-007 | WR2201401-008 | WR2201401-009 | WR2201401-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00054 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 0.772 | 0.558 | 0.573 | 0.824 | 0.633 |
| selenium, dissolved | 7782-49-2 | E421 | 0.050 | µg/L | 0.644 | 1.21 | 0.215 | 3.28 | 1.16 |
| silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 2.35 | 4.74 | 4.28 | 4.20 | 3.52 |
| silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 0.713 | 1.12 | 0.948 | 3.77 | 2.17 |
| strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.0795 | 0.235 | 0.205 | 0.341 | 0.202 |
| sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 7.64 | 1.11 | 1.59 | 11.2 | 2.89 |
| thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00022 | <0.00010 |
| titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | 0.00079 | <0.00030 | <0.00030 | 0.00052 | <0.00030 |
| uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000453 | 0.000990 | 0.000848 | 0.00109 | 0.000481 |
| vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0218 | <0.0010 | 0.0028 | 0.0046 | 0.0025 |
| zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| dissolved mercury filtration location | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| dissolved metals filtration location | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.50 | µg/L | ---- | <0.50 | <0.50 | <0.50 | <0.50 |
| ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | ---- | <0.50 | <0.50 | <0.50 | <0.50 |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | ---- | <0.50 | <0.50 | <0.50 | <0.50 |
| styrene | 100-42-5 | E611A | 0.50 | µg/L | ---- | <0.50 | <0.50 | <0.50 | <0.50 |
| toluene | 108-88-3 | E611A | 0.50 | µg/L | ---- | <0.50 | <0.50 | <0.50 | <0.50 |
| xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | ---- | <0.40 | <0.40 | <0.40 | <0.40 |
| xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | ---- | <0.30 | <0.30 | <0.30 | <0.30 |
| xylenes, total | 1330-20-7 | E611A | 0.50 | µg/L | ---- | <0.50 | <0.50 | <0.50 | <0.50 |
| **Hydrocarbons** | | | | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | ---- | <250 | <250 | <250 | <250 |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | ---- | <250 | <250 | <250 | <250 |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD-MW13-13_2022-10-24 | SD_MW14-01_2022-10-24 | SD_MW14-02_2022-10-24 | SD_MW14-03_2022-10-24 | SD_MW14-04_2022-10-24 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 25-Oct-2022 11:50 | 26-Oct-2022 13:10 | 25-Oct-2022 18:25 | 24-Oct-2022 12:15 | 25-Oct-2022 17:30 |
| | | | | | WR2201401-006 | WR2201401-007 | WR2201401-008 | WR2201401-009 | WR2201401-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Hydrocarbons** | | | | | | | | | |
| **VHw (C6-C10)** | ---- | E581.VH+F1 | 100 | µg/L | ---- | <100 | <100 | <100 | <100 |
| **HEPHw** | ---- | EC600A | 250 | µg/L | ---- | <250 | <250 | <250 | <250 |
| **LEPHw** | ---- | EC600A | 250 | µg/L | ---- | <250 | <250 | <250 | <250 |
| **VPHw** | ---- | EC580A | 100 | µg/L | ---- | <100 | <100 | <100 | <100 |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| **bromobenzotrifluoride, 2- (EPH surr)** | 392-83-6 | E601A | 1.0 | % | ---- | 80.7 | 84.1 | 80.7 | 83.3 |
| **dichlorotoluene, 3,4-** | 97-75-0 | E581.VH+F1 | 1.0 | % | ---- | 115 | 105 | 109 | 92.2 |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| **bromofluorobenzene, 4-** | 460-00-4 | E611A | 1.0 | % | ---- | 73.3 | 70.6 | 74.7 | 73.2 |
| **difluorobenzene, 1,4-** | 540-36-3 | E611A | 1.0 | % | ---- | 96.7 | 97.2 | 95.8 | 96.2 |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **acenaphthene** | 83-32-9 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **acenaphthylene** | 208-96-8 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **acridine** | 260-94-6 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **anthracene** | 120-12-7 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **benz(a)anthracene** | 56-55-3 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **benzo(a)pyrene** | 50-32-8 | E641A | 0.0050 | µg/L | ---- | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| **benzo(b+j)fluoranthene** | n/a | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **benzo(b+j+k)fluoranthene** | n/a | E641A | 0.015 | µg/L | ---- | <0.015 | <0.015 | <0.015 | <0.015 |
| **benzo(g,h,i)perylene** | 191-24-2 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **benzo(k)fluoranthene** | 207-08-9 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **chrysene** | 218-01-9 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **dibenz(a,h)anthracene** | 53-70-3 | E641A | 0.0050 | µg/L | ---- | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| **fluoranthene** | 206-44-0 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **fluorene** | 86-73-7 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **indeno(1,2,3-c,d)pyrene** | 193-39-5 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **methylnaphthalene, 1-** | 90-12-0 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **methylnaphthalene, 2-** | 91-57-6 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **naphthalene** | 91-20-3 | E641A | 0.050 | µg/L | ---- | <0.050 | <0.050 | <0.050 | <0.050 |
| **phenanthrene** | 85-01-8 | E641A | 0.020 | µg/L | ---- | <0.020 | <0.020 | <0.020 | <0.020 |

## Analytical Results

Sub-Matrix: **Groundwater**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD-MW13-13_2022-10-24 | SD_MW14-01_2022-10-24 | SD_MW14-02_2022-10-24 | SD_MW14-03_2022-10-24 | SD_MW14-04_2022-10-24 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 25-Oct-2022 11:50 | 26-Oct-2022 13:10 | 25-Oct-2022 18:25 | 24-Oct-2022 12:15 | 25-Oct-2022 17:30 |
| | | | | | WR2201401-006 | WR2201401-007 | WR2201401-008 | WR2201401-009 | WR2201401-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **pyrene** | 129-00-0 | E641A | 0.010 | µg/L | ---- | <0.010 | <0.010 | <0.010 | <0.010 |
| **quinoline** | 91-22-5 | E641A | 0.050 | µg/L | ---- | <0.050 | <0.050 | <0.050 | <0.050 |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| **chrysene-d12** | 1719-03-5 | E641A | 0.1 | % | ---- | 105 | 112 | 104 | 105 |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | ---- | 89.0 | 90.4 | 86.4 | 87.1 |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | ---- | 106 | 108 | 103 | 103 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

| Sub-Matrix: Groundwater (Matrix: Water) | | | | Client sample ID | SD_MW-FB_2022-10-24 | SD_MW-TB_2022-10-24 | SD_MW-FD2_2022-10-24 | SD_MW-FD-2022-10-24 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 28-Oct-2022 15:10 | 17-Oct-2022 | 28-Oct-2022 | 28-Oct-2022 | ---- |
| Analyte | CAS Number | Method | LOR | Unit | WR2201401-011 | WR2201401-013 | WR2201401-014 | WR2201401-015 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | <1.0 | <1.0 | 207 | 280 | ---- |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | <2.0 | <2.0 | 445 | 560 | ---- |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | <0.60 | ---- | 245 | 327 | ---- |
| **pH** | ---- | E108 | 0.10 | pH units | 5.47 | 5.43 | 8.06 | 7.67 | ---- |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | ---- | 0.0154 | 0.0168 | ---- |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | ---- |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | <0.0050 | <0.0050 | 0.503 | 0.223 | ---- |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | ---- |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | <0.30 | <0.30 | 36.6 | 35.3 | ---- |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | <0.0010 | ---- | 0.0045 | 0.0032 | ---- |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | <0.00010 | ---- | 0.00011 | 0.00028 | ---- |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | <0.00010 | ---- | 0.00116 | 0.00017 | ---- |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | <0.00010 | ---- | 0.00773 | 0.121 | ---- |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | ---- | <0.000020 | <0.000020 | ---- |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | ---- | <0.000050 | <0.000050 | ---- |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | ---- | <0.010 | 0.174 | ---- |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | <0.0000050 | ---- | 0.0000186 | 0.000244 | ---- |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | <0.050 | ---- | 84.7 | 113 | ---- |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | ---- | <0.00050 | 0.00060 | ---- |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | ---- | <0.00010 | <0.00010 | ---- |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00020 | ---- | 0.00065 | 0.00096 | ---- |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | ---- | <0.010 | <0.010 | ---- |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | ---- | 0.000150 | 0.000124 | ---- |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0010 | ---- | 0.0016 | 0.0012 | ---- |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | <0.100 | ---- | 8.16 | 10.8 | ---- |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | <0.00010 | ---- | 0.00030 | 0.00083 | ---- |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | ---- | <0.0000050 | <0.0000050 | ---- |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | <0.000050 | ---- | 0.00184 | 0.000658 | ---- |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW-FB_2022-10-24 | SD_MW-TB_2022-10-24 | SD_MW-FD2_2022-10-24 | SD_MW-FD-2022-10-24 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 28-Oct-2022 15:10 | 17-Oct-2022 | 28-Oct-2022 | 28-Oct-2022 | ---- |
| | | | | | WR2201401-011 | WR2201401-013 | WR2201401-014 | WR2201401-015 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **Dissolved Metals** | | | | | | | | | |
| nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | ---- | <0.00050 | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | ---- | <0.050 | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | <0.100 | ---- | 1.06 | 0.838 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.050 | µg/L | <0.050 | ---- | 1.77 | 3.62 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | <0.050 | ---- | 3.84 | 4.14 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | ---- | <0.000010 | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | <0.050 | ---- | 1.86 | 3.76 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | <0.00020 | ---- | 0.352 | 0.350 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | <0.50 | ---- | 12.1 | 11.8 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | ---- | <0.000010 | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | ---- | 0.00027 | 0.00023 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | ---- | <0.00030 | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | <0.000010 | ---- | 0.00292 | 0.00114 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | ---- | <0.00050 | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | ---- | 0.0014 | 0.0048 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | ---- | <0.00020 | <0.00020 | ---- |
| dissolved mercury filtration location | ---- | EP509 | - | - | Field | ---- | Field | Field | ---- |
| dissolved metals filtration location | ---- | EP421 | - | - | Field | ---- | Field | Field | ---- |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | ---- |
| styrene | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | ---- |
| toluene | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | <0.40 | <0.40 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | <0.30 | <0.30 | ---- |
| xylenes, total | 1330-20-7 | E611A | 0.50 | µg/L | <0.50 | <0.50 | <0.50 | <0.50 | ---- |
| **Hydrocarbons** | | | | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | <250 | <250 | <250 | <250 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | <250 | <250 | <250 | <250 | ---- |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW-FB_2022-10-24 | SD_MW-TB_2022-10-24 | SD_MW-FD2_2022-10-24 | SD_MW-FD-2022-10-24 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 28-Oct-2022 15:10 | 17-Oct-2022 | 28-Oct-2022 | 28-Oct-2022 | ---- |
| | | | | | WR2201401-011 | WR2201401-013 | WR2201401-014 | WR2201401-015 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **Hydrocarbons** | | | | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | <100 | <100 | ---- |
| HEPHw | ---- | EC600A | 250 | µg/L | <250 | <250 | <250 | <250 | ---- |
| LEPHw | ---- | EC600A | 250 | µg/L | <250 | <250 | <250 | <250 | ---- |
| VPHw | ---- | EC580A | 100 | µg/L | <100 | <100 | <100 | <100 | ---- |
| **Hydrocarbons Surrogates** | | | | | | | | | |
| bromobenzotrifluoride, 2- (EPH surr) | 392-83-6 | E601A | 1.0 | % | 79.8 | 76.6 | 83.8 | 85.7 | ---- |
| dichlorotoluene, 3,4- | 97-75-0 | E581.VH+F1 | 1.0 | % | 117 | 90.1 | 101 | 110 | ---- |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | |
| bromofluorobenzene, 4- | 460-00-4 | E611A | 1.0 | % | 70.8 | 81.7 | 72.8 | 71.8 | ---- |
| difluorobenzene, 1,4- | 540-36-3 | E611A | 1.0 | % | 96.2 | 99.9 | 96.3 | 94.8 | ---- |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| acridine | 260-94-6 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| anthracene | 120-12-7 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.0050 | µg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| benzo(b+j+k)fluoranthene | n/a | E641A | 0.015 | µg/L | <0.015 | <0.015 | <0.015 | <0.015 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| chrysene | 218-01-9 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.0050 | µg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | ---- |
| fluoranthene | 206-44-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| fluorene | 86-73-7 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| naphthalene | 91-20-3 | E641A | 0.050 | µg/L | <0.050 | <0.050 | <0.050 | <0.050 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.020 | µg/L | <0.020 | <0.020 | <0.020 | <0.020 | ---- |

## Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MW-FB_2022-10-24 | SD_MW-TB_2022-10-24 | SD_MW-FD2_2022-10-24 | SD_MW-FD-2022-10-24 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 28-Oct-2022 15:10 | 17-Oct-2022 | 28-Oct-2022 | 28-Oct-2022 | ---- |
| | | | | | WR2201401-011 | WR2201401-013 | WR2201401-014 | WR2201401-015 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | |
| **pyrene** | 129-00-0 | E641A | 0.010 | µg/L | <0.010 | <0.010 | <0.010 | <0.010 | ---- |
| **quinoline** | 91-22-5 | E641A | 0.050 | µg/L | <0.050 | <0.050 | <0.050 | <0.050 | ---- |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | |
| **chrysene-d12** | 1719-03-5 | E641A | 0.1 | % | 107 | 101 | 99.4 | 102 | ---- |
| **naphthalene-d8** | 1146-65-2 | E641A | 0.1 | % | 89.8 | 83.7 | 81.8 | 86.6 | ---- |
| **phenanthrene-d10** | 1517-22-2 | E641A | 0.1 | % | 107 | 102 | 98.0 | 105 | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

# ALS Canada Ltd.

# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2201401** | Page | : 1 of 27 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 31-Oct-2022 12:30 |
| PO | : PO# 10289 | Issue Date | : 09-Nov-2022 14:42 |
| C-O-C number | : ---- | | |
| Sampler | : Finley Sparling | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 15 | | |
| No. of samples analysed | : 14 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**

**CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.**

**DQO: Data Quality Objective.**

**LOR: Limit of Reporting (detection limit).**

**RPD: Relative Percent Difference.**

## *Workorder Comments*

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### *Outliers: Reference Material (RM) Samples*

- No Reference Material (RM) Sample outliers occur.

## *Outliers : Analysis Holding Time Compliance (Breaches)*

- Analysis Holding Time Outliers exist - please see following pages for full details.

## *Outliers : Frequency of Quality Control Samples*

- No Quality Control Sample Frequency Outliers occur.

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW14-04_2022-10-24 | E298 | 25-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 28 days | 10 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-01_2022-10-24 | E298 | 28-Oct-2022 | 08-Nov-2022 | ---- | ---- | | 08-Nov-2022 | 28 days | 11 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-08_2022-10-24 | E298 | 28-Oct-2022 | 08-Nov-2022 | ---- | ---- | | 08-Nov-2022 | 28 days | 11 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-10_2022-10-24 | E298 | 28-Oct-2022 | 08-Nov-2022 | ---- | ---- | | 08-Nov-2022 | 28 days | 11 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW14-03_2022-10-24 | E298 | 24-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 28 days | 11 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-07_2022-10-24 | E298 | 26-Oct-2022 | 08-Nov-2022 | ---- | ---- | | 08-Nov-2022 | 28 days | 13 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW14-01_2022-10-24 | E298 | 26-Oct-2022 | 08-Nov-2022 | ---- | ---- | | 08-Nov-2022 | 28 days | 13 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW13-06_2022-10-24 | E298 | 25-Oct-2022 | 08-Nov-2022 | ---- | ---- | | 08-Nov-2022 | 28 days | 14 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW14-02_2022-10-24 | E298 | 25-Oct-2022 | 08-Nov-2022 | ---- | ---- | | 08-Nov-2022 | 28 days | 14 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD-MW13-13_2022-10-24 | E298 | 25-Oct-2022 | 08-Nov-2022 | ---- | ---- | | 08-Nov-2022 | 28 days | 14 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-FB_2022-10-24 | E298 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-FD2_2022-10-24 | E298 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)** SD_MW-FD-2022-10-24 | E298 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-10-24 | E235.Br-L | 17-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 17 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-10-24 | E235.Br-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-10-24 | E235.Br-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* / Container / Client Sample ID(s) | *Method* | *Sampling Date* | *Extraction / Preparation* Preparation Date | Holding Times Rec | Holding Times Actual | Eval | *Analysis* Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-10-24 | E235.Br-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-10-24 | E235.Br-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-10-24 | E235.Br-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD-2022-10-24 | E235.Br-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-10-24 | E235.Br-L | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-10-24 | E235.Br-L | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-10-24 | E235.Br-L | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-10-24 | E235.Br-L | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-10-24 | E235.Br-L | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD-MW13-13_2022-10-24 | E235.Br-L | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-03_2022-10-24 | E235.Br-L | 24-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 9 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-10-24 | E235.NO3-L | 17-Oct-2022 | 02-Nov-2022 | 3 days | 17 days | × EHTR | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-10-24 | E235.NO3-L | 28-Oct-2022 | 02-Nov-2022 | 3 days | 5 days | × EHTL | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-10-24 | E235.NO3-L | 28-Oct-2022 | 02-Nov-2022 | 3 days | 5 days | × EHTL | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-10-24 | E235.NO3-L | 28-Oct-2022 | 02-Nov-2022 | 3 days | 5 days | × EHTL | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-10-24 | E235.NO3-L | 28-Oct-2022 | 02-Nov-2022 | 3 days | 5 days | × EHTL | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-10-24 | E235.NO3-L | 28-Oct-2022 | 02-Nov-2022 | 3 days | 6 days | × EHTL | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD-2022-10-24 | E235.NO3-L | 28-Oct-2022 | 02-Nov-2022 | 3 days | 6 days | × EHTL | 02-Nov-2022 | 3 days | 0 days | ✓ |

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-10-24 | E235.NO3-L | 26-Oct-2022 | 02-Nov-2022 | 3 days | 7 days | ✗ EHTR | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-10-24 | E235.NO3-L | 26-Oct-2022 | 02-Nov-2022 | 3 days | 7 days | ✗ EHTR | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-10-24 | E235.NO3-L | 25-Oct-2022 | 02-Nov-2022 | 3 days | 8 days | ✗ EHTR | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-10-24 | E235.NO3-L | 25-Oct-2022 | 02-Nov-2022 | 3 days | 8 days | ✗ EHTR | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-10-24 | E235.NO3-L | 25-Oct-2022 | 02-Nov-2022 | 3 days | 8 days | ✗ EHTR | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD-MW13-13_2022-10-24 | E235.NO3-L | 25-Oct-2022 | 02-Nov-2022 | 3 days | 8 days | ✗ EHTR | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-03_2022-10-24 | E235.NO3-L | 24-Oct-2022 | 02-Nov-2022 | 3 days | 9 days | ✗ EHTR | 02-Nov-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-10-24 | E235.NO2-L | 17-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 17 days | ✗ EHTR-FM |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-10-24 | E235.NO2-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 5 days | ✗ EHTL |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-10-24 | E235.NO2-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 5 days | × EHTL |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-10-24 | E235.NO2-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 5 days | × EHTL |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-10-24 | E235.NO2-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 5 days | × EHTL |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-10-24 | E235.NO2-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 6 days | × EHTL |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW-FD-2022-10-24 | E235.NO2-L | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 6 days | × EHTL |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-10-24 | E235.NO2-L | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 7 days | × EHTR-FM |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-10-24 | E235.NO2-L | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 7 days | × EHTR-FM |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-10-24 | E235.NO2-L | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 8 days | × EHTR-FM |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-10-24 | E235.NO2-L | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 8 days | × EHTR-FM |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-10-24 | E235.NO2-L | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 8 days | × EHTR-FM |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD-MW13-13_2022-10-24 | E235.NO2-L | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 8 days | × EHTR-FM |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MW14-03_2022-10-24 | E235.NO2-L | 24-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 3 days | 9 days | × EHTR-FM |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-10-24 | E235.SO4 | 17-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 17 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-10-24 | E235.SO4 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-10-24 | E235.SO4 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-10-24 | E235.SO4 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-10-24 | E235.SO4 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-10-24 | E235.SO4 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW-FD-2022-10-24 | E235.SO4 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW13-07_2022-10-24 | E235.SO4 | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW14-01_2022-10-24 | E235.SO4 | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW13-06_2022-10-24 | E235.SO4 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW14-02_2022-10-24 | E235.SO4 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW14-04_2022-10-24 | E235.SO4 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD-MW13-13_2022-10-24 | E235.SO4 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** | | | | | | | | | | |
| SD_MW14-03_2022-10-24 | E235.SO4 | 24-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** | | | | | | | | | | |
| SD_MW14-03_2022-10-24 | E509 | 24-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 10 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-01_2022-10-24 | E509 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-08_2022-10-24 | E509 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-10_2022-10-24 | E509 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW-FB_2022-10-24 | E509 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW-FD2_2022-10-24 | E509 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW-FD-2022-10-24 | E509 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-07_2022-10-24 | E509 | 26-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW14-01_2022-10-24 | E509 | 26-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 8 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW13-06_2022-10-24 | E509 | 25-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW14-02_2022-10-24 | E509 | 25-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MW14-04_2022-10-24 | E509 | 25-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD-MW13-13_2022-10-24 | E509 | 25-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 03-Nov-2022 | 28 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW13-06_2022-10-24 | E421 | 25-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW14-02_2022-10-24 | E421 | 25-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW14-04_2022-10-24 | E421 | 25-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD-MW13-13_2022-10-24 | E421 | 25-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 10 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW14-03_2022-10-24 | E421 | 24-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 11 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MW13-01_2022-10-24 | E421 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW13-08_2022-10-24 | E421 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW13-10_2022-10-24 | E421 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW-FB_2022-10-24 | E421 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW-FD2_2022-10-24 | E421 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW-FD-2022-10-24 | E421 | 28-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW13-07_2022-10-24 | E421 | 26-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 9 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MW14-01_2022-10-24 | E421 | 26-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 180 days | 9 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW14-03_2022-10-24 | E601A | 24-Oct-2022 | 03-Nov-2022 | 14 days | 10 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)**<br>SD_MW-TB_2022-10-24 | E601A | 17-Oct-2022 | 03-Nov-2022 | 14 days | 17 days | ✘ EHTL | 03-Nov-2022 | 40 days | 0 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FB_2022-10-24 | E601A | 28-Oct-2022 | 03-Nov-2022 | 14 days | 5 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-10_2022-10-24 | E601A | 28-Oct-2022 | 03-Nov-2022 | 14 days | 6 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FD2_2022-10-24 | E601A | 28-Oct-2022 | 02-Nov-2022 | 14 days | 6 days | ✓ | 03-Nov-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FD-2022-10-24 | E601A | 28-Oct-2022 | 02-Nov-2022 | 14 days | 6 days | ✓ | 03-Nov-2022 | 40 days | 1 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-07_2022-10-24 | E601A | 26-Oct-2022 | 03-Nov-2022 | 14 days | 8 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-01_2022-10-24 | E601A | 26-Oct-2022 | 03-Nov-2022 | 14 days | 8 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-02_2022-10-24 | E601A | 25-Oct-2022 | 03-Nov-2022 | 14 days | 8 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : BC PHCs - EPH by GC-FID** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-04_2022-10-24 | E601A | 25-Oct-2022 | 03-Nov-2022 | 14 days | 8 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-02_2022-10-24 | E581.VH+F1 | 25-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 10 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-04_2022-10-24 | E581.VH+F1 | 25-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 10 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-03_2022-10-24 | E581.VH+F1 | 24-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 11 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-TB_2022-10-24 | E581.VH+F1 | 17-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 14 days | 19 days | × EHTL |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-10_2022-10-24 | E581.VH+F1 | 28-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 7 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FB_2022-10-24 | E581.VH+F1 | 28-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 7 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FD2_2022-10-24 | E581.VH+F1 | 28-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 8 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FD-2022-10-24 | E581.VH+F1 | 28-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 8 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-07_2022-10-24 | E581.VH+F1 | 26-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 9 days | ✓ |
| **Hydrocarbons : VH and F1 by Headspace GC-FID** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-01_2022-10-24 | E581.VH+F1 | 26-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 9 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-10-24 | E290 | 17-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 17 days | × EHTL |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-10-24 | E290 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-10-24 | E290 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-10-24 | E290 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-10-24 | E290 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-10-24 | E290 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW-FD-2022-10-24 | E290 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-10-24 | E290 | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 7 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-10-24 | E290 | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-10-24 | E290 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 8 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-10-24 | E290 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 8 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-10-24 | E290 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 8 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD-MW13-13_2022-10-24 | E290 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 8 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MW14-03_2022-10-24 | E290 | 24-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 14 days | 9 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-10-24 | E100 | 17-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 17 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-01_2022-10-24 | E100 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-08_2022-10-24 | E100 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-10_2022-10-24 | E100 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-10-24 | E100 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 5 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-10-24 | E100 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW-FD-2022-10-24 | E100 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-07_2022-10-24 | E100 | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW14-01_2022-10-24 | E100 | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 7 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW13-06_2022-10-24 | E100 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW14-02_2022-10-24 | E100 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-10-24 | E100 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD-MW13-13_2022-10-24 | E100 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 8 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-03_2022-10-24 | E100 | 24-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 28 days | 9 days | ✓ |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-01_2022-10-24 | E108 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-06_2022-10-24 | E108 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-07_2022-10-24 | E108 | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-08_2022-10-24 | E108 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW13-10_2022-10-24 | E108 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-01_2022-10-24 | E108 | 26-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-02_2022-10-24 | E108 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MW14-03_2022-10-24 | E108 | 24-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW14-04_2022-10-24 | E108 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW-FB_2022-10-24 | E108 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW-FD2_2022-10-24 | E108 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW-FD-2022-10-24 | E108 | 28-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MW-TB_2022-10-24 | E108 | 17-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD-MW13-13_2022-10-24 | E108 | 25-Oct-2022 | 02-Nov-2022 | ---- | ---- | | 02-Nov-2022 | 0.25 hrs | 8.25 hrs | × EHTR-FM |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-03_2022-10-24 | E641A | 24-Oct-2022 | 03-Nov-2022 | 14 days | 10 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-TB_2022-10-24 | E641A | 17-Oct-2022 | 03-Nov-2022 | 14 days | 17 days | × EHTL | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FB_2022-10-24 | E641A | 28-Oct-2022 | 03-Nov-2022 | 14 days | 5 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis: Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-10_2022-10-24 | E641A | 28-Oct-2022 | 03-Nov-2022 | 14 days | 6 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FD2_2022-10-24 | E641A | 28-Oct-2022 | 02-Nov-2022 | 14 days | 6 days | ✓ | 03-Nov-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW-FD-2022-10-24 | E641A | 28-Oct-2022 | 02-Nov-2022 | 14 days | 6 days | ✓ | 03-Nov-2022 | 40 days | 1 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW13-07_2022-10-24 | E641A | 26-Oct-2022 | 03-Nov-2022 | 14 days | 8 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-01_2022-10-24 | E641A | 26-Oct-2022 | 03-Nov-2022 | 14 days | 8 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-02_2022-10-24 | E641A | 25-Oct-2022 | 03-Nov-2022 | 14 days | 8 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS** | | | | | | | | | | |
| **Amber glass/Teflon lined cap (sodium bisulfate)** SD_MW14-04_2022-10-24 | E641A | 25-Oct-2022 | 03-Nov-2022 | 14 days | 8 days | ✓ | 03-Nov-2022 | 40 days | 0 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-02_2022-10-24 | E611A | 25-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 10 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-04_2022-10-24 | E611A | 25-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 10 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* | *Method* | *Sampling Date* | *Extraction / Preparation* | | | | *Analysis* | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Container / Client Sample ID(s)** | | | *Preparation Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* | *Analysis Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-03_2022-10-24 | E611A | 24-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 11 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-TB_2022-10-24 | E611A | 17-Oct-2022 | 03-Nov-2022 | ---- | ---- | | 04-Nov-2022 | 14 days | 19 days | × EHTL |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-10_2022-10-24 | E611A | 28-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 7 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FB_2022-10-24 | E611A | 28-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 7 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FD2_2022-10-24 | E611A | 28-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 8 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW-FD-2022-10-24 | E611A | 28-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 8 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW13-07_2022-10-24 | E611A | 26-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 9 days | ✓ |
| **Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS** | | | | | | | | | | |
| **Glass vial (sodium bisulfate)** SD_MW14-01_2022-10-24 | E611A | 26-Oct-2022 | 04-Nov-2022 | ---- | ---- | | 05-Nov-2022 | 14 days | 9 days | ✓ |

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

Rec. HT: ALS recommended hold time (see units).

## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | QC | Regular | Actual | Expected | Evaluation |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 726622 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 727978 | 2 | 40 | 5.0 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 726618 | 1 | 17 | 5.8 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 728982 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Conductivity in Water | E100 | 726620 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 729276 | 2 | 40 | 5.0 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 727171 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 726614 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 726615 | 1 | 20 | 5.0 | 5.0 | ✓ |
| pH by Meter | E108 | 726621 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 726613 | 1 | 20 | 5.0 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 728983 | 2 | 35 | 5.7 | 5.0 | ✓ |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 726622 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 727978 | 2 | 40 | 5.0 | 5.0 | ✓ |
| BC PHCs - EPH by GC-FID | E601A | 727361 | 2 | 23 | 8.7 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 726618 | 1 | 17 | 5.8 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 728982 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Conductivity in Water | E100 | 726620 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 729276 | 2 | 40 | 5.0 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 727171 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 726614 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 726615 | 1 | 20 | 5.0 | 5.0 | ✓ |
| PAHs by Hexane LVI GC-MS | E641A | 727360 | 2 | 24 | 8.3 | 5.0 | ✓ |
| pH by Meter | E108 | 726621 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 726613 | 1 | 20 | 5.0 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 728983 | 2 | 35 | 5.7 | 5.0 | ✓ |
| **Method Blanks (MB)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 726622 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 727978 | 2 | 40 | 5.0 | 5.0 | ✓ |
| BC PHCs - EPH by GC-FID | E601A | 727361 | 2 | 23 | 8.7 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 726618 | 1 | 17 | 5.8 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 728982 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Conductivity in Water | E100 | 726620 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 729276 | 2 | 40 | 5.0 | 5.0 | ✓ |

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Method Blanks (MB) - Continued** | | | | | | | |
| Dissolved Metals in Water by CRC ICPMS | E421 | 727171 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 726614 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 726615 | 1 | 20 | 5.0 | 5.0 | ✓ |
| PAHs by Hexane LVI GC-MS | E641A | 727360 | 2 | 24 | 8.3 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 726613 | 1 | 20 | 5.0 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 728983 | 2 | 35 | 5.7 | 5.0 | ✓ |
| **Matrix Spikes (MS)** | | | | | | | |
| Ammonia by Fluorescence | E298 | 727978 | 2 | 40 | 5.0 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 726618 | 1 | 17 | 5.8 | 5.0 | ✓ |
| BTEX by Headspace GC-MS | E611A | 728982 | 2 | 37 | 5.4 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 729276 | 2 | 40 | 5.0 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 727171 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 726614 | 1 | 18 | 5.5 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 726615 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 726613 | 1 | 20 | 5.0 | 5.0 | ✓ |
| VH and F1 by Headspace GC-FID | E581.VH+F1 | 728983 | 2 | 35 | 5.7 | 5.0 | ✓ |

# Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Conductivity in Water | E100<br><br>Vancouver - Environmental | Water | APHA 2510 (mod) | Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C. |
| pH by Meter | E108<br><br>Vancouver - Environmental | Water | APHA 4500-H (mod) | pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time. |
| Bromide in Water by IC (Low Level) | E235.Br-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrite in Water by IC (Low Level) | E235.NO2-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrate in Water by IC (Low Level) | E235.NO3-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Sulfate in Water by IC | E235.SO4<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Alkalinity Species by Titration | E290<br><br>Vancouver - Environmental | Water | APHA 2320 B (mod) | Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. |
| Ammonia by Fluorescence | E298<br><br>Vancouver - Environmental | Water | Method Fialab 100, 2018 | Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021) |
| Dissolved Metals in Water by CRC ICPMS | E421<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 6020B (mod) | Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Dissolved Mercury in Water by CVAAS | E509<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 1631E (mod) | Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS. |
| VH and F1 by Headspace GC-FID | E581.VH+F1<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod) | Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. |
| BC PHCs - EPH by GC-FID | E601A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual | Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions. |
| BTEX by Headspace GC-MS | E611A<br><br>Vancouver - Environmental | Water | EPA 8260D (mod) | Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. |
| PAHs by Hexane LVI GC-MS | E641A<br><br>Vancouver - Environmental | Water | EPA 8270E (mod) | Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS. |
| Dissolved Hardness (Calculated) | EC100<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. |
| VPH: VH-BTEX-Styrene | EC580A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual (VPH in Water and Solids) (mod) | Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VPHw = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene. |
| LEPH and HEPH: EPH-PAH | EC600A<br><br>Vancouver - Environmental | Water | BC MOE Lab Manual (LEPH and HEPH) (mod) | Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Acenaphthene, Acridine, Anthracene, Fluorene, Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(a)pyrene, Fluoranthene, and Pyrene. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Preparation for Ammonia | EP298<br><br>Vancouver - Environmental | Water | | Sample preparation for Preserved Nutrients Water Quality Analysis. |
| Dissolved Metals Water Filtration | EP421<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HNO3. |

| *Preparation Methods* | *Method / Lab* | *Matrix* | *Method Reference* | *Method Descriptions* |
|---|---|---|---|---|
| Dissolved Mercury Water Filtration | EP509<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HCl. |
| VOCs Preparation for Headspace Analysis | EP581<br><br>Vancouver - Environmental | Water | EPA 5021A (mod) | Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system. |
| PHCs and PAHs Hexane Extraction | EP601<br><br>Vancouver - Environmental | Water | EPA 3511 (mod) | Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction. |

**ALS Canada Ltd.**

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2201401** | Page | : 1 of 16 |
| Client | : Teck Metals Ltd | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 31-Oct-2022 12:30 |
| PO | : PO# 10289 | Date Analysis Commenced | : 02-Nov-2022 |
| C-O-C number | : ---- | Issue Date | : 09-Nov-2022 14:42 |
| Sampler | : Finley Sparling 250 427 8404 | | |
| Site | : Sa Dena Hes | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 15 | | |
| No. of samples analysed | : 14 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Cindy Tang | Team Leader - Inorganics | Vancouver Inorganics, Burnaby, British Columbia |
| Delson Resende | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |
| Janice Leung | Supervisor - Organics Instrumentation | Vancouver Organics, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Vancouver Metals, Burnaby, British Columbia |
| Qammar Almas | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests (QC Lot: 726620)** | | | | | | | | | | | |
| VA22C6475-003 | Anonymous | conductivity | ---- | E100 | 2.0 | µS/cm | 365 | 367 | 0.546% | 10% | ---- |
| **Physical Tests (QC Lot: 726621)** | | | | | | | | | | | |
| VA22C6475-003 | Anonymous | pH | ---- | E108 | 0.10 | pH units | 7.56 | 7.57 | 0.132% | 4% | ---- |
| **Physical Tests (QC Lot: 726622)** | | | | | | | | | | | |
| VA22C6475-003 | Anonymous | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 56.3 | 57.6 | 2.28% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 726613)** | | | | | | | | | | | |
| VA22C6475-001 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 80.5 | 80.3 | 0.280% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 726614)** | | | | | | | | | | | |
| VA22C6475-001 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.512 | 0.513 | 0.0386% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 726615)** | | | | | | | | | | | |
| VA22C6475-001 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 726618)** | | | | | | | | | | | |
| VA22C6475-001 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 727978)** | | | | | | | | | | | |
| WR2201400-001 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0189 | 0.0192 | 0.0003 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 728112)** | | | | | | | | | | | |
| KS2204100-021 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 727171)** | | | | | | | | | | | |
| VA22C6002-001 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0261 | 0.0246 | 5.77% | 20% | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00040 | 0.00036 | 0.00004 | Diff <2x LOR | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.00276 | 0.00266 | 3.68% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 4.70 | 4.86 | 3.35% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Dissolved Metals (QC Lot: 727171) - continued** | | | | | | | | | | | |
| VA22C6002-001 | Anonymous | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | 0.062 | 0.060 | 0.002 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 1.24 | 1.22 | 1.36% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.0264 | 0.0260 | 1.48% | 20% | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000266 | 0.000265 | 0.000001 | Diff <2x LOR | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 0.330 | 0.324 | 0.006 | Diff <2x LOR | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 5.38 | 5.21 | 3.21% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 2.12 | 2.13 | 0.490% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.0358 | 0.0332 | 7.71% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000024 | 0.000026 | 0.000002 | Diff <2x LOR | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 729276)** | | | | | | | | | | | |
| WR2201395-005 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 729277)** | | | | | | | | | | | |
| WR2201401-006 | SD-MW13-13_2022-10-24 | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Volatile Organic Compounds (QC Lot: 728982)** | | | | | | | | | | | |
| VA22C6227-001 | Anonymous | benzene | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | styrene | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | toluene | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | 0 | Diff <2x LOR | ---- |
| | | xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Volatile Organic Compounds (QC Lot: 731419)** | | | | | | | | | | | |
| WR2201401-003 | SD_MW13-07_2022-10-24 | benzene | 71-43-2 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | styrene | 100-42-5 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | toluene | 108-88-3 | E611A | 0.50 | µg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 0.40 | µg/L | <0.40 | <0.40 | 0 | Diff <2x LOR | ---- |
| | | xylene, o- | 95-47-6 | E611A | 0.30 | µg/L | <0.30 | <0.30 | 0 | Diff <2x LOR | ---- |
| **Hydrocarbons (QC Lot: 728983)** | | | | | | | | | | | |
| VA22C6240-001 | Anonymous | VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | 0.0% | 30% | ---- |
| **Hydrocarbons (QC Lot: 731418)** | | | | | | | | | | | |
| WR2201401-003 | SD_MW13-07_2022-10-24 | VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | <100 | 0.0% | 30% | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Physical Tests (QCLot: 726620)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 1.5 | ---- |
| **Physical Tests (QCLot: 726622)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Anions and Nutrients (QCLot: 726613)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 726614)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 726615)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 726618)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 727978)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 728112)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Dissolved Metals (QCLot: 727171)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 727171) - continued** | | | | | | |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 729276)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 729277)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Volatile Organic Compounds (QCLot: 728982)** | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | <0.50 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | <0.50 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | <0.50 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | <0.40 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | <0.30 | ---- |
| **Volatile Organic Compounds (QCLot: 731419)** | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | <0.50 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | <0.50 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | <0.50 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (QCLot: 731419) - continued** | | | | | | |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | <0.50 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | <0.40 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | <0.30 | ---- |
| **Hydrocarbons (QCLot: 727361)** | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | <250 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | <250 | ---- |
| **Hydrocarbons (QCLot: 727464)** | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | <250 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | <250 | ---- |
| **Hydrocarbons (QCLot: 728983)** | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | ---- |
| **Hydrocarbons (QCLot: 731418)** | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | <100 | ---- |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 727360)** | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.01 | µg/L | <0.010 | ---- |
| acridine | 260-94-6 | E641A | 0.01 | µg/L | <0.010 | ---- |
| anthracene | 120-12-7 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.005 | µg/L | <0.0050 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| chrysene | 218-01-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.005 | µg/L | <0.0050 | ---- |
| fluoranthene | 206-44-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| fluorene | 86-73-7 | E641A | 0.01 | µg/L | <0.010 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.01 | µg/L | <0.010 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.01 | µg/L | <0.010 | ---- |
| naphthalene | 91-20-3 | E641A | 0.05 | µg/L | <0.050 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.02 | µg/L | <0.020 | ---- |
| pyrene | 129-00-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| quinoline | 91-22-5 | E641A | 0.05 | µg/L | <0.050 | ---- |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 727465)** | | | | | | |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Polycyclic Aromatic Hydrocarbons (QCLot: 727465) - continued** | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.01 | µg/L | <0.010 | ---- |
| acridine | 260-94-6 | E641A | 0.01 | µg/L | <0.010 | ---- |
| anthracene | 120-12-7 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.005 | µg/L | <0.0050 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.01 | µg/L | <0.010 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| chrysene | 218-01-9 | E641A | 0.01 | µg/L | <0.010 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.005 | µg/L | <0.0050 | ---- |
| fluoranthene | 206-44-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| fluorene | 86-73-7 | E641A | 0.01 | µg/L | <0.010 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.01 | µg/L | <0.010 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.01 | µg/L | <0.010 | ---- |
| naphthalene | 91-20-3 | E641A | 0.05 | µg/L | <0.050 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.02 | µg/L | <0.020 | ---- |
| pyrene | 129-00-0 | E641A | 0.01 | µg/L | <0.010 | ---- |
| quinoline | 91-22-5 | E641A | 0.05 | µg/L | <0.050 | ---- |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 726620)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 96.2 | 90.0 | 110 | ---- |
| **Physical Tests (QCLot: 726621)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 99.8 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 726622)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 101 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 726613)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 104 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 726614)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 103 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 726615)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 98.5 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 726618)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 101 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 727978)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 93.1 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 728112)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 89.5 | 85.0 | 115 | ---- |
| **Dissolved Metals (QCLot: 727171)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 98.8 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 98.0 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 101 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 101 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 98.9 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 96.4 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 97.0 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 99.8 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 96.5 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 97.6 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 96.9 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Laboratory Control Sample (LCS) Report* | | | | |
| **Dissolved Metals (QCLot: 727171) - continued** | | | | | | | | | |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 108 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 95.4 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 99.6 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 98.4 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 100 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 97.7 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 111 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 98.0 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 101 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 94.5 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 95.4 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 96.9 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 103 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 93.1 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 98.7 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 96.8 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 95.3 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 102 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 98.8 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 98.1 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 96.7 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 96.3 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 94.5 | 80.0 | 120 | ---- |
| **Volatile Organic Compounds (QCLot: 728982)** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | 100 µg/L | 110 | 70.0 | 130 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | 100 µg/L | 109 | 70.0 | 130 | ---- |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | 100 µg/L | 101 | 70.0 | 130 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | 100 µg/L | 102 | 70.0 | 130 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | 100 µg/L | 110 | 70.0 | 130 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | 200 µg/L | 122 | 70.0 | 130 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | 100 µg/L | 113 | 70.0 | 130 | ---- |
| **Volatile Organic Compounds (QCLot: 731419)** | | | | | | | | | |
| benzene | 71-43-2 | E611A | 0.5 | µg/L | 100 µg/L | 97.2 | 70.0 | 130 | ---- |
| ethylbenzene | 100-41-4 | E611A | 0.5 | µg/L | 100 µg/L | 84.0 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | Concentration | LCS | Low | High | Qualifier |
| **Volatile Organic Compounds (QCLot: 731419) - continued** | | | | | | | | | |
| methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 0.5 | µg/L | 100 µg/L | 100 | 70.0 | 130 | ---- |
| styrene | 100-42-5 | E611A | 0.5 | µg/L | 100 µg/L | 87.0 | 70.0 | 130 | ---- |
| toluene | 108-88-3 | E611A | 0.5 | µg/L | 100 µg/L | 87.1 | 70.0 | 130 | ---- |
| xylene, m+p- | 179601-23-1 | E611A | 0.4 | µg/L | 200 µg/L | 98.8 | 70.0 | 130 | ---- |
| xylene, o- | 95-47-6 | E611A | 0.3 | µg/L | 100 µg/L | 86.7 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 727361)** | | | | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | 6491 µg/L | 92.5 | 70.0 | 130 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | 3363 µg/L | 110 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 727464)** | | | | | | | | | |
| EPH (C10-C19) | ---- | E601A | 250 | µg/L | 6491 µg/L | 93.2 | 70.0 | 130 | ---- |
| EPH (C19-C32) | ---- | E601A | 250 | µg/L | 3363 µg/L | 112 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 728983)** | | | | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | 6310 µg/L | 86.8 | 70.0 | 130 | ---- |
| **Hydrocarbons (QCLot: 731418)** | | | | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1 | 100 | µg/L | 6310 µg/L | 81.9 | 70.0 | 130 | ---- |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 727360)** | | | | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 95.0 | 60.0 | 130 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.01 | µg/L | 0.5 µg/L | 104 | 60.0 | 130 | ---- |
| acridine | 260-94-6 | E641A | 0.01 | µg/L | 0.5 µg/L | 102 | 60.0 | 130 | ---- |
| anthracene | 120-12-7 | E641A | 0.01 | µg/L | 0.5 µg/L | 112 | 60.0 | 130 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.01 | µg/L | 0.5 µg/L | 116 | 60.0 | 130 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.005 | µg/L | 0.5 µg/L | 95.2 | 60.0 | 130 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.01 | µg/L | 0.5 µg/L | 81.3 | 60.0 | 130 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.01 | µg/L | 0.5 µg/L | 97.7 | 60.0 | 130 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 81.9 | 60.0 | 130 | ---- |
| chrysene | 218-01-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 103 | 60.0 | 130 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.005 | µg/L | 0.5 µg/L | 104 | 60.0 | 130 | ---- |
| fluoranthene | 206-44-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 104 | 60.0 | 130 | ---- |
| fluorene | 86-73-7 | E641A | 0.01 | µg/L | 0.5 µg/L | 106 | 60.0 | 130 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.01 | µg/L | 0.5 µg/L | 129 | 60.0 | 130 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 92.8 | 60.0 | 130 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.01 | µg/L | 0.5 µg/L | 96.8 | 60.0 | 130 | ---- |
| naphthalene | 91-20-3 | E641A | 0.05 | µg/L | 0.5 µg/L | 93.3 | 50.0 | 130 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.02 | µg/L | 0.5 µg/L | 108 | 60.0 | 130 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Laboratory Control Sample (LCS) Report: Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Polycyclic Aromatic Hydrocarbons (QCLot: 727360) - continued** | | | | | | | | | |
| pyrene | 129-00-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 106 | 60.0 | 130 | ---- |
| quinoline | 91-22-5 | E641A | 0.05 | µg/L | 0.5 µg/L | 104 | 60.0 | 130 | ---- |
| **Polycyclic Aromatic Hydrocarbons (QCLot: 727465)** | | | | | | | | | |
| acenaphthene | 83-32-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 83.0 | 60.0 | 130 | ---- |
| acenaphthylene | 208-96-8 | E641A | 0.01 | µg/L | 0.5 µg/L | 90.8 | 60.0 | 130 | ---- |
| acridine | 260-94-6 | E641A | 0.01 | µg/L | 0.5 µg/L | 105 | 60.0 | 130 | ---- |
| anthracene | 120-12-7 | E641A | 0.01 | µg/L | 0.5 µg/L | 99.4 | 60.0 | 130 | ---- |
| benz(a)anthracene | 56-55-3 | E641A | 0.01 | µg/L | 0.5 µg/L | 97.5 | 60.0 | 130 | ---- |
| benzo(a)pyrene | 50-32-8 | E641A | 0.005 | µg/L | 0.5 µg/L | 83.8 | 60.0 | 130 | ---- |
| benzo(b+j)fluoranthene | n/a | E641A | 0.01 | µg/L | 0.5 µg/L | 72.6 | 60.0 | 130 | ---- |
| benzo(g,h,i)perylene | 191-24-2 | E641A | 0.01 | µg/L | 0.5 µg/L | 84.8 | 60.0 | 130 | ---- |
| benzo(k)fluoranthene | 207-08-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 72.1 | 60.0 | 130 | ---- |
| chrysene | 218-01-9 | E641A | 0.01 | µg/L | 0.5 µg/L | 88.6 | 60.0 | 130 | ---- |
| dibenz(a,h)anthracene | 53-70-3 | E641A | 0.005 | µg/L | 0.5 µg/L | 89.9 | 60.0 | 130 | ---- |
| fluoranthene | 206-44-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 91.6 | 60.0 | 130 | ---- |
| fluorene | 86-73-7 | E641A | 0.01 | µg/L | 0.5 µg/L | 93.3 | 60.0 | 130 | ---- |
| indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A | 0.01 | µg/L | 0.5 µg/L | 110 | 60.0 | 130 | ---- |
| methylnaphthalene, 1- | 90-12-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 80.8 | 60.0 | 130 | ---- |
| methylnaphthalene, 2- | 91-57-6 | E641A | 0.01 | µg/L | 0.5 µg/L | 83.9 | 60.0 | 130 | ---- |
| naphthalene | 91-20-3 | E641A | 0.05 | µg/L | 0.5 µg/L | 81.6 | 50.0 | 130 | ---- |
| phenanthrene | 85-01-8 | E641A | 0.02 | µg/L | 0.5 µg/L | 95.5 | 60.0 | 130 | ---- |
| pyrene | 129-00-0 | E641A | 0.01 | µg/L | 0.5 µg/L | 91.4 | 60.0 | 130 | ---- |
| quinoline | 91-22-5 | E641A | 0.05 | µg/L | 0.5 µg/L | 106 | 60.0 | 130 | ---- |

## *Matrix Spike (MS) Report*

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 726613)** | | | | | | | | | | |
| VA22C6475-002 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 106 mg/L | 100 mg/L | 106 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 726614)** | | | | | | | | | | |
| VA22C6475-002 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 2.65 mg/L | 2.5 mg/L | 106 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 726615)** | | | | | | | | | | |
| VA22C6475-002 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.510 mg/L | 0.5 mg/L | 102 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 726618)** | | | | | | | | | | |
| VA22C6475-002 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.531 mg/L | 0.5 mg/L | 106 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 727978)** | | | | | | | | | | |
| WR2201400-002 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.102 mg/L | 0.1 mg/L | 102 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 728112)** | | | | | | | | | | |
| KS2204100-022 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.0938 mg/L | 0.1 mg/L | 93.8 | 75.0 | 125 | ---- |
| **Dissolved Metals (QCLot: 727171)** | | | | | | | | | | |
| VA22C6002-002 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.194 mg/L | 0.2 mg/L | 96.9 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0196 mg/L | 0.02 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0195 mg/L | 0.02 mg/L | 97.4 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.0196 mg/L | 0.02 mg/L | 98.2 | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0410 mg/L | 0.04 mg/L | 102 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00991 mg/L | 0.01 mg/L | 99.1 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.096 mg/L | 0.1 mg/L | 96.3 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00398 mg/L | 0.004 mg/L | 99.4 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0391 mg/L | 0.04 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0199 mg/L | 0.02 mg/L | 99.6 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0198 mg/L | 0.02 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.99 mg/L | 2 mg/L | 99.4 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0205 mg/L | 0.02 mg/L | 102 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.100 mg/L | 0.1 mg/L | 100 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0203 mg/L | 0.02 mg/L | 102 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0202 mg/L | 0.02 mg/L | 101 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *Concentration* | *Target* | *MS* | *Low* | *High* | *Qualifier* |
| **Dissolved Metals (QCLot: 727171) - continued** | | | | | | | | | | |
| VA22C6002-002 | Anonymous | nickel, dissolved | 7440-02-0 | E421 | 0.0400 mg/L | 0.04 mg/L | 100.0 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 10.4 mg/L | 10 mg/L | 104 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 3.83 mg/L | 4 mg/L | 95.8 | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0407 mg/L | 0.04 mg/L | 102 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 8.79 mg/L | 10 mg/L | 87.9 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00413 mg/L | 0.004 mg/L | 103 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 20.0 mg/L | 20 mg/L | 100 | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00392 mg/L | 0.004 mg/L | 98.0 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0195 mg/L | 0.02 mg/L | 97.5 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0398 mg/L | 0.04 mg/L | 99.5 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.00398 mg/L | 0.004 mg/L | 99.5 | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.0994 mg/L | 0.1 mg/L | 99.4 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.396 mg/L | 0.4 mg/L | 99.0 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0410 mg/L | 0.04 mg/L | 102 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 729276)** | | | | | | | | | | |
| WR2201395-006 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000897 mg/L | 0.0001 mg/L | 89.7 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 729277)** | | | | | | | | | | |
| WR2201401-007 | SD_MW14-01_2022-10-24 | mercury, dissolved | 7439-97-6 | E509 | 0.0000914 mg/L | 0.0001 mg/L | 91.4 | 70.0 | 130 | ---- |
| **Volatile Organic Compounds (QCLot: 728982)** | | | | | | | | | | |
| VA22C6227-002 | Anonymous | benzene | 71-43-2 | E611A | 111 µg/L | 100 µg/L | 111 | 60.0 | 140 | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 114 µg/L | 100 µg/L | 114 | 60.0 | 140 | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 105 µg/L | 100 µg/L | 105 | 60.0 | 140 | ---- |
| | | styrene | 100-42-5 | E611A | 105 µg/L | 100 µg/L | 105 | 60.0 | 140 | ---- |
| | | toluene | 108-88-3 | E611A | 114 µg/L | 100 µg/L | 114 | 60.0 | 140 | ---- |
| | | xylene, m+p- | 179601-23-1 | E611A | 242 µg/L | 200 µg/L | 121 | 60.0 | 140 | ---- |
| | | xylene, o- | 95-47-6 | E611A | 117 µg/L | 100 µg/L | 117 | 60.0 | 140 | ---- |
| **Volatile Organic Compounds (QCLot: 731419)** | | | | | | | | | | |
| WR2201401-003 | SD_MW13-07_2022-10-24 | benzene | 71-43-2 | E611A | 90.4 µg/L | 100 µg/L | 90.4 | 60.0 | 140 | ---- |
| | | ethylbenzene | 100-41-4 | E611A | 90.8 µg/L | 100 µg/L | 90.8 | 60.0 | 140 | ---- |
| | | methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611A | 96.6 µg/L | 100 µg/L | 96.6 | 60.0 | 140 | ---- |
| | | styrene | 100-42-5 | E611A | 82.4 µg/L | 100 µg/L | 82.4 | 60.0 | 140 | ---- |
| | | toluene | 108-88-3 | E611A | 93.8 µg/L | 100 µg/L | 93.8 | 60.0 | 140 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Volatile Organic Compounds (QCLot: 731419) - continued** | | | | | | | | | | |
| WR2201401-003 | SD_MW13-07_2022-10-24 | xylene, m+p- | 179601-23-1 | E611A | 208 µg/L | 200 µg/L | 104 | 60.0 | 140 | ---- |
| | | xylene, o- | 95-47-6 | E611A | 91.5 µg/L | 100 µg/L | 91.5 | 60.0 | 140 | ---- |
| **Hydrocarbons (QCLot: 728983)** | | | | | | | | | | |
| VA22C6240-002 | Anonymous | VHw (C6-C10) | ---- | E581.VH+F1 | 4310 µg/L | 6310 µg/L | 68.4 | 60.0 | 140 | ---- |
| **Hydrocarbons (QCLot: 731418)** | | | | | | | | | | |
| WR2201401-005 | SD_MW13-10_2022-10-24 | VHw (C6-C10) | ---- | E581.VH+F1 | 5030 µg/L | 6310 µg/L | 79.6 | 60.0 | 140 | ---- |

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www.alsglobal.com

COC #

Page 1 of ~~2~~

Environmental Division
Whitehorse
Work Order Reference
**WR2201401**

Telephone : +1 867 668 6689

| | | | |
|---|---|---|---|
| **Report To** | | **Report Format / Distribution** | |
| Company: | TECK Metals Ltd | ✓ Standard | Other |
| Contact: | Michelle Unger | ✓ PDF ✓ Excel ✓ Digital Fax | |
| Address: | 601 Knightton Road | Email 1: | azheng@ensero.com, slyons@ensero.com |
| | Kimberly, BC | Email 2: | wendy.mcbain@teck.com, colin.lynch@teck.com |
| Phone: | 250-427-8422 Fax: | Email 3: | chanson@ensero.com, teckkimb@equisonline.co |
| Invoice To | Same as Report ? ✓ Yes No | **Invoice Distribution** | |
| Hardcopy of Invoice with Report? | Yes ✓ No | Select Email Distribution: | |
| **Client / Project Information** | | Email 1 or Fax: michelle.unger@teck.com | |
| Project # | ECA22YT00199 | Email 2: legacy.ap@teck.com | |
| PO / AFE: | TECK PO10289 | | |
| LSD: | | Quote #: | Q62635 |
| Lab Work Order # (lab use only) | | ALS Contact: Can Dang | Sampler: Finley Sparling |

**Service Requested** (Rush for routine analysis sub
- (●) Regular (Standard Turnaround Times - Business Days)
- ( ) Priority (2-4 Business Days) - 50% Surcharge - Contact
- ( ) Emergency (1-2 Bus. Days) - 100% Surcharge - Contac
- ( ) Same Day or Weekend Emergency - Contact ALS to Co

**Analysis Requ**
Please indicate below Filtered, Preserv

| Sample # | Sample Identification | Sample Location (This description will appear on the bottle) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | pH, SPC, alkalinity, hardness | dissolved metals low level +Hg (F/P) | Anions (nitrate, nitrite, sulphate, Cl, F, Br) | Ammonia (P) | BTEX, LEPH, HEPH (P) | VPH, PAH (P) | Numb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SD_MW13-01_2022-10-24 | SD_MW13-01 | 28-Oct-22 | 15:40 | Groundwater | X | X | X | X | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | SD_MW13-06_2022-10-24 | SD_MW13-06 | 25-Oct-22 | 14:00 | Groundwater | X | X | X | X | | | |
| | SD_MW13-07_2022-10-24 | SD_MW13-07 | 26-Oct-22 | 14:45 | Groundwater | X | X | X | X | X | X | |
| | SD_MW13-08_2022-10-24 | SD_MW13-08 | 28-Oct-22 | 13:50 | Groundwater | X | X | X | X | | | |
| | SD_MW13-10_2022-10-24 | SD_MW13-10 | 28-Oct-22 | 11:45 | Groundwater | X | X | X | X | X | X | |
| | SD_MW13-13_2022-10-24 | SD_MW13-13 | 25-Oct-22 | 11:50 | Groundwater | X | X | X | X | | | |
| | SD_MW14-01_2022-10-24 | SD_MW14-01 | 26-Oct-22 | 13:10 | Groundwater | X | X | X | X | X | X | |
| | SD_MW14-02_2022-10-24 | SD_MW14-02 | 25-Oct-22 | 18:25 | Groundwater | X | X | X | X | X | X | |
| | SD_MW14-03_2022-10-24 | SD_MW14-03 | 26-Oct-22 | 12:15 | Groundwater | X | X | X | X | X | X | |
| | SD_MW14-04_2022-10-24 | SD_MW14-04 | 25-Oct-22 | 17:30 | Groundwater | X | X | X | X | X | X | |
| | SD_MW-FB_2022-10-24 | SD_MW-FB | 28-Oct-22 | 15:10 | Groundwater | X | X | X | X | X | X | |
| | SD_MW-FD_2022-10-24 | SD_MW-FD | 26-Oct-22 | No Time | Groundwater | X | X | X | X | X | X | |

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

Yukon EQWin and ACC200 digital formats. General A: pH, EC, TSS (low) General B: pH, EC, TSS (low), anions-all
General C: pH, EC, TSS (low), anions-all, ion balance, alkalinity General D: pH, EC, TSS (low), SO4, ion balance, alkalinity General E: pH, EC, TSS (low), SO4, ion balance

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: Finley Sparling | Date (dd-mmm-yy) 31-Oct-22 | Time (hh-mm) 12:30 | Received by: | Date: Oct 31 | Time: 1230 | Temperature: °C | Verified by: | Date: | Time: | Obse Observations: Yes / Yes / No ? If Ye If Yes add SIF |

1, 2, 3, 1, 3

GENF 20.00 Front

ALS Environmental

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COC #

Page 2 of 2

| Report To | | Report Format / Distribution | | Service Requested (Rush for routine analysis subject to availability) |
|---|---|---|---|---|
| Company: | TECK Metals Ltd | ✓ Standard | Other | (●) Regular (Standard Turnaround Times - Business Days) |
| Contact: | Michelle Unger | ✓ PDF ✓ Excel ✓ Digital Fax | | ( ) Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT |
| Address: | 601 Knighton Road | Email 1: | azhenc@ensero.com, slyons@ensero.com | ( ) Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT |
| | Kimberly, BC | Email 2: | wendy.mcbain@teck.com, colin.lynch@teck.com | ( ) Same Day or Weekend Emergency - Contact ALS to Confirm TAT |
| Phone: | 250-427-8422 Fax: | Email 3: | chanson@ensero.com, teckkimb@equisonline.co | |
| Invoice To | Same as Report ? ✓ Yes No | Invoice Distribution | | |
| Hardcopy of Invoice with Report? | Yes ✓ No | Select Email Distribution: | | |
| Client / Project Information | | Email 1 or Fax: michelle.unger@teck.com | | |
| Project # | ECA22YT00199 | Email 2: legacy.ap@teck.com | | |
| PO / AFE: | TECK PO10289 | | | |
| LSD: | | Quote #: | Q62635 | |
| Lab Work Order # (lab use only) | | ALS Contact: Can Dang | Sampler: Finley Sparling | |

**Analysis Request** — Please indicate below Filtered, Preserved or both (F, P, F/P)

| Sample # | Sample Identification | Sample Location (This description will appear on the bottle) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | pH, SPC, alkalinity, hardness | dissolved metals low level +Hg (F/P) | Anions (nitrate, nitrite, sulphate, Cl, F, Br) | Ammonia (P) | BTEX, LEPH, HEPH (P) | VPH, PAH (P) | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SD_MW-TB_2022-10-24 | Travel Blank | 17-Oct-22 | No Time | Groundwater | X | X | X | X | X | X | |
| | SD_MW-FD2_2022-10-24 | MW-FD2 | 28-Oct-22 | No Time | Groundwater | X | X | X | X | X | X | |

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

**Yukon EQWin and ACC200 digital formats. General A:** pH, EC, TSS (low) **General B:** pH, EC, TSS (low), anions-all
**General C:** pH, EC, TSS (low), anions-all, ion balance, alkalinity **General D:** pH, EC, TSS (low), SO4, ion balance, alkalinity **General E:** pH, EC, TSS (low), SO4, ion balance

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: Finley Sparling | Date (dd-mmm-yy) 31-Oct-22 | Time (hh-mm) 12:30 | Received by: | Date: | Time: | Temperature: °C | Verified by: | Date: | Time: | Obse Observations: Yes / No ? If Ye If Yes add SIF |

GENF 20.00 Front

ALS Canada Ltd.

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2201530** | Page | : 1 of 14 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 05-Dec-2022 15:00 |
| PO | : PO# 10289 | Date Analysis Commenced | : 07-Dec-2022 |
| C-O-C number | : ---- | Issue Date | : 13-Dec-2022 13:00 |
| Sampler | : Wes Moir | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 13 | | |
| No. of samples analysed | : 13 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Inorganics, Burnaby, British Columbia |
| Qammar Almas | Lab Assistant | Metals, Burnaby, British Columbia |
| Sukhman Khosa | Lab Assistant | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| - | no units |
| µg/L | micrograms per litre |
| µS/cm | microsiemens per centimetre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLDS* | *Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.* |
| *DLM* | *Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).* |

## Analytical Results

Sub-Matrix: Water
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-02_2022-12-05 | SD_MH-04_2022-12-05 | SD_MH-11_2022-12-05 | SD_MH-12_2022-12-05 | SD_MH-13_2022-12-05 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 01-Dec-2022 17:20 | 04-Dec-2022 11:10 | 04-Dec-2022 13:20 | 01-Dec-2022 16:30 | 03-Dec-2022 13:20 |
| | | | | | WR2201530-001 | WR2201530-002 | WR2201530-003 | WR2201530-004 | WR2201530-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 308 | 145 | 197 | 164 | 204 |
| conductivity | ---- | E100 | 2.0 | µS/cm | 1080 | 315 | 393 | 329 | 394 |
| hardness (as CaCO3), dissolved | ---- | EC100 | 0.60 | mg/L | 572 | 154 | 201 | 168 | 207 |
| hardness (as CaCO3), from total Ca/Mg | ---- | EC100A | 0.60 | mg/L | 593 | 150 | 201 | 167 | 210 |
| pH | ---- | E108 | 0.10 | pH units | 8.04 | 8.26 | 8.25 | 8.22 | 8.22 |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 786 | 165 | 217 | 193 | 231 |
| solids, total suspended [TSS] | ---- | E160-L | 1.0 | mg/L | 1.5 | <1.0 | <1.0 | 5.1 | <1.0 |
| **Anions and Nutrients** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0118 | <0.0050 | 0.0064 | 0.0120 | <0.0050 |
| bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.250 DLDS | <0.050 | <0.050 | <0.050 | <0.050 |
| chloride | 16887-00-6 | E235.Cl | 0.50 | mg/L | <2.50 DLDS | <0.50 | <0.50 | 0.74 | <0.50 |
| fluoride | 16984-48-8 | E235.F | 0.020 | mg/L | <0.100 DLDS | 0.158 | 0.091 | 0.090 | 0.059 |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.0294 | 0.238 | 0.135 | 0.0944 | 0.0687 |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0050 DLDS | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 344 | 19.2 | 15.6 | 9.52 | 8.84 |
| **Total Metals** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0439 | 0.0041 | 0.0065 | 0.0251 | 0.0035 |
| antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | <0.00010 | 0.00012 | 0.00012 | 0.00023 | <0.00010 |
| arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00041 | 0.00039 | 0.00044 | 0.00067 | 0.00027 |
| barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.151 | 0.0216 | 0.0633 | 0.0710 | 0.145 |
| beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.000149 | 0.000240 | 0.0000413 | 0.0000490 | 0.0000158 |
| calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 207 | 54.3 | 67.5 | 56.6 | 59.1 |
| chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | 0.00068 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | 0.00119 | <0.00050 | 0.00054 | 0.0176 | <0.00050 |
| iron, total | 7439-89-6 | E420 | 0.010 | mg/L | 0.196 | <0.010 | 0.048 | 0.044 | 0.093 |

## Analytical Results

Sub-Matrix: Water
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-02_2022-12-05 | SD_MH-04_2022-12-05 | SD_MH-11_2022-12-05 | SD_MH-12_2022-12-05 | SD_MH-13_2022-12-05 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 01-Dec-2022 17:20 | 04-Dec-2022 11:10 | 04-Dec-2022 13:20 | 01-Dec-2022 16:30 | 03-Dec-2022 13:20 |
| | | | | | WR2201530-001 | WR2201530-002 | WR2201530-003 | WR2201530-004 | WR2201530-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000834 | 0.000149 | 0.000144 | 0.00149 | <0.000050 |
| **lithium, total** | 7439-93-2 | E420 | 0.0010 | mg/L | <0.0010 | 0.0015 | 0.0017 | 0.0014 | 0.0012 |
| **magnesium, total** | 7439-95-4 | E420 | 0.100 | mg/L | 18.4 | 3.46 | 8.00 | 6.31 | 15.2 |
| **manganese, total** | 7439-96-5 | E420 | 0.00010 | mg/L | 1.30 | 0.00095 | 0.0107 | 0.00222 | 0.00636 |
| **mercury, total** | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, total** | 7439-98-7 | E420 | 0.000050 | mg/L | 0.000440 | 0.000685 | 0.000816 | 0.00130 | 0.00101 |
| **nickel, total** | 7440-02-0 | E420 | 0.00050 | mg/L | 0.00087 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, total** | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, total** | 7440-09-7 | E420 | 0.100 | mg/L | 1.97 | 0.433 | 0.413 | 0.646 | 0.395 |
| **selenium, total** | 7782-49-2 | E420 | 0.050 | µg/L | <0.050 | 1.13 | 0.694 | 0.719 | 0.618 |
| **silicon, total** | 7440-21-3 | E420 | 0.10 | mg/L | 5.00 | 3.24 | 3.70 | 3.97 | 3.43 |
| **silver, total** | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, total** | 7440-23-5 | E420 | 0.050 | mg/L | 9.36 | 0.899 | 1.18 | 1.27 | 1.02 |
| **strontium, total** | 7440-24-6 | E420 | 0.00020 | mg/L | 0.671 | 0.194 | 0.267 | 0.215 | 0.204 |
| **sulfur, total** | 7704-34-9 | E420 | 0.50 | mg/L | 117 | 6.79 | 5.37 | 3.49 | 3.07 |
| **thallium, total** | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, total** | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00045 | <0.00010 |
| **titanium, total** | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00150 DLM | <0.00030 | <0.00030 | 0.00085 | <0.00030 |
| **uranium, total** | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00121 | 0.000893 | 0.00117 | 0.000966 | 0.00143 |
| **vanadium, total** | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, total** | 7440-66-6 | E420 | 0.0030 | mg/L | 0.0195 | 0.0046 | 0.0050 | 0.0071 | <0.0030 |
| **zirconium, total** | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0014 | 0.0015 | 0.0022 | 0.0023 | 0.0019 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | <0.00010 | 0.00012 | 0.00012 | 0.00021 | <0.00010 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00025 | 0.00040 | 0.00043 | 0.00063 | 0.00021 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.143 | 0.0217 | 0.0640 | 0.0710 | 0.145 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |

## Analytical Results

Sub-Matrix: Water
(Matrix: Water)

| | | | | Client sample ID | SD_MH-02_2022-12-05 | SD_MH-04_2022-12-05 | SD_MH-11_2022-12-05 | SD_MH-12_2022-12-05 | SD_MH-13_2022-12-05 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 01-Dec-2022 17:20 | 04-Dec-2022 11:10 | 04-Dec-2022 13:20 | 01-Dec-2022 16:30 | 03-Dec-2022 13:20 |
| Analyte | CAS Number | Method | LOR | Unit | WR2201530-001 | WR2201530-002 | WR2201530-003 | WR2201530-004 | WR2201530-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000672 | 0.000235 | 0.0000392 | 0.0000422 | 0.0000118 |
| calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 200 | 56.4 | 67.8 | 57.5 | 58.5 |
| chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | 0.00059 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00098 | <0.00020 | 0.00029 | 0.00118 | 0.00023 |
| iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | 0.020 | <0.010 | 0.026 | <0.010 | 0.015 |
| lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000055 | 0.000062 | <0.000050 | 0.000072 | <0.000050 |
| lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0010 | 0.0014 | 0.0015 | 0.0012 | 0.0011 |
| magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 17.6 | 3.17 | 7.72 | 5.96 | 14.7 |
| manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 1.23 | 0.00032 | 0.00923 | 0.00047 | 0.00546 |
| mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.000429 | 0.000733 | 0.000831 | 0.00136 | 0.00102 |
| nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00072 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 1.96 | 0.399 | 0.427 | 0.633 | 0.369 |
| selenium, dissolved | 7782-49-2 | E421 | 0.050 | µg/L | 0.055 | 1.08 | 0.705 | 0.711 | 0.590 |
| silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 5.08 | 3.37 | 3.90 | 4.10 | 3.59 |
| silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 8.74 | 0.776 | 1.12 | 1.21 | 0.938 |
| strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.671 | 0.203 | 0.268 | 0.219 | 0.214 |
| sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 115 | 6.49 | 5.48 | 3.25 | 2.98 |
| thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00115 | 0.000872 | 0.00109 | 0.000933 | 0.00136 |
| vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0164 | 0.0041 | 0.0044 | 0.0054 | <0.0010 |
| zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| dissolved mercury filtration location | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| dissolved metals filtration location | ---- | EP421 | - | - | Field | Field | Field | Field | Field |

## Analytical Results

| Sub-Matrix: Water (Matrix: Water) | | | | Client sample ID | SD_MH-02_2022-12-05 | SD_MH-04_2022-12-05 | SD_MH-11_2022-12-05 | SD_MH-12_2022-12-05 | SD_MH-13_2022-12-05 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 01-Dec-2022 17:20 | 04-Dec-2022 11:10 | 04-Dec-2022 13:20 | 01-Dec-2022 16:30 | 03-Dec-2022 13:20 |
| Analyte | CAS Number | Method | LOR | Unit | WR2201530-001 | WR2201530-002 | WR2201530-003 | WR2201530-004 | WR2201530-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Speciated Metals** | | | | | | | | | |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: Water
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-12-05 | SD_MH-22_2022-12-05 | SD_MH-29_2022-12-05 | SD_MH-30_2022-12-05 | SD_MH-FB_2022-12-05 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 03-Dec-2022 11:50 | 04-Dec-2022 09:50 | 04-Dec-2022 14:00 | 04-Dec-2022 14:10 | 03-Dec-2022 |
| | | | | | WR2201530-006 | WR2201530-007 | WR2201530-008 | WR2201530-009 | WR2201530-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 189 | 110 | 179 | 183 | <1.0 |
| conductivity | ---- | E100 | 2.0 | μS/cm | 372 | 303 | 347 | 356 | <2.0 |
| hardness (as CaCO3), dissolved | ---- | EC100 | 0.60 | mg/L | 192 | 140 | 174 | 179 | <0.60 |
| hardness (as CaCO3), from total Ca/Mg | ---- | EC100A | 0.60 | mg/L | 190 | 149 | 185 | 186 | <0.60 |
| pH | ---- | E108 | 0.10 | pH units | 8.20 | 8.05 | 8.24 | 8.03 | 5.42 |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 210 | 180 | 200 | 196 | <10 |
| solids, total suspended [TSS] | ---- | E160-L | 1.0 | mg/L | <1.0 | <1.0 | 2.0 | 2.6 | <1.0 |
| **Anions and Nutrients** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0070 | <0.0050 | 0.0050 | 0.0168 | <0.0050 |
| bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| chloride | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| fluoride | 16984-48-8 | E235.F | 0.020 | mg/L | 0.087 | 1.32 | 0.054 | 0.051 | <0.020 |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.0353 | 0.110 | 0.117 | 0.0406 | <0.0050 |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 4.59 | 43.7 | 4.45 | 4.88 | <0.30 |
| **Total Metals** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0034 | <0.0030 | 0.0416 | 0.0056 | <0.0030 |
| antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00012 | 0.00256 | 0.00020 | 0.00018 | <0.00010 |
| arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00028 | 0.00328 | 0.00071 | 0.00035 | <0.00010 |
| barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.170 | 0.0163 | 0.0469 | 0.231 | <0.00010 |
| beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000093 | 0.00449 | 0.0000832 | 0.0000261 | <0.0000050 |
| calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 55.0 | 48.3 | 64.2 | 46.6 | <0.050 |
| chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00013 | <0.00010 |
| copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| iron, total | 7439-89-6 | E420 | 0.010 | mg/L | 0.101 | <0.010 | 0.124 | 0.727 | <0.010 |
| lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | 0.000312 | 0.000390 | <0.000050 | <0.000050 |

## Analytical Results

Sub-Matrix: Water
(Matrix: Water)

| | | | | Client sample ID | SD_MH-15_2022-12-05 | SD_MH-22_2022-12-05 | SD_MH-29_2022-12-05 | SD_MH-30_2022-12-05 | SD_MH-FB_2022-12-05 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 03-Dec-2022 11:50 | 04-Dec-2022 09:50 | 04-Dec-2022 14:00 | 04-Dec-2022 14:10 | 03-Dec-2022 |
| Analyte | CAS Number | Method | LOR | Unit | WR2201530-006 | WR2201530-007 | WR2201530-008 | WR2201530-009 | WR2201530-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0012 | 0.0060 | 0.0015 | <0.0010 | <0.0010 |
| magnesium, total | 7439-95-4 | E420 | 0.100 | mg/L | 12.7 | 6.94 | 6.01 | 17.0 | <0.100 |
| manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.00820 | 0.00020 | 0.0201 | 0.0350 | <0.00010 |
| mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00177 | 0.00835 | 0.000744 | 0.00142 | <0.000050 |
| nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | 0.00373 | <0.00050 | 0.00056 | <0.00050 |
| phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| potassium, total | 7440-09-7 | E420 | 0.100 | mg/L | 0.415 | 0.611 | 0.268 | 0.401 | <0.100 |
| selenium, total | 7782-49-2 | E420 | 0.050 | µg/L | 0.521 | 14.6 | 0.536 | 0.491 | <0.050 |
| silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 4.03 | 4.37 | 3.86 | 3.41 | <0.10 |
| silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 1.05 | 0.888 | 0.947 | 0.866 | <0.050 |
| strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.179 | 0.238 | 0.220 | 0.126 | <0.00020 |
| sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 1.79 | 14.7 | 1.60 | 1.85 | <0.50 |
| thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | 0.000016 | <0.000010 | <0.000010 | <0.000010 |
| tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0.00093 | <0.00030 | <0.00030 |
| uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.000817 | 0.00396 | 0.000704 | 0.00161 | <0.000010 |
| vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | <0.0030 | 0.768 | <0.0030 | <0.0030 | <0.0030 |
| zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0014 | 0.0011 | 0.0019 | 0.0025 | <0.0010 |
| antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00012 | 0.00248 | 0.00013 | <0.00010 | <0.00010 |
| arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00024 | 0.00320 | 0.00051 | 0.00022 | <0.00010 |
| barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.172 | 0.0164 | 0.0454 | 0.226 | <0.00010 |
| beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000053 | 0.00423 | 0.0000399 | 0.0000157 | <0.0000050 |

## Analytical Results

Sub-Matrix: Water
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-12-05 | SD_MH-22_2022-12-05 | SD_MH-29_2022-12-05 | SD_MH-30_2022-12-05 | SD_MH-FB_2022-12-05 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 03-Dec-2022 11:50 | 04-Dec-2022 09:50 | 04-Dec-2022 14:00 | 04-Dec-2022 14:10 | 03-Dec-2022 |
| | | | | | WR2201530-006 | WR2201530-007 | WR2201530-008 | WR2201530-009 | WR2201530-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 57.5 | 45.6 | 60.9 | 44.4 | <0.050 |
| chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00012 | <0.00010 |
| copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0.00025 | 0.00035 | <0.00020 |
| iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | 0.061 | <0.010 | 0.018 | 0.106 | <0.010 |
| lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | 0.000247 | <0.000050 | <0.000050 | <0.000050 |
| lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0011 | 0.0056 | 0.0012 | <0.0010 | <0.0010 |
| magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 11.9 | 6.46 | 5.28 | 16.5 | <0.100 |
| manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00685 | 0.00011 | 0.00765 | 0.0342 | <0.00010 |
| mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00184 | 0.00823 | 0.000702 | 0.00142 | <0.000050 |
| nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | 0.00344 | <0.00050 | 0.00075 | <0.00050 |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 0.357 | 0.574 | 0.233 | 0.341 | <0.100 |
| selenium, dissolved | 7782-49-2 | E421 | 0.050 | µg/L | 0.574 | 13.7 | 0.450 | 0.450 | <0.050 |
| silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 4.18 | 4.43 | 3.88 | 3.48 | <0.050 |
| silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 0.930 | 0.786 | 0.825 | 0.738 | <0.050 |
| strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.184 | 0.234 | 0.220 | 0.126 | <0.00020 |
| sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 1.47 | 14.1 | 1.47 | 1.51 | <0.50 |
| thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | 0.000015 | <0.000010 | <0.000010 | <0.000010 |
| tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000773 | 0.00354 | 0.000612 | 0.00152 | <0.000010 |
| vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | 0.734 | <0.0010 | 0.0011 | <0.0010 |
| zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| dissolved mercury filtration location | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| dissolved metals filtration location | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Speciated Metals** | | | | | | | | | |

## Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

| | | | | Client sample ID | SD_MH-15_2022-12-05 | SD_MH-22_2022-12-05 | SD_MH-29_2022-12-05 | SD_MH-30_2022-12-05 | SD_MH-FB_2022-12-05 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 03-Dec-2022 11:50 | 04-Dec-2022 09:50 | 04-Dec-2022 14:00 | 04-Dec-2022 14:10 | 03-Dec-2022 |
| Analyte | CAS Number | Method | LOR | Unit | WR2201530-006 | WR2201530-007 | WR2201530-008 | WR2201530-009 | WR2201530-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Speciated Metals** | | | | | | | | | |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: Water

(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-FD_2022-12-05 | SD_MH-TB_2022-12-05 | SD_MH-FD1_2022-12-05 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 03-Dec-2022 | [01-Dec-2022] | 04-Dec-2022 | ---- | ---- |
| | | | | | WR2201530-011 | WR2201530-012 | WR2201530-013 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 190 | <1.0 | 143 | ---- | ---- |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 369 | <2.0 | 314 | ---- | ---- |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 193 | ---- | 155 | ---- | ---- |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | 197 | <0.60 | 158 | ---- | ---- |
| **pH** | ---- | E108 | 0.10 | pH units | 8.23 | 5.38 | 8.27 | ---- | ---- |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 198 | <10 | 188 | ---- | ---- |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 1.1 | <1.0 | <1.0 | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | <0.0050 | ---- | ---- |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | ---- | ---- |
| **chloride** | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | <0.50 | ---- | ---- |
| **fluoride** | 16984-48-8 | E235.F | 0.020 | mg/L | 0.093 | <0.020 | 0.163 | ---- | ---- |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.0350 | <0.0050 | 0.236 | ---- | ---- |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | ---- | ---- |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 4.38 | <0.30 | 18.6 | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0034 | <0.0030 | 0.0036 | ---- | ---- |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00012 | <0.00010 | 0.00013 | ---- | ---- |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00029 | <0.00010 | 0.00038 | ---- | ---- |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | 0.168 | <0.00010 | 0.0220 | ---- | ---- |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | ---- | ---- |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | ---- | ---- |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | ---- | ---- |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000090 | <0.0000050 | 0.000240 | ---- | ---- |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | 57.5 | <0.050 | 57.7 | ---- | ---- |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | ---- | ---- |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | 0.098 | <0.010 | <0.010 | ---- | ---- |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0.000140 | ---- | ---- |

## Analytical Results

Sub-Matrix: Water
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-FD_2022-12-05 | SD_MH-TB_2022-12-05 | SD_MH-FD1_2022-12-05 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 03-Dec-2022 | [01-Dec-2022] | 04-Dec-2022 | ---- | ---- |
| | | | | | WR2201530-011 | WR2201530-012 | WR2201530-013 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0012 | <0.0010 | 0.0016 | ---- | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.100 | mg/L | 12.9 | <0.100 | 3.44 | ---- | ---- |
| manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.00816 | <0.00010 | 0.00053 | ---- | ---- |
| mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | ---- | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00172 | <0.000050 | 0.000741 | ---- | ---- |
| nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | ---- | ---- |
| potassium, total | 7440-09-7 | E420 | 0.100 | mg/L | 0.405 | <0.100 | 0.441 | ---- | ---- |
| selenium, total | 7782-49-2 | E420 | 0.050 | µg/L | 0.534 | <0.050 | 1.12 | ---- | ---- |
| silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 4.02 | <0.10 | 3.29 | ---- | ---- |
| silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | ---- | ---- |
| sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 1.04 | <0.050 | 0.893 | ---- | ---- |
| strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.171 | <0.00020 | 0.198 | ---- | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 1.66 | <0.50 | 6.50 | ---- | ---- |
| thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | ---- | ---- |
| tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | ---- | ---- |
| titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | ---- | ---- |
| uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.000826 | <0.000010 | 0.000931 | ---- | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |
| zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | <0.0030 | <0.0030 | 0.0047 | ---- | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0015 | ---- | 0.0015 | ---- | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00011 | ---- | 0.00012 | ---- | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00024 | ---- | 0.00039 | ---- | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.173 | ---- | 0.0219 | ---- | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | ---- | <0.000020 | ---- | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | ---- | <0.000050 | ---- | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | ---- | <0.010 | ---- | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000068 | ---- | 0.000235 | ---- | ---- |

## Analytical Results

Sub-Matrix: Water
(Matrix: Water)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-FD_2022-12-05 | SD_MH-TB_2022-12-05 | SD_MH-FD1_2022-12-05 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 03-Dec-2022 | [01-Dec-2022] | 04-Dec-2022 | ---- | ---- |
| | | | | | WR2201530-011 | WR2201530-012 | WR2201530-013 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **Dissolved Metals** | | | | | | | | | |
| calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 57.4 | ---- | 57.0 | ---- | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | ---- | <0.00050 | ---- | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | ---- | <0.00010 | ---- | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | <0.00020 | ---- | <0.00020 | ---- | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | 0.044 | ---- | <0.010 | ---- | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | ---- | 0.000057 | ---- | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0011 | ---- | 0.0014 | ---- | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 12.1 | ---- | 3.12 | ---- | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00663 | ---- | 0.00037 | ---- | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | ---- | <0.0000050 | ---- | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00181 | ---- | 0.000771 | ---- | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | ---- | <0.00050 | ---- | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | ---- | <0.050 | ---- | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 0.367 | ---- | 0.404 | ---- | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.050 | µg/L | 0.508 | ---- | 0.961 | ---- | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 4.31 | ---- | 3.40 | ---- | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | ---- | <0.000010 | ---- | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 0.944 | ---- | 0.789 | ---- | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.182 | ---- | 0.209 | ---- | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 1.49 | ---- | 6.38 | ---- | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | ---- | <0.000010 | ---- | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | ---- | <0.00010 | ---- | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | ---- | <0.00030 | ---- | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000770 | ---- | 0.000880 | ---- | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | ---- | <0.00050 | ---- | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | ---- | 0.0044 | ---- | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | ---- | <0.00020 | ---- | ---- |
| dissolved mercury filtration location | ---- | EP509 | - | - | Field | ---- | Field | ---- | ---- |
| dissolved metals filtration location | ---- | EP421 | - | - | Field | ---- | Field | ---- | ---- |
| **Speciated Metals** | | | | | | | | | |

## *Analytical Results*

Sub-Matrix: **Water**

(Matrix: **Water**)

| | | | | *Client sample ID* | **SD_MH-FD_2022-12-05** | **SD_MH-TB_2022-12-05** | **SD_MH-FD1_2022-12-05** | **----** | **----** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *Client sampling date / time* | 03-Dec-2022 | [01-Dec-2022] | 04-Dec-2022 | ---- | ---- |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | **WR2201530-011** | **WR2201530-012** | **WR2201530-013** | **--------** | **--------** |
| | | | | | Result | Result | Result | ---- | ---- |
| **Speciated Metals** | | | | | | | | | |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | ---- | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

# ALS Canada Ltd.

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# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2201530** | Page | : 1 of 31 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 05-Dec-2022 15:00 |
| PO | : PO# 10289 | Issue Date | : 13-Dec-2022 13:00 |
| C-O-C number | : ---- | | |
| Sampler | : Wes Moir | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 13 | | |
| No. of samples analysed | : 13 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**

**CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.**

**DQO: Data Quality Objective.**

**LOR: Limit of Reporting (detection limit).**

**RPD: Relative Percent Difference.**

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Summary of Outliers

### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

## *Outliers : Analysis Holding Time Compliance (Breaches)*

- Analysis Holding Time Outliers exist - please see following pages for full details.

## *Outliers : Frequency of Quality Control Samples*

- No Quality Control Sample Frequency Outliers occur.

# Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-04_2022-12-05 | E298 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-11_2022-12-05 | E298 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-22_2022-12-05 | E298 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-29_2022-12-05 | E298 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-30_2022-12-05 | E298 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-FD1_2022-12-05 | E298 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-13_2022-12-05 | E298 | 03-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 5 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-15_2022-12-05 | E298 | 03-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-FB_2022-12-05 | E298 | 03-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-FD_2022-12-05 | E298 | 03-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-02_2022-12-05 | E298 | 01-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-12_2022-12-05 | E298 | 01-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Ammonia by Fluorescence** | | | | | | | | | | |
| **Amber glass total (sulfuric acid)**<br>SD_MH-TB_2022-12-05 | E298 | 01-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 28 days | 7 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-11_2022-12-05 | E235.Br-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-12-05 | E235.Br-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-30_2022-12-05 | E235.Br-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* | *Method* | *Sampling Date* | *Extraction / Preparation* | | | | *Analysis* | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Container / Client Sample ID(s)** | | | *Preparation Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* | *Analysis Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-12-05 | E235.Br-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-12-05 | E235.Br-L | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-12-05 | E235.Br-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD1_2022-12-05 | E235.Br-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-12-05 | E235.Br-L | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-12-05 | E235.Br-L | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-12-05 | E235.Br-L | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-12-05 | E235.Br-L | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-12-05 | E235.Br-L | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Bromide in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-12-05 | E235.Br-L | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-12-05 | E235.Cl | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-12-05 | E235.Cl | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-12-05 | E235.Cl | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-12-05 | E235.Cl | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-12-05 | E235.Cl | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-12-05 | E235.Cl | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FD1_2022-12-05 | E235.Cl | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-12-05 | E235.Cl | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-12-05 | E235.Cl | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-12-05 | E235.Cl | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-12-05 | E235.Cl | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-12-05 | E235.Cl | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Chloride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-12-05 | E235.Cl | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 6 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-12-05 | E235.F | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-12-05 | E235.F | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-12-05 | E235.F | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-12-05 | E235.F | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-12-05 | E235.F | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-12-05 | E235.F | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FD1_2022-12-05 | E235.F | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-12-05 | E235.F | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-12-05 | E235.F | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-12-05 | E235.F | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-12-05 | E235.F | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-12-05 | E235.F | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Fluoride in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-12-05 | E235.F | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 6 days | ✓ |

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-12-05 | E235.NO3-L | 04-Dec-2022 | 07-Dec-2022 | 3 days | 2 days | ✓ | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-12-05 | E235.NO3-L | 04-Dec-2022 | 07-Dec-2022 | 3 days | 2 days | ✓ | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-12-05 | E235.NO3-L | 04-Dec-2022 | 07-Dec-2022 | 3 days | 2 days | ✓ | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-12-05 | E235.NO3-L | 04-Dec-2022 | 07-Dec-2022 | 3 days | 3 days | ✓ | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-12-05 | E235.NO3-L | 03-Dec-2022 | 07-Dec-2022 | 3 days | 3 days | ✘ | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-12-05 | E235.NO3-L | 04-Dec-2022 | 07-Dec-2022 | 3 days | 3 days | ✓ | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD1_2022-12-05 | E235.NO3-L | 04-Dec-2022 | 07-Dec-2022 | 3 days | 3 days | ✓ | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-12-05 | E235.NO3-L | 03-Dec-2022 | 07-Dec-2022 | 3 days | 4 days | ✘ EHT | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-12-05 | E235.NO3-L | 03-Dec-2022 | 07-Dec-2022 | 3 days | 4 days | ✘ EHT | 07-Dec-2022 | 3 days | 0 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-12-05 | E235.NO3-L | 03-Dec-2022 | 07-Dec-2022 | 3 days | 4 days | × EHT | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-12-05 | E235.NO3-L | 01-Dec-2022 | 07-Dec-2022 | 3 days | 5 days | × EHTL | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-12-05 | E235.NO3-L | 01-Dec-2022 | 07-Dec-2022 | 3 days | 5 days | × EHTR | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrate in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-12-05 | E235.NO3-L | 01-Dec-2022 | 07-Dec-2022 | 3 days | 6 days | × EHTR | 07-Dec-2022 | 3 days | 0 days | ✓ |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-12-05 | E235.NO2-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 2 days | ✓ |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-12-05 | E235.NO2-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 2 days | ✓ |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-12-05 | E235.NO2-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 2 days | ✓ |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-12-05 | E235.NO2-L | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 3 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-12-05 | E235.NO2-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 3 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-12-05 | E235.NO2-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 3 days | ✓ |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD1_2022-12-05 | E235.NO2-L | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 3 days | ✓ |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-12-05 | E235.NO2-L | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 4 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-12-05 | E235.NO2-L | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 4 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-12-05 | E235.NO2-L | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 4 days | × EHT |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-12-05 | E235.NO2-L | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 5 days | × EHTL |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-12-05 | E235.NO2-L | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 5 days | × EHTR-FM |
| **Anions and Nutrients : Nitrite in Water by IC (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-12-05 | E235.NO2-L | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 3 days | 6 days | × EHTR-FM |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-12-05 | E235.SO4 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-12-05 | E235.SO4 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-12-05 | E235.SO4 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-12-05 | E235.SO4 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-12-05 | E235.SO4 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-12-05 | E235.SO4 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FD1_2022-12-05 | E235.SO4 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-12-05 | E235.SO4 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-12-05 | E235.SO4 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-12-05 | E235.SO4 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-12-05 | E235.SO4 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-12-05 | E235.SO4 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |
| **Anions and Nutrients : Sulfate in Water by IC** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-12-05 | E235.SO4 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-04_2022-12-05 | E509 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-11_2022-12-05 | E509 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-22_2022-12-05 | E509 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-29_2022-12-05 | E509 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-30_2022-12-05 | E509 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-FD1_2022-12-05 | E509 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* Container / Client Sample ID(s) | *Method* | *Sampling Date* | *Extraction / Preparation* | | | | *Analysis* | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | *Preparation Date* | *Holding Times* Rec | *Holding Times* Actual | *Eval* | *Analysis Date* | *Holding Times* Rec | *Holding Times* Actual | *Eval* |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-13_2022-12-05 | E509 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-15_2022-12-05 | E509 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-FB_2022-12-05 | E509 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-FD_2022-12-05 | E509 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-02_2022-12-05 | E509 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial dissolved (hydrochloric acid)** SD_MH-12_2022-12-05 | E509 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-04_2022-12-05 | E421 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 5 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-11_2022-12-05 | E421 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 5 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)** SD_MH-22_2022-12-05 | E421 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 5 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MH-29_2022-12-05 | E421 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 5 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MH-30_2022-12-05 | E421 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 5 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MH-FD1_2022-12-05 | E421 | 04-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 5 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MH-13_2022-12-05 | E421 | 03-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MH-15_2022-12-05 | E421 | 03-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MH-FB_2022-12-05 | E421 | 03-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MH-FD_2022-12-05 | E421 | 03-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 6 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MH-02_2022-12-05 | E421 | 01-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 7 days | ✓ |
| **Dissolved Metals : Dissolved Metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE dissolved (nitric acid)**<br>SD_MH-12_2022-12-05 | E421 | 01-Dec-2022 | 08-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Container / Client Sample ID(s) | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-12-05 | E290 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 2 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-12-05 | E290 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 2 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-12-05 | E290 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 2 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-12-05 | E290 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 3 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-12-05 | E290 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 3 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-12-05 | E290 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 3 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-FD1_2022-12-05 | E290 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 3 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-12-05 | E290 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 4 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-12-05 | E290 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 4 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-12-05 | E290 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 4 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-12-05 | E290 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-12-05 | E290 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 5 days | ✓ |
| **Physical Tests : Alkalinity Species by Titration** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-12-05 | E290 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 14 days | 6 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-12-05 | E100 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-12-05 | E100 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-12-05 | E100 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 2 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-12-05 | E100 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-12-05 | E100 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-12-05 | E100 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-FD1_2022-12-05 | E100 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-12-05 | E100 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-12-05 | E100 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-12-05 | E100 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-12-05 | E100 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-12-05 | E100 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |
| **Physical Tests : Conductivity in Water** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-12-05 | E100 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 6 days | ✓ |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-12-05 | E108 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Holding Times: Rec | Holding Times: Actual | Eval | Analysis: Analysis Date | Holding Times: Rec | Holding Times: Actual | Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-12-05 | E108 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-12-05 | E108 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-12-05 | E108 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-13_2022-12-05 | E108 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-12-05 | E108 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-22_2022-12-05 | E108 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-29_2022-12-05 | E108 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-30_2022-12-05 | E108 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-12-05 | E108 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD_2022-12-05 | E108 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD1_2022-12-05 | E108 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : pH by Meter** | | | | | | | | | | |
| **HDPE**<br>SD_MH-TB_2022-12-05 | E108 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 0.25 hrs | 5.25 hrs | × EHTR-FM |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-04_2022-12-05 | E162 | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 4 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-11_2022-12-05 | E162 | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 4 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22_2022-12-05 | E162 | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 4 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-12-05 | E162 | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 4 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-30_2022-12-05 | E162 | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 4 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE**<br>SD_MH-13_2022-12-05 | E162 | 03-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 5 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-15_2022-12-05 | E162 | 03-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-FD1_2022-12-05 | E162 | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-FB_2022-12-05 | E162 | 03-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-FD_2022-12-05 | E162 | 03-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-02_2022-12-05 | E162 | 01-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-12-05 | E162 | 01-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TDS by Gravimetry** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-12-05 | E162 | 01-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 8 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-04_2022-12-05 | E160-L | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 4 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-11_2022-12-05 | E160-L | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 4 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group<br>Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-22_2022-12-05 | E160-L | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 4 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-29_2022-12-05 | E160-L | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 4 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-30_2022-12-05 | E160-L | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 4 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-13_2022-12-05 | E160-L | 03-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-15_2022-12-05 | E160-L | 03-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD1_2022-12-05 | E160-L | 04-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 5 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FB_2022-12-05 | E160-L | 03-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-FD_2022-12-05 | E160-L | 03-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 6 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE**<br>SD_MH-02_2022-12-05 | E160-L | 01-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 7 days | ✓ |

Work Order : WR2201530
Client : Teck Metals Ltd
Project : Sa Dena Hes

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-12_2022-12-05 | E160-L | 01-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 7 days | ✓ |
| **Physical Tests : TSS by Gravimetry (Low Level)** | | | | | | | | | | |
| **HDPE** SD_MH-TB_2022-12-05 | E160-L | 01-Dec-2022 | ---- | ---- | ---- | | 08-Dec-2022 | 7 days | 7 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-04_2022-12-05 | E508 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-11_2022-12-05 | E508 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-22_2022-12-05 | E508 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-29_2022-12-05 | E508 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-30_2022-12-05 | E508 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 3 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-13_2022-12-05 | E508 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)** SD_MH-15_2022-12-05 | E508 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation: Preparation Date | Extraction / Preparation: Holding Times Rec | Extraction / Preparation: Holding Times Actual | Extraction / Preparation: Eval | Analysis: Analysis Date | Analysis: Holding Times Rec | Analysis: Holding Times Actual | Analysis: Eval |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-FD1_2022-12-05 | E508 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 4 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-FB_2022-12-05 | E508 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-FD_2022-12-05 | E508 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 5 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-02_2022-12-05 | E508 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 6 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-12_2022-12-05 | E508 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 6 days | ✓ |
| **Total Metals : Total Mercury in Water by CVAAS** | | | | | | | | | | |
| **Glass vial total (hydrochloric acid)**<br>SD_MH-TB_2022-12-05 | E508 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 07-Dec-2022 | 28 days | 7 days | ✓ |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-04_2022-12-05 | E420 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 4 days | ✓ |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-11_2022-12-05 | E420 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 4 days | ✓ |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)**<br>SD_MH-22_2022-12-05 | E420 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 4 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| Analyte Group / Container / Client Sample ID(s) | Method | Sampling Date | Extraction / Preparation | | | | Analysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preparation Date | Holding Times Rec | Holding Times Actual | Eval | Analysis Date | Holding Times Rec | Holding Times Actual | Eval |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-29_2022-12-05 | E420 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 4 days | ✓ |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-30_2022-12-05 | E420 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 4 days | ✓ |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-13_2022-12-05 | E420 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 5 days | ✓ |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-15_2022-12-05 | E420 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 5 days | ✓ |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-FD1_2022-12-05 | E420 | 04-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 5 days | ✓ |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-FB_2022-12-05 | E420 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 6 days | ✓ |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-FD_2022-12-05 | E420 | 03-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 6 days | ✓ |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-02_2022-12-05 | E420 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 7 days | ✓ |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE total (nitric acid)** SD_MH-12_2022-12-05 | E420 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 7 days | ✓ |

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

| *Analyte Group* | *Method* | *Sampling Date* | *Extraction / Preparation* | | | | *Analysis* | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Container / Client Sample ID(s)** | | | *Preparation Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* | *Analysis Date* | *Holding Times Rec* | *Holding Times Actual* | *Eval* |
| **Total Metals : Total metals in Water by CRC ICPMS** | | | | | | | | | | |
| **HDPE - total (lab preserved)**<br>SD_MH-TB_2022-12-05 | E420 | 01-Dec-2022 | 07-Dec-2022 | ---- | ---- | | 08-Dec-2022 | 180 days | 8 days | ✓ |

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 769686 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 771617 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 769691 | 2 | 29 | 6.9 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 769690 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Conductivity in Water | E100 | 769687 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 770338 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 769741 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 769689 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 769692 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 769688 | 2 | 39 | 5.1 | 5.0 | ✓ |
| pH by Meter | E108 | 769685 | 2 | 39 | 5.1 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 769693 | 2 | 31 | 6.4 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 770240 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 770837 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Total metals in Water by CRC ICPMS | E420 | 769718 | 2 | 34 | 5.8 | 5.0 | ✓ |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 769686 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 771617 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 769691 | 2 | 29 | 6.9 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 769690 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Conductivity in Water | E100 | 769687 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 770338 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 769741 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 769689 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 769692 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 769688 | 2 | 39 | 5.1 | 5.0 | ✓ |
| pH by Meter | E108 | 769685 | 2 | 39 | 5.1 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 769693 | 2 | 31 | 6.4 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 770240 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 770837 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Total metals in Water by CRC ICPMS | E420 | 769718 | 2 | 34 | 5.8 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 769737 | 3 | 30 | 10.0 | 5.0 | ✓ |
| **Method Blanks (MB)** | | | | | | | |
| Alkalinity Species by Titration | E290 | 769686 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Ammonia by Fluorescence | E298 | 771617 | 1 | 20 | 5.0 | 5.0 | ✓ |

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

| Quality Control Sample Type | | | Count | | Frequency (%) | | |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC Lot #* | *QC* | *Regular* | *Actual* | *Expected* | *Evaluation* |
| **Method Blanks (MB) - Continued** | | | | | | | |
| Bromide in Water by IC (Low Level) | E235.Br-L | 769691 | 2 | 29 | 6.9 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 769690 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Conductivity in Water | E100 | 769687 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 770338 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 769741 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 769689 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 769692 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 769688 | 2 | 39 | 5.1 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 769693 | 2 | 31 | 6.4 | 5.0 | ✓ |
| TDS by Gravimetry | E162 | 770240 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 770837 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Total metals in Water by CRC ICPMS | E420 | 769718 | 2 | 34 | 5.8 | 5.0 | ✓ |
| TSS by Gravimetry (Low Level) | E160-L | 769737 | 3 | 30 | 10.0 | 5.0 | ✓ |
| **Matrix Spikes (MS)** | | | | | | | |
| Ammonia by Fluorescence | E298 | 771617 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Bromide in Water by IC (Low Level) | E235.Br-L | 769691 | 2 | 29 | 6.9 | 5.0 | ✓ |
| Chloride in Water by IC | E235.Cl | 769690 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Dissolved Mercury in Water by CVAAS | E509 | 770338 | 2 | 28 | 7.1 | 5.0 | ✓ |
| Dissolved Metals in Water by CRC ICPMS | E421 | 769741 | 1 | 20 | 5.0 | 5.0 | ✓ |
| Fluoride in Water by IC | E235.F | 769689 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Nitrate in Water by IC (Low Level) | E235.NO3-L | 769692 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Nitrite in Water by IC (Low Level) | E235.NO2-L | 769688 | 2 | 39 | 5.1 | 5.0 | ✓ |
| Sulfate in Water by IC | E235.SO4 | 769693 | 2 | 31 | 6.4 | 5.0 | ✓ |
| Total Mercury in Water by CVAAS | E508 | 770837 | 2 | 26 | 7.6 | 5.0 | ✓ |
| Total metals in Water by CRC ICPMS | E420 | 769718 | 2 | 34 | 5.8 | 5.0 | ✓ |

# Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Conductivity in Water | E100<br><br>Vancouver - Environmental | Water | APHA 2510 (mod) | Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C. |
| pH by Meter | E108<br><br>Vancouver - Environmental | Water | APHA 4500-H (mod) | pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time. |
| TSS by Gravimetry (Low Level) | E160-L<br><br>Vancouver - Environmental | Water | APHA 2540 D (mod) | Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples. |
| TDS by Gravimetry | E162<br><br>Vancouver - Environmental | Water | APHA 2540 C (mod) | Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue. |
| Bromide in Water by IC (Low Level) | E235.Br-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Chloride in Water by IC | E235.Cl<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Fluoride in Water by IC | E235.F<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrite in Water by IC (Low Level) | E235.NO2-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Nitrate in Water by IC (Low Level) | E235.NO3-L<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Sulfate in Water by IC | E235.SO4<br><br>Vancouver - Environmental | Water | EPA 300.1 (mod) | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |
| Alkalinity Species by Titration | E290<br><br>Vancouver - Environmental | Water | APHA 2320 B (mod) | Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. |
| Ammonia by Fluorescence | E298<br><br>Vancouver - Environmental | Water | Method Fialab 100, 2018 | Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021) |
| Total metals in Water by CRC ICPMS | E420<br><br>Vancouver - Environmental | Water | EPA 200.2/6020B (mod) | Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Dissolved Metals in Water by CRC ICPMS | E421<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 6020B (mod) | Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.<br><br>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. |
| Total Mercury in Water by CVAAS | E508<br><br>Vancouver - Environmental | Water | EPA 1631E (mod) | Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS |
| Dissolved Mercury in Water by CVAAS | E509<br><br>Vancouver - Environmental | Water | APHA 3030B/EPA 1631E (mod) | Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS. |
| Dissolved Hardness (Calculated) | EC100<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. |
| Hardness (Calculated) from Total Ca/Mg | EC100A<br><br>Vancouver - Environmental | Water | APHA 2340B | "Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters. |

| Analytical Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Total Trivalent Chromium (Cr III) by Calculation | EC535<br><br>Vancouver - Environmental | Water | APHA 3030B/6020A/EPA 7196A (mod) | Chromium (III)-Total is calculated as the difference between the total chromium and the total hexavalent chromium (Cr(VI)) results.The Limit of Reporting for Chromium (III) varies as a function of the test results. |

| Preparation Methods | Method / Lab | Matrix | Method Reference | Method Descriptions |
|---|---|---|---|---|
| Preparation for Ammonia | EP298<br><br>Vancouver - Environmental | Water | | Sample preparation for Preserved Nutrients Water Quality Analysis. |
| Dissolved Metals Water Filtration | EP421<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HNO3. |
| Dissolved Mercury Water Filtration | EP509<br><br>Vancouver - Environmental | Water | APHA 3030B | Water samples are filtered (0.45 um), and preserved with HCl. |

ALS Canada Ltd.

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2201530** | Page | : 1 of 22 |
| Client | : Teck Metals Ltd | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 05-Dec-2022 15:00 |
| PO | : PO# 10289 | Date Analysis Commenced | : 07-Dec-2022 |
| C-O-C number | : ---- | Issue Date | : 13-Dec-2022 13:00 |
| Sampler | : Wes Moir 250 427 8404 | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 13 | | |
| No. of samples analysed | : 13 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Vancouver Metals, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Vancouver Inorganics, Burnaby, British Columbia |
| Qammar Almas | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |
| Sukhman Khosa | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
| **Physical Tests (QC Lot: 769685)** | | | | | | | | | | | |
| WR2201529-003 | Anonymous | pH | ---- | E108 | 0.10 | pH units | 8.07 | 8.07 | 0.00% | 4% | ---- |
| **Physical Tests (QC Lot: 769686)** | | | | | | | | | | | |
| WR2201529-003 | Anonymous | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 262 | 259 | 1.36% | 20% | ---- |
| **Physical Tests (QC Lot: 769687)** | | | | | | | | | | | |
| WR2201529-003 | Anonymous | conductivity | ---- | E100 | 2.0 | µS/cm | 519 | 525 | 1.15% | 10% | ---- |
| **Physical Tests (QC Lot: 769694)** | | | | | | | | | | | |
| VA22C9587-001 | Anonymous | pH | ---- | E108 | 0.10 | pH units | 5.42 | 5.37 | 0.927% | 4% | ---- |
| **Physical Tests (QC Lot: 769695)** | | | | | | | | | | | |
| VA22C9587-001 | Anonymous | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | <1.0 | <1.0 | 0 | Diff <2x LOR | ---- |
| **Physical Tests (QC Lot: 769696)** | | | | | | | | | | | |
| VA22C9587-001 | Anonymous | conductivity | ---- | E100 | 2.0 | µS/cm | <2.0 | <2.0 | 0 | Diff <2x LOR | ---- |
| **Physical Tests (QC Lot: 770240)** | | | | | | | | | | | |
| VA22C9507-001 | Anonymous | solids, total dissolved [TDS] | ---- | E162 | 20 | mg/L | 1100 | 1120 | 1.40% | 20% | ---- |
| **Physical Tests (QC Lot: 770241)** | | | | | | | | | | | |
| WR2201530-005 | SD_MH-13_2022-12-05 | solids, total dissolved [TDS] | ---- | E162 | 20 | mg/L | 231 | 228 | 1.53% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 769688)** | | | | | | | | | | | |
| WR2201529-001 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 769689)** | | | | | | | | | | | |
| WR2201529-001 | Anonymous | fluoride | 16984-48-8 | E235.F | 0.020 | mg/L | 0.076 | 0.075 | 0.0004 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 769690)** | | | | | | | | | | | |
| WR2201529-001 | Anonymous | chloride | 16887-00-6 | E235.Cl | 0.50 | mg/L | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 769691)** | | | | | | | | | | | |
| WR2201529-001 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 769692)** | | | | | | | | | | | |
| WR2201529-001 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.0134 | 0.0132 | 0.0002 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 769693)** | | | | | | | | | | | |
| WR2201529-001 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 23.0 | 23.2 | 0.734% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 769698)** | | | | | | | | | | | |
| VA22C9565-001 | Anonymous | fluoride | 16984-48-8 | E235.F | 0.100 | mg/L | <0.100 | <0.100 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 769699)** | | | | | | | | | | | |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Anions and Nutrients (QC Lot: 769699) - continued** | | | | | | | | | | | |
| VA22C9565-001 | Anonymous | chloride | 16887-00-6 | E235.Cl | 2.50 | mg/L | <2.50 | <2.50 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 769700)** | | | | | | | | | | | |
| VA22C9565-001 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.250 | mg/L | <0.250 | <0.250 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 769701)** | | | | | | | | | | | |
| VA22C9565-001 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.0250 | mg/L | 0.0586 | 0.0584 | 0.0003 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 769702)** | | | | | | | | | | | |
| VA22C9565-001 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.0050 | mg/L | <0.0050 | <0.0050 | 0 | Diff <2x LOR | ---- |
| **Anions and Nutrients (QC Lot: 769703)** | | | | | | | | | | | |
| VA22C9565-001 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 1.50 | mg/L | 454 | 454 | 0.174% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 771617)** | | | | | | | | | | | |
| VA22C9485-001 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | 0.0250 | mg/L | 3.26 | 3.09 | 5.51% | 20% | ---- |
| **Total Metals (QC Lot: 769718)** | | | | | | | | | | | |
| WR2201527-001 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0160 | 0.0170 | 0.0010 | Diff <2x LOR | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00046 | 0.00045 | 0.00001 | Diff <2x LOR | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.0587 | 0.0583 | 0.772% | 20% | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000214 | 0.0000217 | 0.0000003 | Diff <2x LOR | ---- |
| | | calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 34.3 | 34.7 | 1.35% | 20% | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | 0.00042 | 0.00043 | 0.00002 | Diff <2x LOR | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | iron, total | 7439-89-6 | E420 | 0.010 | mg/L | 6.98 | 7.30 | 4.49% | 20% | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000095 | 0.000096 | 0.000001 | Diff <2x LOR | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0042 | 0.0042 | 0.0000006 | Diff <2x LOR | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 0.0050 | mg/L | 8.19 | 8.51 | 3.80% | 20% | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.142 | 0.147 | 2.91% | 20% | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.000499 | 0.000532 | 6.30% | 20% | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | 0.00077 | 0.00076 | 0.00001 | Diff <2x LOR | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, total | 7440-09-7 | E420 | 0.050 | mg/L | 0.961 | 1.00 | 4.32% | 20% | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.000050 | mg/L | 0.000334 | 0.000338 | 0.000004 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Total Metals (QC Lot: 769718) - continued** | | | | | | | | | | | |
| WR2201527-001 | Anonymous | silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 5.37 | 5.40 | 0.677% | 20% | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 2.50 | 2.63 | 5.23% | 20% | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.163 | 0.171 | 4.99% | 20% | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 13.0 | 13.8 | 5.70% | 20% | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | 0.00040 | 0.00043 | 0.00003 | Diff <2x LOR | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00188 | 0.00191 | 1.56% | 20% | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | 0.540 | 0.549 | 1.57% | 20% | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 770291)** | | | | | | | | | | | |
| VA22C9490-021 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | 0.224 | 0.232 | 3.20% | 20% | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00111 | 0.00110 | 0.572% | 20% | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00074 | 0.00084 | 0.00010 | Diff <2x LOR | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.0431 | 0.0442 | 2.41% | 20% | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.000100 | mg/L | <0.000100 | <0.000100 | 0 | Diff <2x LOR | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000391 | 0.0000409 | 0.0000017 | Diff <2x LOR | ---- |
| | | calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 34.8 | 34.2 | 1.75% | 20% | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | 0.00079 | 0.00084 | 0.00005 | Diff <2x LOR | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | 0.00024 | 0.00024 | 0.000005 | Diff <2x LOR | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | 0.00132 | 0.00134 | 0.00002 | Diff <2x LOR | ---- |
| | | iron, total | 7439-89-6 | E420 | 0.010 | mg/L | 0.445 | 0.450 | 1.13% | 20% | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000317 | 0.000322 | 0.000005 | Diff <2x LOR | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0017 | 0.0017 | 0.00001 | Diff <2x LOR | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 0.0050 | mg/L | 5.96 | 6.16 | 3.34% | 20% | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.0156 | 0.0157 | 0.881% | 20% | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00138 | 0.00136 | 1.07% | 20% | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | 0.00107 | 0.00099 | 0.00008 | Diff <2x LOR | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, total | 7440-09-7 | E420 | 0.050 | mg/L | 0.880 | 0.884 | 0.367% | 20% | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Total Metals (QC Lot: 770291) - continued** | | | | | | | | | | | |
| VA22C9490-021 | Anonymous | selenium, total | 7782-49-2 | E420 | 0.000050 | mg/L | 0.000850 | 0.000805 | 5.43% | 20% | ---- |
| | | silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 2.61 | 2.64 | 1.05% | 20% | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 2.38 | 2.36 | 0.778% | 20% | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.303 | 0.306 | 1.21% | 20% | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 14.0 | 14.2 | 2.10% | 20% | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | 0.0114 | 0.0120 | 5.32% | 20% | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.000049 | 0.000049 | 0.0000001 | Diff <2x LOR | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | 0.00122 | 0.00122 | 0.0000004 | Diff <2x LOR | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | 0.0056 | 0.0054 | 0.0002 | Diff <2x LOR | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 770837)** | | | | | | | | | | | |
| WR2201527-001 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 770838)** | | | | | | | | | | | |
| WR2201530-012 | SD_MH-TB_2022-12-05 | mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 769741)** | | | | | | | | | | | |
| VA22C9490-021 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0084 | 0.0080 | 0.0004 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00093 | 0.00093 | 0.0000005 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00035 | 0.00031 | 0.00004 | Diff <2x LOR | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0343 | 0.0347 | 1.19% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000100 | mg/L | <0.000100 | <0.000100 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000241 | 0.0000272 | 0.0000031 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 30.9 | 30.9 | 0.0603% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00041 | 0.00039 | 0.00002 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000113 | <0.000050 | 0.000063 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0014 | 0.0014 | 0.00003 | Diff <2x LOR | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.0050 | mg/L | 5.28 | 5.14 | 2.70% | 20% | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Dissolved Metals (QC Lot: 769741) - continued** | | | | | | | | | | | |
| VA22C9490-021 | Anonymous | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00326 | 0.00318 | 2.78% | 20% | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00123 | 0.00122 | 0.532% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00053 | 0.00052 | 0.00001 | Diff <2x LOR | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.050 | mg/L | 0.814 | 0.798 | 1.95% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | 0.000733 | 0.000698 | 4.88% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 2.09 | 2.05 | 1.94% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 2.09 | 1.96 | 6.56% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.266 | 0.268 | 0.641% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 13.3 | 12.7 | 4.63% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000039 | 0.000042 | 0.000003 | Diff <2x LOR | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0027 | 0.0028 | 0.00002 | Diff <2x LOR | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 770338)** | | | | | | | | | | | |
| WR2201528-022 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 770339)** | | | | | | | | | | | |
| WR2201530-009 | SD_MH-30_2022-12-05 | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Physical Tests (QCLot: 769686)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 769687)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 1.0 | ---- |
| **Physical Tests (QCLot: 769695)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 769696)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 1.1 | ---- |
| **Physical Tests (QCLot: 769737)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 770236)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 770237)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 770240)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Physical Tests (QCLot: 770241)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Anions and Nutrients (QCLot: 769688)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 769689)** | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | <0.020 | ---- |
| **Anions and Nutrients (QCLot: 769690)** | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | <0.50 | ---- |
| **Anions and Nutrients (QCLot: 769691)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 769692)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 769693)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 769698)** | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | <0.020 | ---- |
| **Anions and Nutrients (QCLot: 769699)** | | | | | | |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Anions and Nutrients (QCLot: 769699) - continued** | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | <0.50 | ---- |
| **Anions and Nutrients (QCLot: 769700)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 769701)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 769702)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 769703)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 771617)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Total Metals (QCLot: 769718)** | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | <0.050 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | <0.010 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | <0.050 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | <0.050 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | <0.10 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 769718) - continued** | | | | | | |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | <0.050 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | <0.50 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| **Total Metals (QCLot: 770291)** | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | <0.050 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | <0.010 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | <0.050 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | <0.050 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | <0.10 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 770291) - continued** | | | | | | |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | <0.050 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | <0.50 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| **Total Metals (QCLot: 770837)** | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Total Metals (QCLot: 770838)** | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 769741)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 769741) - continued** | | | | | | |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 770338)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 770339)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 769685)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 100 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 769686)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 102 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 769687)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 97.1 | 90.0 | 110 | ---- |
| **Physical Tests (QCLot: 769694)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 100 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 769695)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 104 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 769696)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 98.4 | 90.0 | 110 | ---- |
| **Physical Tests (QCLot: 769737)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 91.7 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 770236)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 101 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 770237)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 97.3 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 770240)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 98.2 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 770241)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 97.6 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 769688)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 99.0 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 769689)** | | | | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | 1 mg/L | 97.2 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 769690)** | | | | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | 100 mg/L | 101 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 769691)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 102 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 769692)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 102 | 90.0 | 110 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 769693)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 105 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 769698)** | | | | | | | | | |
| fluoride | 16984-48-8 | E235.F | 0.02 | mg/L | 1 mg/L | 101 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 769699)** | | | | | | | | | |
| chloride | 16887-00-6 | E235.Cl | 0.5 | mg/L | 100 mg/L | 101 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 769700)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 101 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 769701)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 101 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 769702)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 102 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 769703)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 103 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 771617)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 97.0 | 85.0 | 115 | ---- |
| **Total Metals (QCLot: 769718)** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | 2 mg/L | 93.8 | 80.0 | 120 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | 1 mg/L | 98.1 | 80.0 | 120 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | 1 mg/L | 99.4 | 80.0 | 120 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | 0.25 mg/L | 97.4 | 80.0 | 120 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | 0.1 mg/L | 101 | 80.0 | 120 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | 1 mg/L | 96.3 | 80.0 | 120 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | 1 mg/L | 98.3 | 80.0 | 120 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | 0.1 mg/L | 95.7 | 80.0 | 120 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | 50 mg/L | 99.8 | 80.0 | 120 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | 0.25 mg/L | 93.5 | 80.0 | 120 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | 0.25 mg/L | 93.7 | 80.0 | 120 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | 0.25 mg/L | 94.4 | 80.0 | 120 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | 1 mg/L | 99.0 | 80.0 | 120 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | 0.5 mg/L | 95.0 | 80.0 | 120 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | 50 mg/L | 98.0 | 80.0 | 120 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | 0.25 mg/L | 95.7 | 80.0 | 120 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | 0.25 mg/L | 95.3 | 80.0 | 120 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | 0.5 mg/L | 97.3 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Total Metals (QCLot: 769718) - continued** | | | | | | | | | |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | 10 mg/L | 90.2 | 80.0 | 120 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | 50 mg/L | 100 | 80.0 | 120 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | 1 mg/L | 98.7 | 80.0 | 120 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | 10 mg/L | 96.7 | 80.0 | 120 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | 0.1 mg/L | 94.4 | 80.0 | 120 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | 50 mg/L | 99.6 | 80.0 | 120 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | 0.25 mg/L | 99.8 | 80.0 | 120 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | 50 mg/L | 83.6 | 80.0 | 120 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | 1 mg/L | 96.8 | 80.0 | 120 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | 0.5 mg/L | 96.3 | 80.0 | 120 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | 0.25 mg/L | 95.3 | 80.0 | 120 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | 0.005 mg/L | 96.7 | 80.0 | 120 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | 0.5 mg/L | 96.3 | 80.0 | 120 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | 0.5 mg/L | 97.5 | 80.0 | 120 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | 0.1 mg/L | 96.2 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 770291)** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | 2 mg/L | 101 | 80.0 | 120 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | 1 mg/L | 106 | 80.0 | 120 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | 1 mg/L | 108 | 80.0 | 120 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | 0.25 mg/L | 111 | 80.0 | 120 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | 0.1 mg/L | 103 | 80.0 | 120 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | 0.1 mg/L | 102 | 80.0 | 120 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | 50 mg/L | 105 | 80.0 | 120 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | 0.25 mg/L | 103 | 80.0 | 120 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | 0.25 mg/L | 101 | 80.0 | 120 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | 1 mg/L | 114 | 80.0 | 120 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | 0.5 mg/L | 103 | 80.0 | 120 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | 0.25 mg/L | 103 | 80.0 | 120 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | 0.25 mg/L | 105 | 80.0 | 120 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | 0.5 mg/L | 102 | 80.0 | 120 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | 10 mg/L | 103 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Total Metals (QCLot: 770291) - continued** | | | | | | | | | |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | 1 mg/L | 99.3 | 80.0 | 120 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | 10 mg/L | 106 | 80.0 | 120 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | 0.1 mg/L | 97.3 | 80.0 | 120 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | 50 mg/L | 105 | 80.0 | 120 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | 50 mg/L | 99.0 | 80.0 | 120 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | 0.5 mg/L | 102 | 80.0 | 120 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | 0.25 mg/L | 99.2 | 80.0 | 120 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | 0.005 mg/L | 98.1 | 80.0 | 120 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | 0.5 mg/L | 102 | 80.0 | 120 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | 0.5 mg/L | 104 | 80.0 | 120 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | 0.1 mg/L | 104 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 770837)** | | | | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | 0.0001 mg/L | 93.1 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 770838)** | | | | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | 0.0001 mg/L | 91.8 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 769741)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 94.4 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 103 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 97.4 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 95.2 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 97.2 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 95.5 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 94.6 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 94.9 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 97.8 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 92.8 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 92.1 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 90.5 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 98.8 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 98.0 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 96.4 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 93.9 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Laboratory Control Sample (LCS) Report: Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 769741) - continued** | | | | | | | | | |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 92.1 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 104 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 92.8 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 104 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 97.8 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 94.6 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 103 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 92.5 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 93.9 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 88.1 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 102 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 95.5 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 88.4 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 98.0 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 94.1 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 93.1 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 97.6 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 97.2 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 97.1 | 80.0 | 120 | ---- |

## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 769688)** | | | | | | | | | | |
| WR2201529-002 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.488 mg/L | 0.5 mg/L | 97.5 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 769689)** | | | | | | | | | | |
| WR2201529-002 | Anonymous | fluoride | 16984-48-8 | E235.F | 0.977 mg/L | 1 mg/L | 97.7 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 769690)** | | | | | | | | | | |
| WR2201529-002 | Anonymous | chloride | 16887-00-6 | E235.Cl | 101 mg/L | 100 mg/L | 101 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 769691)** | | | | | | | | | | |
| WR2201529-002 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.512 mg/L | 0.5 mg/L | 102 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 769692)** | | | | | | | | | | |
| WR2201529-002 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 2.57 mg/L | 2.5 mg/L | 103 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 769693)** | | | | | | | | | | |
| WR2201529-002 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 103 mg/L | 100 mg/L | 103 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 769698)** | | | | | | | | | | |
| VA22C9565-002 | Anonymous | fluoride | 16984-48-8 | E235.F | 10.6 mg/L | 10 mg/L | 106 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 769699)** | | | | | | | | | | |
| VA22C9565-002 | Anonymous | chloride | 16887-00-6 | E235.Cl | 1050 mg/L | 1000 mg/L | 105 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 769700)** | | | | | | | | | | |
| VA22C9565-002 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 5.24 mg/L | 5 mg/L | 105 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 769701)** | | | | | | | | | | |
| VA22C9565-002 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 26.6 mg/L | 25 mg/L | 106 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 769702)** | | | | | | | | | | |
| VA22C9565-002 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 5.31 mg/L | 5 mg/L | 106 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 769703)** | | | | | | | | | | |
| VA22C9565-002 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 1070 mg/L | 1000 mg/L | 107 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 771617)** | | | | | | | | | | |
| VA22C9485-002 | Anonymous | ammonia, total (as N) | 7664-41-7 | E298 | ND mg/L | 0.1 mg/L | ND | 75.0 | 125 | MS-B |
| **Total Metals (QCLot: 769718)** | | | | | | | | | | |
| WR2201527-002 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.182 mg/L | 0.2 mg/L | 91.1 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *Concentration* | *Target* | *MS* | *Low* | *High* | *Qualifier* |
| **Total Metals (QCLot: 769718) - continued** | | | | | | | | | | |
| WR2201527-002 | Anonymous | antimony, total | 7440-36-0 | E420 | 0.0184 mg/L | 0.02 mg/L | 91.9 | 70.0 | 130 | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.0189 mg/L | 0.02 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | barium, total | 7440-39-3 | E420 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.0374 mg/L | 0.04 mg/L | 93.6 | 70.0 | 130 | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.00910 mg/L | 0.01 mg/L | 91.0 | 70.0 | 130 | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.092 mg/L | 0.1 mg/L | 92.4 | 70.0 | 130 | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.00373 mg/L | 0.004 mg/L | 93.3 | 70.0 | 130 | ---- |
| | | calcium, total | 7440-70-2 | E420 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.0376 mg/L | 0.04 mg/L | 93.9 | 70.0 | 130 | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.0183 mg/L | 0.02 mg/L | 91.6 | 70.0 | 130 | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.0183 mg/L | 0.02 mg/L | 91.7 | 70.0 | 130 | ---- |
| | | iron, total | 7439-89-6 | E420 | 1.82 mg/L | 2 mg/L | 90.8 | 70.0 | 130 | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.0178 mg/L | 0.02 mg/L | 89.0 | 70.0 | 130 | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0932 mg/L | 0.1 mg/L | 93.2 | 70.0 | 130 | ---- |
| | | magnesium, total | 7439-95-4 | E420 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, total | 7439-96-5 | E420 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.0184 mg/L | 0.02 mg/L | 92.2 | 70.0 | 130 | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.0374 mg/L | 0.04 mg/L | 93.6 | 70.0 | 130 | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 9.38 mg/L | 10 mg/L | 93.8 | 70.0 | 130 | ---- |
| | | potassium, total | 7440-09-7 | E420 | 3.95 mg/L | 4 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.0391 mg/L | 0.04 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | silicon, total | 7440-21-3 | E420 | 9.14 mg/L | 10 mg/L | 91.4 | 70.0 | 130 | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.00378 mg/L | 0.004 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | sodium, total | 7440-23-5 | E420 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, total | 7440-24-6 | E420 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 19.9 mg/L | 20 mg/L | 99.4 | 70.0 | 130 | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.00357 mg/L | 0.004 mg/L | 89.4 | 70.0 | 130 | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.0188 mg/L | 0.02 mg/L | 94.0 | 70.0 | 130 | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.0376 mg/L | 0.04 mg/L | 93.9 | 70.0 | 130 | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.00385 mg/L | 0.004 mg/L | 96.2 | 70.0 | 130 | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.0952 mg/L | 0.1 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.388 mg/L | 0.4 mg/L | 97.1 | 70.0 | 130 | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.0395 mg/L | 0.04 mg/L | 98.8 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 770291)** | | | | | | | | | | |
| VA22C9490-022 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.191 mg/L | 0.2 mg/L | 95.4 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Total Metals (QCLot: 770291) - continued** | | | | | | | | | | |
| VA22C9490-022 | Anonymous | antimony, total | 7440-36-0 | E420 | 0.0184 mg/L | 0.02 mg/L | 92.2 | 70.0 | 130 | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.0189 mg/L | 0.02 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.0202 mg/L | 0.02 mg/L | 101 | 70.0 | 130 | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.0386 mg/L | 0.04 mg/L | 96.4 | 70.0 | 130 | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.00906 mg/L | 0.01 mg/L | 90.6 | 70.0 | 130 | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.100 mg/L | 0.1 mg/L | 99.8 | 70.0 | 130 | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.00393 mg/L | 0.004 mg/L | 98.3 | 70.0 | 130 | ---- |
| | | calcium, total | 7440-70-2 | E420 | 3.78 mg/L | 4 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.0390 mg/L | 0.04 mg/L | 97.6 | 70.0 | 130 | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.0195 mg/L | 0.02 mg/L | 97.3 | 70.0 | 130 | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.0192 mg/L | 0.02 mg/L | 96.2 | 70.0 | 130 | ---- |
| | | iron, total | 7439-89-6 | E420 | 1.94 mg/L | 2 mg/L | 96.8 | 70.0 | 130 | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.0184 mg/L | 0.02 mg/L | 92.0 | 70.0 | 130 | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0958 mg/L | 0.1 mg/L | 95.8 | 70.0 | 130 | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 0.961 mg/L | 1 mg/L | 96.1 | 70.0 | 130 | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.0191 mg/L | 0.02 mg/L | 95.5 | 70.0 | 130 | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.0187 mg/L | 0.02 mg/L | 93.7 | 70.0 | 130 | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.0393 mg/L | 0.04 mg/L | 98.2 | 70.0 | 130 | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 9.87 mg/L | 10 mg/L | 98.7 | 70.0 | 130 | ---- |
| | | potassium, total | 7440-09-7 | E420 | 3.75 mg/L | 4 mg/L | 93.8 | 70.0 | 130 | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.0371 mg/L | 0.04 mg/L | 92.8 | 70.0 | 130 | ---- |
| | | silicon, total | 7440-21-3 | E420 | 9.14 mg/L | 10 mg/L | 91.4 | 70.0 | 130 | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.00378 mg/L | 0.004 mg/L | 94.4 | 70.0 | 130 | ---- |
| | | sodium, total | 7440-23-5 | E420 | 1.94 mg/L | 2 mg/L | 97.0 | 70.0 | 130 | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.0192 mg/L | 0.02 mg/L | 96.1 | 70.0 | 130 | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 18.8 mg/L | 20 mg/L | 93.9 | 70.0 | 130 | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.00363 mg/L | 0.004 mg/L | 90.9 | 70.0 | 130 | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.0181 mg/L | 0.02 mg/L | 90.6 | 70.0 | 130 | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.0378 mg/L | 0.04 mg/L | 94.4 | 70.0 | 130 | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.00355 mg/L | 0.004 mg/L | 88.7 | 70.0 | 130 | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.0958 mg/L | 0.1 mg/L | 95.8 | 70.0 | 130 | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.393 mg/L | 0.4 mg/L | 98.3 | 70.0 | 130 | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.0385 mg/L | 0.04 mg/L | 96.3 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 770837)** | | | | | | | | | | |
| WR2201527-002 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000995 mg/L | 0.0001 mg/L | 99.5 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Total Metals (QCLot: 770838)** | | | | | | | | | | |
| WR2201530-013 | SD_MH-FD1_2022-12-05 | mercury, total | 7439-97-6 | E508 | 0.000102 mg/L | 0.0001 mg/L | 102 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 769741)** | | | | | | | | | | |
| VA22C9490-023 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.187 mg/L | 0.2 mg/L | 93.3 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0199 mg/L | 0.02 mg/L | 99.4 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0187 mg/L | 0.02 mg/L | 93.5 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.0187 mg/L | 0.02 mg/L | 93.4 | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0393 mg/L | 0.04 mg/L | 98.2 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00933 mg/L | 0.01 mg/L | 93.3 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.097 mg/L | 0.1 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00376 mg/L | 0.004 mg/L | 94.0 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 4.02 mg/L | 4 mg/L | 101 | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0376 mg/L | 0.04 mg/L | 93.9 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0185 mg/L | 0.02 mg/L | 92.4 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0186 mg/L | 0.02 mg/L | 93.1 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.88 mg/L | 2 mg/L | 94.0 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0202 mg/L | 0.02 mg/L | 101 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0983 mg/L | 0.1 mg/L | 98.3 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.927 mg/L | 1 mg/L | 92.7 | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0186 mg/L | 0.02 mg/L | 93.1 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0204 mg/L | 0.02 mg/L | 102 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0377 mg/L | 0.04 mg/L | 94.3 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 9.57 mg/L | 10 mg/L | 95.7 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 3.83 mg/L | 4 mg/L | 95.8 | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0368 mg/L | 0.04 mg/L | 91.9 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 9.41 mg/L | 10 mg/L | 94.1 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00394 mg/L | 0.004 mg/L | 98.5 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 1.87 mg/L | 2 mg/L | 93.5 | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.0213 mg/L | 0.02 mg/L | 107 | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 19.0 mg/L | 20 mg/L | 94.9 | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00378 mg/L | 0.004 mg/L | 94.4 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0186 mg/L | 0.02 mg/L | 93.3 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0354 mg/L | 0.04 mg/L | 88.4 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.00383 mg/L | 0.004 mg/L | 95.7 | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.0936 mg/L | 0.1 mg/L | 93.6 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.382 mg/L | 0.4 mg/L | 95.4 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| | | | | | Concentration | Target | MS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 769741) - continued** | | | | | | | | | | |
| VA22C9490-023 | Anonymous | zirconium, dissolved | 7440-67-7 | E421 | 0.0418 mg/L | 0.04 mg/L | 104 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 770338)** | | | | | | | | | | |
| WR2201528-023 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000946 mg/L | 0.0001 mg/L | 94.6 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 770339)** | | | | | | | | | | |
| WR2201530-010 | SD_MH-FB_2022-12-05 | mercury, dissolved | 7439-97-6 | E509 | 0.000101 mg/L | 0.0001 mg/L | 101 | 70.0 | 130 | ---- |

## *Qualifiers*

| *Qualifier* | *Description* |
|---|---|
| *MS-B* | *Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.* |

# Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number:

Page 2 of

Environmental Division
Whitehorse
Work Order Reference
WR2201530

Telephone : + 1 867 668 6689

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Phone: | 250-4278422 |
| | Company address below will appear on the final report |
| Street: | 601 Knighton Road |
| City/Province: | Kimberly, BC |
| Postal Code: | V1A 3E1 |
| Invoice To | Same as Report To |
| | Copy of Invoice with Report |
| Company: | |
| Contact: | |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | |
| Quality Control (QC) Report with Report | |
| Select Distribution: | |
| Email 1 or Fax | azheng@ensero.com, kgardner@ensero.com |
| Email 2 | wendy.mcbain@teck.com, colin.lynch@teck.com |
| Email 3 | chanson@ensero.com,teckkimb@equisonline.com |
| Invoice Distribution | |
| Select Invoice Distribution: | |
| Email 1 or Fax | Michelle.unger@teck.com |
| Email 2 | legacy.ap@teck.com |

Select Service Level Below - Please confirm all E&P TATs
Regular [R]
PRIORITY (Business Days): 4 day [P4] / 3 day [P3] / 2 day [P2]
EMERGENCY
Date and Time Required for all E&P TATs:
For tests that can not be performed according to the ser
Analy
Indicate Filtered (F), Preserved (P) or Filt

| Project Information | | Oil and Gas Required Fields (client use) | |
|---|---|---|---|
| ALS Account # / Quote #: Q62635 | | AFE/Cost Center: | PO# |
| Job #: ECA22YT00199 | | Major/Minor Code: | Routing Code: |
| PO / AFE: Teck PO-10289 | | Requisitioner: | |
| LSD: | | Location: | |
| ALS Lab Work Order # (lab use only) | | ALS Contact: Can Dang | Sampler: Wes Moir |

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Sample Location (SYS_LOC_CODE) | Date (dd-mmm-yy) | Time (hh:mm) | Field Matrix | Total Metals (low level) + Hg | Dissolved Metals (low level) +Hg | pH, SPC, alkalinity, hardness | Anions( Nitrate, Nitrite, Sulphate, Cl, F, Br) | Ammonia | TDS, TSS(low) | Chromium Speciation | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | P | F/P | | P | P | | P | |
| | SD_MH-FD1_2022-12-05 | SD_MH-FD1 | 4-Dec-22 | | WS | R | R | R | R | R | R | R | 7 |

| Drinking Water (DW) Samples[1] (client use) | Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) |
|---|---|
| Are samples taken from a Regulated DW System? | |
| Are samples for human drinking water use? | |

SAMPLE CONDITION AS RECEIVED (lab use only)
Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐
INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C

| SHIPMENT RELEASE (client use) | | | INITIAL SHIPMENT RECEPTION (lab use only) | | | FINAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|---|---|---|---|---|---|
| Released by: Wes Moir | Date: 5-Dec-22 | Time: 3:15 | Received by: | Date: | Time: | Received by: | Date: | Time: |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION   WHITE - LABORATORY COPY   YELLOW - CLIENT COPY   OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Environmental
www.alsglobal.com

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

**Affix ALS barcode label here** (lab use only)

COC Number:



| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | TECK Metals Ltd |
| Contact: | Michelle Unger |
| Phone: | 250-4278422 |
| | Company address below will appear on the final report |
| Street: | 601 Knighton Road |
| City/Province: | Kimberly, BC |
| Postal Code: | V1A 3E1 |
| Invoice To | Same as Report To |
| | Copy of Invoice with Report |
| Company: | |
| Contact: | |

**Project Information**

| | |
|---|---|
| ALS Account # / Quote #: | Q62635 |
| Job #: | ECA22YT00199 |
| PO / AFE: | Teck PO-10289 |
| LSD: | |

ALS Lab Work Order # (lab use only)

**Report Format / Distribution**

Select Report Format:
Quality Control (QC) Report with Report
Select Distribution:

| | |
|---|---|
| Email 1 or Fax | azheng@ensero.com, kgardner@ensero.com |
| Email 2 | wendy.mcbain@teck.com, colin.lynch@teck.com |
| Email 3 | chanson@ensero.com,teckkimb@equisonline.com |

**Invoice Distribution**

Select Invoice Distribution:

| | |
|---|---|
| Email 1 or Fax | Michelle.unger@teck.com |
| Email 2 | legacy.ap@teck.com |

**Oil and Gas Required Fields (client use)**

| | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |

ALS Contact: Can Dang    Sampler: Wes Moir

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R]

PRIORITY (Business Days): 4 day [P4] / 3 day [P3] / 2 day [P2]

EMERGENCY: 1 Business day [E1] / Same Day, Weekend or Statutory holiday [E0]

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

**Analysis Request**

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Sample Location (SYS_LOC_CODE) | Date (dd-mmm-yy) | Time (hh:mm) | Field Matrix | Total Metals (low level) + Hg | Dissolved Metals (low level) +Hg | pH, SPC, alkalinity, hardness | Anions( Nitrate, Nitrite, Sulphate, Cl, F, Br) | Ammonia | TDS, TSS(low) | Chromium Speciation | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | P | F/P | | P | P | | P | |
| | SD_MH-02_2022-12-05 | SD_MH-02 | 1-Dec-22 | 17:20 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-04_2022-12-05 | SD_MH-04 | 4-Dec-22 | 11:10 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-11_2022-12-05 | SD_MH-11 | 4-Dec-22 | 13:20 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-12_2022-12-05 | SD_MH-12 | 1-Dec-22 | 16:30 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-13_2022-12-05 | SD_MH-13 | 3-Dec-22 | 13:20 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-15_2022-12-05 | SD_MH-15 | 3-Dec-22 | 11:50 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-22_2022-12-05 | SD_MH-22 | 4-Dec-22 | 9:50 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-29_2022-12-05 | SD_MH-29 | 4-Dec-22 | 14:00 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-30_2022-12-05 | SD_MH-30 | 4-Dec-22 | 14:10 | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-FB_2022-12-05 | SD_MH-FB | 3-Dec-22 | | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-FD_2022-12-05 | SD_MH-FD | 3-Dec-22 | | WS | R | R | R | R | R | R | R | 7 |
| | SD_MH-TB_2022-12-05 | SD_MH-TB | | | WS | R | R | R | R | R | R | R | 5 |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System?

Are samples for human drinking water use?

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐    SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☐    Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

| INITIAL COOLER TEMPERATURES °C | | | FINAL COOLER TEMPERATURES °C |
|---|---|---|---|
| 6 | 6 | 8 | |

| SHIPMENT RELEASE (client use) | | |
|---|---|---|
| Released by: Wes Moir | Date: 5-Dec-22 | Time: 3:15 |

| INITIAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|
| Received by: | Date: DEC 5 | Time: 300 |

| FINAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|
| Received by: | Date: | Time: |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY    YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

OCTOBER 2015 FRONT

# Appendix D:

# 2022 Water Quality Results

| | | MW13-06 | | | | MW13-13 | | | | MW13-01 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Burwick 1200 Portal | | | | Downgradient of 1380 Portal | | | | Jewelbox/Main Zone - in 1360 Gully, downgradient of 1380 Portal | | | |
| | | 08/Feb/22 | 29/Jun/22 | 10/Aug/22 | 25/Oct/22 | 08/Feb/22 | 29/Jun/22 | 10/Aug/22 | 25/Oct/22 | 10/Feb/22 | 29/Jun/22 | 10/Aug/22 | 28/Oct/22 |
| **Ground Water Elevation** | masl | Site Inaccessible | 1185.46 | 1182.18 | 1179.88 | Site Inaccessible | 1252.32 | 1245.89 | 1246.04 | 1180.45 | 1182.72 | 1180.88 | 1180.7 |
| **Temperature - Field** | C | | 5.7 | 4.2 | 2.4 | | 2.1 | 2.6 | 8 | 2.3 | 4.1 | 4.7 | 3.4 |
| **pH - Field** | pH | | 7.03 | 6.75 | 8.53 | | 7.99 | 8.02 | 7.87 | 7.4 | 7.84 | 7.16 | 0.53 |
| **pH - Lab** | pH | | 8.2 | 7.27 | 7.72 | | 8.09 | 7.75 | 7.84 | 7.8 | 8.33 | 7.64 | 7.93 |
| **Hardness (Dissolved, CaCO3)** | mg/L | | 406 | 411 | 453 | | 94.2 | 124 | 128 | 169 | 158 | 155 | 154 |
| **Conductivity - Field** | µS/cm | | 788.4 | 814.9 | 680 | | 196.8 | 266.6 | 258.9 | 287.9 | 304.9 | 294.7 | 320.3 |
| **Conductivity - Lab** | µS/cm | | 794 | 825 | 805 | | 199 | 271 | 248 | 307 | 312 | 307 | 288 |
| **Ammonia Nitrogen** | mg/L | | 0.0172 | 0.0164 | 0.0174 | | 0.0058 | 0.0233 | 0.221 | <0.0050 | <0.0050 | <0.0050 | 0.0064 |
| **Nitrite** | mg/L | | <0.0050 | <0.0050 | <0.0050 | | <0.0010 | 0.0031 | 0.0123 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **Nitrate** | mg/L | | <0.0250 | <0.0250 | <0.0250 | | 0.137 | 0.313 | 0.552 | 0.289 | 0.29 | 0.223 | 0.245 |
| **Sulphate** | mg/L | | 253 | 258 | 299 | | 20.1 | 43.4 | 24.6 | 11.1 | 13.1 | 9.36 | 10.8 |
| **Fluoride** | mg/L | | 0.486 | | | | 0.105 | | | 0.346 | 0.44 | | |
| **Chloride** | mg/L | | <2.50 | | | | <0.50 | | | <0.50 | <0.50 | | |
| **Bromide** | mg/L | | <0.250 | <0.250 | <0.250 | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **Dissolved Oxygen** | % | | 34 | 30 | 28.2 | | 89.7 | 82.1 | 107.7 | 63.3 | 63.8 | 64.1 | 74.8 |
| **Dissolved Oxygen** | mg/L | | 3.95 | 3.12 | 3.88 | | 13.61 | 10.96 | 12.87 | 8.47 | 8.27 | 8.21 | 9.81 |
| **ORP** | mV | | 113.6 | 60.6 | -121.8 | | 1132.3 | 239.9 | 17.1 | 108.3 | 131.4 | 187.2 | 80.3 |
| **Alkalinity (CaCO3)** | mg/L | | 187 | 176 | 164 | | 80.1 | 85.5 | 105 | 151 | 154 | 144 | 139 |
| **Dissolved Arsenic** | mg/L | | 0.0447 | 0.0488 | 0.0456 | | 0.00071 | 0.00053 | 0.00055 | 0.00038 | 0.00071 | 0.00048 | 0.00032 |
| **Dissolved Silver** | mg/L | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Dissolved Aluminum** | mg/L | | 0.0022 | 0.0013 | 0.002 | | 0.011 | 0.0151 | 0.024 | 0.0041 | 0.0036 | 0.0013 | 0.0016 |
| **Dissolved Barium** | mg/L | | 0.0234 | 0.0237 | 0.025 | | 0.0129 | 0.0274 | 0.0148 | 0.022 | 0.018 | 0.0191 | 0.019 |
| **Dissolved Beryllium** | mg/L | | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **Dissolved Boron** | mg/L | | | | | | | | | | | | |
| **Dissolved Bismuth** | mg/L | | <0.000050 | <0.000050 | <0.000050 | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **Dissolved Calcium** | mg/L | | 144 | 146 | 161 | | 35.4 | 46.6 | 48 | 61.2 | 55.8 | 55.8 | 56.2 |
| **Dissolved Cadmium** | mg/L | | 0.000059 | 0.0000962 | 0.0000671 | | 0.00207 | 0.000938 | 0.000955 | 0.00074 | 0.000273 | 0.00059 | 0.00057 |
| **Dissolved Cobalt** | mg/L | | 0.00238 | 0.00264 | 0.00256 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **Dissolved Chromium** | mg/L | | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **Dissolved Copper** | mg/L | | <0.00020 | 0.00108 | <0.00020 | | 0.00157 | 0.00323 | 0.00235 | <0.00020 | 0.00025 | <0.00020 | <0.00020 |
| **Dissolved Iron** | mg/L | | 0.507 | 0.518 | 0.5 | | 0.023 | 0.018 | 0.033 | <0.010 | <0.010 | <0.010 | <0.010 |
| **Dissolved Mercury** | mg/L | | <0.0000050 | <0.0000050 | <0.0000050 | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **Dissolved Potassium** | mg/L | | 2.18 | 2 | 2.05 | | 0.58 | 0.869 | 0.772 | 0.637 | 0.627 | 0.663 | 0.585 |
| **Dissolved Lithium** | mg/L | | 0.0084 | 0.0077 | 0.0076 | | <0.0010 | <0.0010 | <0.0010 | 0.0014 | 0.0027 | 0.0014 | 0.0013 |
| **Dissolved Magnesium** | mg/L | | 11.3 | 11.2 | 12.3 | | 1.41 | 1.87 | 1.92 | 3.93 | 4.5 | 3.86 | 3.42 |
| **Dissolved Manganese** | mg/L | | 0.311 | 0.306 | 0.315 | | 0.00231 | 0.00124 | 0.00133 | 0.00148 | 0.00034 | 0.0003 | 0.00018 |
| **Dissolved Molybdenum** | mg/L | | 0.034 | 0.0342 | 0.0333 | | 0.00021 | 0.000394 | 0.000346 | 0.000659 | 0.00157 | 0.000778 | 0.000699 |
| **Dissolved Sodium** | mg/L | | 5.24 | 4.81 | 5.15 | | 0.521 | 0.898 | 0.713 | 0.764 | 0.962 | 0.741 | 0.693 |
| **Dissolved Nickel** | mg/L | | 0.029 | 0.0286 | 0.0294 | | <0.00050 | 0.00082 | 0.00054 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **Dissolved Lead** | mg/L | | 0.000399 | 0.000053 | 0.000086 | | 0.00278 | 0.000752 | 0.000737 | 0.00154 | 0.000928 | 0.000868 | 0.001 |
| **Dissolved Phosphorus** | mg/L | | 0.146 | 0.167 | 0.159 | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **Dissolved Antimony** | mg/L | | 0.00015 | 0.00021 | 0.00015 | | 0.00012 | 0.00017 | 0.00014 | 0.00012 | 0.00021 | 0.00014 | 0.00011 |
| **Dissolved Sulphur** | mg/L | | 93.5 | 96.6 | 95.6 | | 7.98 | 15.9 | 7.64 | 3.85 | 5.01 | 3.87 | 3.36 |
| **Dissolved Selenium** | mg/L | | 0.000066 | <0.000050 | <0.000050 | | 0.000626 | 0.00135 | 0.000644 | 0.00157 | 0.00121 | 0.00122 | 0.00117 |

| | | MW13-06 | | | | MW13-13 | | | | MW13-01 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Burwick 1200 Portal | | | | Downgradient of 1380 Portal | | | | Jewelbox/Main Zone - in 1360 Gully, downgradient of 1380 Portal | | | |
| | | 08/Feb/22 | 29/Jun/22 | 10/Aug/22 | 25/Oct/22 | 08/Feb/22 | 29/Jun/22 | 10/Aug/22 | 25/Oct/22 | 10/Feb/22 | 29/Jun/22 | 10/Aug/22 | 28/Oct/22 |
| **Dissolved Silicon** | mg/L | | 16.4 | 15.4 | 14 | | 2.02 | 2.39 | 2.35 | 3.32 | 4.31 | 3.5 | 3.15 |
| **Dissolved Tin** | mg/L | | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | 0.00015 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **Dissolved Strontium** | mg/L | | 0.518 | 0.517 | 0.545 | | 0.0659 | 0.0848 | 0.0795 | 0.177 | 0.23 | 0.178 | 0.151 |
| **Dissolved Titanium** | mg/L | | <0.00030 | <0.00030 | <0.00030 | | 0.0003 | <0.00030 | 0.00079 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **Dissolved Thallium** | mg/L | Site Inaccessible | 0.000013 | 0.000017 | 0.000014 | Site Inaccessible | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Dissolved Uranium** | mg/L | | 0.0123 | 0.0126 | 0.0122 | | 0.000233 | 0.000521 | 0.000453 | 0.000867 | 0.00186 | 0.000986 | 0.000941 |
| **Dissolved Vanadium** | mg/L | | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **Dissolved Zinc** | mg/L | | 0.107 | 0.127 | 0.116 | | 0.0617 | 0.0226 | 0.0218 | 0.031 | 0.0094 | 0.0197 | 0.0209 |
| **Dissolved Zirconium** | mg/L | | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Acenaphthene** | mg/L | | | | | | | | | | | | |
| **Acenaphthylene** | mg/L | | | | | | | | | | | | |
| **Acridine** | mg/L | | | | | | | | | | | | |
| **Anthracene** | mg/L | | | | | | | | | | | | |
| **Benz(a)anthracene** | mg/L | | | | | | | | | | | | |
| **Benzene** | mg/L | | | | | | | | | | | | |
| **Benzo(a)pyrene** | mg/L | | | | | | | | | | | | |
| **2-Methylnaphthalene** | mg/L | | | | | | | | | | | | |
| **Benzo(b,j)fluoranthene** | mg/L | | | | | | | | | | | | |
| **Benzo(g,h,i)perylene** | mg/L | | | | | | | | | | | | |
| **VPH (C6-C10)** | mg/L | | | | | | | | | | | | |
| **Benzo(k)fluoranthene** | mg/L | | | | | | | | | | | | |
| **Methyl t-butyl ether** | mg/L | | | | | | | | | | | | |
| **Xylenes, total** | mg/L | | | | | | | | | | | | |
| **1-Methylnaphthalene** | mg/L | | | | | | | | | | | | |
| **Dibenz(a,h)anthracene** | mg/L | | | | | | | | | | | | |
| **HEPH** | mg/L | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable |
| **Fluorene** | mg/L | | | | | | | | | | | | |
| **Fluoranthene** | mg/L | | | | | | | | | | | | |
| **Ethylbenzene** | mg/L | | | | | | | | | | | | |
| **EPH19-32** | mg/L | | | | | | | | | | | | |
| **Chrysene** | mg/L | | | | | | | | | | | | |
| **EPH10-19** | mg/L | | | | | | | | | | | | |
| **Pyrene** | mg/L | | | | | | | | | | | | |
| **Volatile Hydroc (VH6-10)** | mg/L | | | | | | | | | | | | |
| **Toluene** | mg/L | | | | | | | | | | | | |
| **Quinoline** | mg/L | | | | | | | | | | | | |
| **LEPH** | mg/L | | | | | | | | | | | | |
| **Phenanthrene** | mg/L | | | | | | | | | | | | |
| **ortho-Xylene** | mg/L | | | | | | | | | | | | |
| **Naphthalene** | mg/L | | | | | | | | | | | | |
| **meta- & para-Xylene** | mg/L | | | | | | | | | | | | |
| **Styrene** | mg/L | | | | | | | | | | | | |
| **Indeno(1,2,3-c,d)pyrene** | mg/L | | | | | | | | | | | | |

| | | MW13-08 | | | | MW14-01 | | | | MW14-02 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Downgradient of 1380 Portal | | | | In proximity of the landfill | | | | In proximity of the landfill | | | |
| | | 07/Feb/22 | 28/Jun/22 | 08/Aug/22 | 28/Oct/22 | 09/Feb/22 | 30/Jun/22 | 09/Aug/22 | 26/Oct/22 | 09/Feb/22 | 30/Jun/22 | 09/Aug/22 | 25/Oct/22 |
| **Ground Water Elevation** | masl | 1130.82 | 1134.55 | 1131.67 | 1130.23 | 1014.59 | 1018.14 | 1017.18 | 1015.31 | | 1020.74 | 1020.56 | 1019.32 |
| **Temperature - Field** | C | 2.8 | 4.2 | 6.6 | 2 | | 4.8 | 5.1 | 3.9 | | 5 | 6.7 | 3.4 |
| **pH - Field** | pH | 7.36 | 7.55 | 7.04 | -1.04 | | 7.5 | 7.41 | 7.55 | | 8.13 | 7.64 | 8.38 |
| **pH - Lab** | pH | 7.89 | 8.09 | 7.55 | 7.74 | | 8.1 | 7.64 | 7.99 | | 8.28 | 8.07 | 8.11 |
| **Hardness (Dissolved, CaCO3)** | mg/L | 351 | 206 | 244 | 318 | | 264 | 250 | 217 | | 165 | 187 | 208 |
| **Conductivity - Field** | µS/cm | 2873 | 411.6 | 478.6 | 572 | | 471.4 | 494.3 | 344.4 | | 386.1 | 381.6 | 304 |
| **Conductivity - Lab** | µS/cm | 579 | 393 | 485 | 552 | | 447 | 465 | 389 | | 375 | 385 | 351 |
| **Ammonia Nitrogen** | mg/L | 0.0056 | 0.0207 | 0.0192 | 0.0084 | | 0.0138 | 0.0241 | 0.0165 | | 0.0342 | 0.0255 | 0.035 |
| **Nitrite** | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | 0.0012 |
| **Nitrate** | mg/L | 0.315 | 0.387 | 0.226 | 0.0753 | | 0.3 | 0.313 | 0.175 | | 0.173 | 0.167 | 0.124 |
| **Sulphate** | mg/L | 19.7 | 7.76 | 7.62 | 16.9 | | 6.75 | 4.27 | 3.28 | | 5.62 | 5.33 | 4.84 |
| **Fluoride** | mg/L | 0.055 | 0.063 | | | | 0.066 | | | | 0.077 | | |
| **Chloride** | mg/L | 0.58 | <0.50 | | | | <0.50 | | | | <0.50 | | |
| **Bromide** | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | | <0.050 | <0.050 | <0.050 | | <0.050 | <0.050 | <0.050 |
| **Dissolved Oxygen** | % | 46.8 | 82.2 | 1520 | 35 | | 77.2 | 74 | 107.2 | | 78.8 | 81.3 | 96 |
| **Dissolved Oxygen** | mg/L | 5.68 | 99.5 | 183 | 4.57 | | 9.77 | 9.31 | 14.06 | | 10.12 | 10 | 12.75 |
| **ORP** | mV | 137.2 | 120.6 | 238.4 | 92.5 | | 178.7 | 218.7 | 55.7 | | 167.2 | 180.7 | -14 |
| **Alkalinity (CaCO3)** | mg/L | 306 | 212 | 250 | 281 | | 240 | 244 | 212 | | 200 | 203 | 245 |
| **Dissolved Arsenic** | mg/L | 0.00028 | 0.00048 | 0.00025 | 0.00027 | | 0.00062 | 0.00029 | 0.00025 | | 0.00078 | 0.00072 | 0.0006 |
| **Dissolved Silver** | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Dissolved Aluminum** | mg/L | 0.0276 | 0.007 | 0.002 | 0.0018 | | 0.15 | 0.0183 | 0.0053 | | 0.0076 | 0.005 | 0.0062 |
| **Dissolved Barium** | mg/L | 0.233 | 0.1 | 0.159 | 0.242 | | 0.255 | 0.27 | 0.161 | | 0.177 | 0.278 | 0.313 |
| **Dissolved Beryllium** | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | Dry at sample location. | <0.000020 | <0.000020 | <0.000020 | Dry at sample location. | <0.000020 | <0.000020 | <0.000020 |
| **Dissolved Boron** | mg/L | | | | | | | | | | | | |
| **Dissolved Bismuth** | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | | <0.000050 | <0.000050 | <0.000050 | | <0.000050 | <0.000050 | <0.000050 |
| **Dissolved Calcium** | mg/L | 121 | 71.3 | 83.3 | 109 | | 84.2 | 80.8 | 70.7 | | 52.9 | 60.1 | 67.7 |
| **Dissolved Cadmium** | mg/L | 0.0000604 | 0.0000655 | 0.000056 | 0.0000562 | | 0.0000709 | 0.0000371 | 0.000032 | | 0.0000183 | 0.0000222 | 0.0000279 |
| **Dissolved Cobalt** | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | 0.00022 | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 |
| **Dissolved Chromium** | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | 0.00093 | 0.00066 | 0.00066 | | 0.00107 | 0.00115 | 0.00134 |
| **Dissolved Copper** | mg/L | 0.00102 | 0.00083 | 0.00039 | 0.00021 | | 0.00066 | 0.00112 | 0.00044 | | 0.00626 | 0.00058 | 0.00046 |
| **Dissolved Iron** | mg/L | 0.055 | 0.013 | <0.010 | <0.010 | | 0.238 | 0.037 | <0.010 | | <0.010 | <0.010 | 0.011 |
| **Dissolved Mercury** | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | | <0.0000050 | <0.0000050 | <0.0000050 | | <0.0000050 | <0.0000050 | <0.0000050 |
| **Dissolved Potassium** | mg/L | 0.761 | 0.71 | 0.609 | 0.704 | | 0.793 | 0.707 | 0.558 | | 1.01 | 0.698 | 0.573 |
| **Dissolved Lithium** | mg/L | 0.0022 | 0.0011 | 0.0016 | 0.0019 | | 0.0016 | 0.0015 | 0.0011 | | 0.0012 | 0.0013 | 0.0014 |
| **Dissolved Magnesium** | mg/L | 11.9 | 6.86 | 8.86 | 11.2 | | 13 | 11.6 | 9.79 | | 7.96 | 8.98 | 9.49 |
| **Dissolved Manganese** | mg/L | 0.00189 | 0.00264 | 0.00051 | 0.00016 | | 0.0146 | 0.00131 | 0.00044 | | 0.00053 | 0.00042 | 0.00051 |
| **Dissolved Molybdenum** | mg/L | 0.000755 | 0.00144 | 0.000675 | 0.00111 | | 0.00166 | 0.00132 | 0.00191 | | 0.00331 | 0.00149 | 0.000751 |
| **Dissolved Sodium** | mg/L | 1.3 | 1.9 | 0.941 | 1.24 | | 2.36 | 2.27 | 1.12 | | 19.8 | 6.84 | 0.948 |
| **Dissolved Nickel** | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 | | 0.00058 | <0.00050 | <0.00050 |
| **Dissolved Lead** | mg/L | 0.000141 | 0.000502 | <0.000050 | <0.000050 | | 0.000846 | 0.00009 | 0.000086 | | 0.000293 | 0.000127 | 0.00009 |
| **Dissolved Phosphorus** | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | | <0.050 | <0.050 | <0.050 | | <0.050 | <0.050 | <0.050 |
| **Dissolved Antimony** | mg/L | 0.00018 | 0.00017 | 0.00015 | 0.00015 | | 0.00018 | 0.00017 | 0.00014 | | 0.00032 | 0.00024 | 0.0002 |
| **Dissolved Sulphur** | mg/L | 7.6 | 3.02 | 3.4 | 5.91 | | 2.95 | 2.71 | 1.11 | | 2.54 | 2.33 | 1.59 |
| **Dissolved Selenium** | mg/L | 0.00155 | 0.000573 | 0.00114 | 0.00137 | | 0.000735 | 0.000837 | 0.00121 | | 0.000293 | 0.000238 | 0.000215 |

| | | MW13-08 | | | | MW14-01 | | | | MW14-02 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Downgradient of 1380 Portal | | | | In proximity of the landfill | | | | In proximity of the landfill | | | |
| | | 07/Feb/22 | 28/Jun/22 | 08/Aug/22 | 28/Oct/22 | 09/Feb/22 | 30/Jun/22 | 09/Aug/22 | 26/Oct/22 | 09/Feb/22 | 30/Jun/22 | 09/Aug/22 | 25/Oct/22 |
| **Dissolved Silicon** | mg/L | 4.23 | 3.87 | 4.06 | 4.19 | | 5.95 | 5.58 | 4.74 | | 4.81 | 4.78 | 4.28 |
| **Dissolved Tin** | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 |
| **Dissolved Strontium** | mg/L | 0.39 | 0.235 | 0.283 | 0.354 | | 0.287 | 0.278 | 0.235 | | 0.168 | 0.188 | 0.205 |
| **Dissolved Titanium** | mg/L | 0.00111 | <0.00030 | <0.00030 | <0.00030 | | 0.00497 | <0.00060 | <0.00030 | | <0.00030 | <0.00030 | <0.00030 |
| **Dissolved Thallium** | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Dissolved Uranium** | mg/L | 0.00187 | 0.00126 | 0.00126 | 0.00182 | | 0.00138 | 0.00122 | 0.00099 | | 0.00104 | 0.000836 | 0.000848 |
| **Dissolved Vanadium** | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | 0.00065 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 |
| **Dissolved Zinc** | mg/L | 0.0034 | 0.0068 | <0.0010 | <0.0010 | | 0.0042 | 0.0016 | <0.0010 | | 0.002 | <0.0010 | 0.0028 |
| **Dissolved Zirconium** | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 |
| **Acenaphthene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Acenaphthylene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Acridine** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Anthracene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Benz(a)anthracene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Benzene** | mg/L | | | | | | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 |
| **Benzo(a)pyrene** | mg/L | | | | | | <0.0000050 | <0.0000050 | <0.0000050 | | <0.0000050 | <0.0000050 | <0.0000050 |
| **2-Methylnaphthalene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Benzo(b,j)fluoranthene** | mg/L | | | | | | | | | | | | |
| **Benzo(g,h,i)perylene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **VPH (C6-C10)** | mg/L | | | | | | <0.1 | <0.1 | <0.1 | | <0.1 | <0.1 | <0.1 |
| **Benzo(k)fluoranthene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Methyl t-butyl ether** | mg/L | | | | | Dry at sample location. | <0.00050 | <0.00050 | <0.00050 | Dry at sample location. | <0.00050 | <0.00050 | <0.00050 |
| **Xylenes, total** | mg/L | | | | | | | | | | | | |
| **1-Methylnaphthalene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Dibenz(a,h)anthracene** | mg/L | | | | | | <0.0000050 | <0.0000050 | <0.0000050 | | <0.0000050 | <0.0000050 | <0.0000050 |
| **HEPH** | mg/L | Not Applicable | Not Applicable | Not Applicable | Not Applicable | | | | | | | | |
| **Fluorene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Fluoranthene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Ethylbenzene** | mg/L | | | | | | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 |
| **EPH19-32** | mg/L | | | | | | <0.25 | 0.29 | <0.25 | | <0.25 | <0.25 | <0.25 |
| **Chrysene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **EPH10-19** | mg/L | | | | | | <0.25 | <0.25 | <0.25 | | <0.25 | <0.25 | <0.25 |
| **Pyrene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| **Volatile Hydroc (VH6-10)** | mg/L | | | | | | <0.1 | <0.1 | <0.1 | | <0.1 | <0.1 | <0.1 |
| **Toluene** | mg/L | | | | | | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 |
| **Quinoline** | mg/L | | | | | | <0.000050 | <0.000050 | <0.000050 | | <0.000050 | <0.000050 | <0.000050 |
| **LEPH** | mg/L | | | | | | <0.25 | <0.25 | <0.25 | | <0.25 | <0.25 | <0.25 |
| **Phenanthrene** | mg/L | | | | | | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | <0.000020 | <0.000020 |
| **ortho-Xylene** | mg/L | | | | | | <0.00030 | <0.00030 | <0.00030 | | <0.00030 | <0.00030 | <0.00030 |
| **Naphthalene** | mg/L | | | | | | <0.000050 | <0.000050 | <0.000050 | | <0.000050 | <0.000050 | <0.000050 |
| **meta- & para-Xylene** | mg/L | | | | | | <0.00040 | <0.00040 | <0.00040 | | <0.00040 | <0.00040 | <0.00040 |
| **Styrene** | mg/L | | | | | | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 |
| **Indeno(1,2,3-c,d)pyrene** | mg/L | | | | | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |

| | | MW14-03 | | | | MW14-04 | | | | MW13-04 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | In proximity of the landfill | | | | In proximity of the landfill | | | | Main Access Road | | | |
| | | 09/Feb/22 | 27/Jun/23 | 09/Aug/22 | 25/Oct/22 | 09/Feb/22 | 30/Jun/22 | 09/Aug/22 | 25/Oct/22 | 10/Feb/22 | 28/Jun/22 | 08/Aug/22 | 25/Oct/22 |
| **Ground Water Elevation** | masl | Dry at sample location. | Dry at sample location. | 1036.4 | 1035.12 | 1020.76 | 1022.4 | 1021.77 | 1021.53 | Dry at sample location. | 1194.58 | 1182.3 | Dry at sample location. |
| **Temperature - Field** | C | | | 6.9 | 8 | 4.4 | 5.1 | 5.4 | 4.2 | | 3.4 | 5.2 | |
| **pH - Field** | pH | | | 6.96 | 7.08 | 7.98 | 8.21 | 7.93 | 7.79 | | 7.95 | 7.5 | |
| **pH - Lab** | pH | | | 7.44 | 7.74 | 8.21 | 8.33 | 7.92 | 8.25 | | 8.27 | 7.89 | |
| **Hardness (Dissolved, CaCO3)** | mg/L | | | 428 | 319 | 168 | 145 | 166 | 171 | | 124 | 178 | |
| **Conductivity - Field** | µS/cm | | | 848 | 494 | 272.7 | 281 | 333 | 260.4 | | 228.7 | 301.9 | |
| **Conductivity - Lab** | µS/cm | | | 846 | 564 | 294 | 312 | 317 | 307 | | 235 | 306 | |
| **Ammonia Nitrogen** | mg/L | | | 0.0102 | 0.0149 | 0.0136 | 0.0162 | 0.0112 | 0.017 | | 0.0112 | 0.0751 | |
| **Nitrite** | mg/L | | | <0.0050 | 0.0034 | <0.0010 | <0.0010 | <0.0010 | 0.0051 | | <0.0010 | <0.0010 | |
| **Nitrate** | mg/L | | | 0.524 | 0.154 | 0.144 | 0.161 | 0.178 | 0.219 | | 0.217 | 0.376 | |
| **Sulphate** | mg/L | | | 90.1 | 19.8 | 3.77 | 3.32 | 4.45 | 7.29 | | 4 | 4.28 | |
| **Fluoride** | mg/L | | | | | 0.041 | 0.038 | | | | 0.059 | | |
| **Chloride** | mg/L | | | | | <0.50 | <0.50 | | | | <0.50 | | |
| **Bromide** | mg/L | | | <0.250 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | | <0.050 | <0.050 | |
| **Dissolved Oxygen** | % | | | 35 | 57.9 | 57.9 | 728 | 91.4 | 85.8 | | | 123.3 | |
| **Dissolved Oxygen** | mg/L | | | 4.21 | 6.19 | 6.76 | 9.11 | 11.41 | 11.16 | | | 153.61 | |
| **ORP** | mV | | | 163.3 | 43 | 81.6 | 148.7 | 193.9 | 62.3 | | 111.4 | 238.8 | |
| **Alkalinity (CaCO3)** | mg/L | | | 373 | 270 | 160 | 174 | 173 | 167 | | 121 | 153 | |
| **Dissolved Arsenic** | mg/L | | | 0.00015 | 0.00014 | 0.00048 | 0.00045 | 0.00039 | 0.00038 | | 0.00099 | 0.00242 | |
| **Dissolved Silver** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | 0.000102 | |
| **Dissolved Aluminum** | mg/L | | | 0.0018 | 0.0076 | 0.0087 | 0.0084 | 0.0041 | 0.0046 | | 0.0046 | 1.15 | |
| **Dissolved Barium** | mg/L | | | 0.175 | 0.114 | 0.0858 | 0.0827 | 0.105 | 0.102 | | 0.03 | 0.146 | |
| **Dissolved Beryllium** | mg/L | | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | 0.000203 | |
| **Dissolved Boron** | mg/L | | | | | | | | | | | | |
| **Dissolved Bismuth** | mg/L | | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | | <0.000050 | <0.000050 | |
| **Dissolved Calcium** | mg/L | | | 147 | 111 | 57.6 | 49.1 | 56.7 | 58.5 | | 45.4 | 62.6 | |
| **Dissolved Cadmium** | mg/L | | | 0.000453 | 0.000256 | 0.0000072 | 0.000032 | 0.0000201 | 0.0000376 | | 0.000411 | 0.000621 | |
| **Dissolved Cobalt** | mg/L | | | 0.0001 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | 0.00542 | |
| **Dissolved Chromium** | mg/L | | | <0.00050 | 0.00054 | 0.00137 | 0.00147 | 0.00122 | 0.00145 | | <0.00050 | 0.00313 | |
| **Dissolved Copper** | mg/L | | | 0.00119 | 0.00082 | 0.00025 | 0.00131 | 0.00084 | 0.00109 | | 0.00032 | 0.0116 | |
| **Dissolved Iron** | mg/L | | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | | <0.010 | 3.57 | |
| **Dissolved Mercury** | mg/L | | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | | <0.0000050 | 0.0000461 | |
| **Dissolved Potassium** | mg/L | | | 1.2 | 0.824 | 0.596 | 0.895 | 0.685 | 0.633 | | 0.408 | 0.693 | |
| **Dissolved Lithium** | mg/L | | | 0.0014 | 0.0012 | 0.0013 | 0.0013 | 0.0012 | 0.0012 | | 0.0024 | 0.0026 | |
| **Dissolved Magnesium** | mg/L | | | 14.8 | 10.1 | 5.92 | 5.37 | 5.99 | 6.1 | | 2.64 | 5.35 | |
| **Dissolved Manganese** | mg/L | | | 0.0007 | 0.00087 | 0.00033 | 0.00076 | 0.00052 | 0.00056 | | 0.00021 | 0.222 | |
| **Dissolved Molybdenum** | mg/L | | | 0.000574 | 0.000669 | 0.000801 | 0.00149 | 0.000858 | 0.000714 | | 0.000649 | 0.000426 | |
| **Dissolved Sodium** | mg/L | | | 14.4 | 3.77 | 2.42 | 3.93 | 2.48 | 2.17 | | 0.573 | 1.04 | |
| **Dissolved Nickel** | mg/L | | | 0.0007 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | 0.00772 | |
| **Dissolved Lead** | mg/L | | | 0.000116 | 0.0001 | <0.000050 | 0.00124 | 0.000052 | 0.000068 | | 0.00086 | 0.051 | |
| **Dissolved Phosphorus** | mg/L | | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | | <0.050 | 0.231 | |
| **Dissolved Antimony** | mg/L | | | 0.00029 | 0.00028 | 0.00017 | 0.00021 | 0.00018 | 0.00016 | | 0.00027 | 0.0004 | |
| **Dissolved Sulphur** | mg/L | | | 34.8 | 11.2 | 1.76 | 1.14 | 1.86 | 2.89 | | 1.59 | 1.68 | |
| **Dissolved Selenium** | mg/L | | | 0.00103 | 0.00328 | 0.000506 | 0.000402 | 0.000586 | 0.00116 | | 0.00128 | 0.00114 | |

| | | MW14-03 | | | | MW14-04 | | | | MW13-04 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | In proximity of the landfill | | | | In proximity of the landfill | | | | Main Access Road | | | |
| | | 09/Feb/22 | 27/Jun/23 | 09/Aug/22 | 25/Oct/22 | 09/Feb/22 | 30/Jun/22 | 09/Aug/22 | 25/Oct/22 | 10/Feb/22 | 28/Jun/22 | 08/Aug/22 | 25/Oct/22 |
| **Dissolved Silicon** | mg/L | | | 5.12 | 4.2 | 3.99 | 4.18 | 3.89 | 3.52 | | 3.95 | 5.13 | |
| **Dissolved Tin** | mg/L | | | <0.00010 | 0.00022 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | |
| **Dissolved Strontium** | mg/L | | | 0.482 | 0.341 | 0.193 | 0.203 | 0.214 | 0.202 | | 0.109 | 0.173 | |
| **Dissolved Titanium** | mg/L | | | <0.00030 | 0.00052 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | | <0.00030 | 0.0223 | |
| **Dissolved Thallium** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | 0.000044 | |
| **Dissolved Uranium** | mg/L | | | 0.0019 | 0.00109 | 0.000433 | 0.000463 | 0.000451 | 0.000481 | | 0.00057 | 0.000933 | |
| **Dissolved Vanadium** | mg/L | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | 0.00483 | |
| **Dissolved Zinc** | mg/L | | | 0.0045 | 0.0046 | <0.0010 | 0.0031 | 0.0031 | 0.0025 | | 0.0068 | 0.138 | |
| **Dissolved Zirconium** | mg/L | | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | 0.0004 | |
| **Acenaphthene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **Acenaphthylene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **Acridine** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **Anthracene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **Benz(a)anthracene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **Benzene** | mg/L | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | |
| **Benzo(a)pyrene** | mg/L | | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | | <0.0000050 | <0.0000050 | |
| **2-Methylnaphthalene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **Benzo(b,j)fluoranthene** | mg/L | | | | | | | | | | | | |
| **Benzo(g,h,i)perylene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **VPH (C6-C10)** | mg/L | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | | <0.1 | <0.1 | |
| **Benzo(k)fluoranthene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **Methyl t-butyl ether** | mg/L | Dry at sample location. | Dry at sample location. | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | Dry at sample location. | <0.00050 | <0.00050 | Dry at sample location. |
| **Xylenes, total** | mg/L | | | | | | | | | | | | |
| **1-Methylnaphthalene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **Dibenz(a,h)anthracene** | mg/L | | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | | <0.0000050 | <0.0000050 | |
| **HEPH** | mg/L | | | | | | | | | | | | |
| **Fluorene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **Fluoranthene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **Ethylbenzene** | mg/L | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | |
| **EPH19-32** | mg/L | | | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 | | <0.25 | <0.25 | |
| **Chrysene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **EPH10-19** | mg/L | | | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 | | <0.25 | <0.25 | |
| **Pyrene** | mg/L | | | <0.000010 | <0.000010 | 0.000012 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |
| **Volatile Hydroc (VH6-10)** | mg/L | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | | <0.1 | <0.1 | |
| **Toluene** | mg/L | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | 0.00062 | |
| **Quinoline** | mg/L | | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | | <0.000050 | <0.000050 | |
| **LEPH** | mg/L | | | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 | | <0.25 | <0.25 | |
| **Phenanthrene** | mg/L | | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | <0.000020 | |
| **ortho-Xylene** | mg/L | | | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | | <0.00030 | <0.00030 | |
| **Naphthalene** | mg/L | | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | | <0.000050 | <0.000050 | |
| **meta- & para-Xylene** | mg/L | | | <0.00040 | <0.00040 | <0.00040 | <0.00040 | <0.00040 | <0.00040 | | <0.00040 | <0.00040 | |
| **Styrene** | mg/L | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | |
| **Indeno(1,2,3-c,d)pyrene** | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | |

| | | MW13-05 | | | | MW13-07 | | | | MW13-10 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Main Access Road - south of the Mill Site on the Main Access Road | | | | North Dam - north of the North Dam and Tailings Pond Area | | | | Mill Site - northeast of the Mill Site | | | |
| | | 08/Feb/22 | 29/Jun/22 | 08/Aug/22 | 25/Oct/22 | 09/Feb/22 | 28/Jun/22 | 09/Aug/22 | 26/Oct/22 | 10/Feb/22 | 29/Jun/22 | 10/Aug/22 | 28/Oct/22 |
| **Ground Water Elevation** | masl | | 1193.83 | 1191.15 | | 1093.46 | 1095.13 | 1094.13 | 1093.62 | 1115.3 | 1118.71 | 1115.75 | 1115.51 |
| **Temperature - Field** | C | | 3.1 | | | 3.1 | 4.7 | 4.1 | 3.1 | 2.1 | 3.9 | 4.2 | 5.9 |
| **pH - Field** | pH | | 7.84 | | | 7.47 | 7.55 | 7.59 | 7.53 | 7.52 | 7.79 | 7.19 | 7.68 |
| **pH - Lab** | pH | | 8.25 | | | 8.1 | 8.3 | 7.83 | 8.07 | 8.1 | 8.1 | 7.81 | 8.17 |
| **Hardness (Dissolved, CaCO3)** | mg/L | | 171 | | | 251 | 231 | 235 | 244 | 254 | 229 | 237 | 239 |
| **Conductivity - Field** | µS/cm | | 347.9 | | | 435.6 | 459 | 464.4 | 391.8 | 430.3 | 452.5 | 462.2 | 490 |
| **Conductivity - Lab** | µS/cm | | 358 | | | 457 | 451 | 480 | 443 | 450 | 429 | 474 | 440 |
| **Ammonia Nitrogen** | mg/L | | 0.0106 | | | 0.144 | 0.152 | 0.153 | 0.151 | 0.008 | 0.0151 | 0.0097 | 0.0097 |
| **Nitrite** | mg/L | | <0.0010 | | | 0.0019 | 0.0015 | 0.0028 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **Nitrate** | mg/L | | 1.63 | | | 0.0056 | <0.0050 | <0.0050 | <0.0050 | 0.51 | 0.516 | 0.469 | 0.506 |
| **Sulphate** | mg/L | | 55.4 | | | 29.4 | 30.9 | 30.4 | 31 | 35.6 | 28.6 | 35.3 | 36.6 |
| **Fluoride** | mg/L | | 0.061 | | | 0.294 | 0.293 | | | 0.058 | 0.049 | | |
| **Chloride** | mg/L | | <0.50 | | | <0.50 | <0.50 | | | <0.50 | <0.50 | | |
| **Bromide** | mg/L | | <0.050 | | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **Dissolved Oxygen** | % | | | | | 15.4 | 80.7 | 35 | 7.8 | 61.7 | 79 | 65.2 | 75 |
| **Dissolved Oxygen** | mg/L | | 12.72 | | | 2.03 | 13.9 | 4.55 | 0.97 | 8.48 | | 8.51 | 9.34 |
| **ORP** | mV | | 116.2 | | | -22.8 | -56.7 | -8.5 | -70.8 | 99.4 | | 176.4 | 30.5 |
| **Alkalinity (CaCO3)** | mg/L | | 125 | | | 224 | 226 | 232 | 206 | 211 | 206 | 211 | 205 |
| **Dissolved Arsenic** | mg/L | | 0.00064 | | | 0.00157 | 0.00156 | 0.00167 | 0.00155 | 0.00786 | 0.00109 | 0.00115 | 0.00116 |
| **Dissolved Silver** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000054 | <0.000010 | <0.000010 | <0.000010 |
| **Dissolved Aluminum** | mg/L | | 0.0034 | | | 0.0012 | 0.004 | 0.01 | 0.0071 | 0.879 | 0.0029 | 0.0024 | 0.0051 |
| **Dissolved Barium** | mg/L | | 0.0578 | | | 0.0403 | 0.0394 | 0.041 | 0.0412 | 0.0228 | 0.0118 | 0.00897 | 0.00802 |
| **Dissolved Beryllium** | mg/L | Dry at sample location. | <0.000020 | Not enough water to sample. | Dry at sample location. | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.00005 | <0.000020 | <0.000020 | <0.000020 |
| **Dissolved Boron** | mg/L | | | | | | | | | | | | |
| **Dissolved Bismuth** | mg/L | | <0.000050 | | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **Dissolved Calcium** | mg/L | | 62.4 | | | 72.5 | 66.2 | 67.2 | 70 | 87.4 | 77.8 | 81.4 | 81.9 |
| **Dissolved Cadmium** | mg/L | | 0.0000596 | | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | 0.0000649 | 0.000022 | 0.0000179 | 0.0000186 |
| **Dissolved Cobalt** | mg/L | | <0.00010 | | | <0.00010 | 0.0001 | <0.00010 | <0.00010 | 0.00069 | <0.00010 | <0.00010 | <0.00010 |
| **Dissolved Chromium** | mg/L | | <0.00050 | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.0021 | <0.00050 | <0.00050 | 0.00051 |
| **Dissolved Copper** | mg/L | | 0.00067 | | | <0.00020 | 0.00023 | 0.00022 | <0.00020 | 0.00266 | 0.00035 | 0.00052 | 0.00056 |
| **Dissolved Iron** | mg/L | | <0.010 | | | 0.674 | 0.675 | 0.674 | 0.561 | 0.984 | <0.010 | <0.010 | 0.01 |
| **Dissolved Mercury** | mg/L | | <0.0000050 | | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **Dissolved Potassium** | mg/L | | 0.626 | | | 2.82 | 3 | 2.87 | 2.81 | 1.33 | 1.07 | 1.15 | 1.06 |
| **Dissolved Lithium** | mg/L | | 0.0017 | | | 0.0095 | 0.0097 | 0.009 | 0.009 | 0.0025 | 0.0015 | 0.0016 | 0.0016 |
| **Dissolved Magnesium** | mg/L | | 3.73 | | | 17.1 | 16 | 16.4 | 16.7 | 8.75 | 8.44 | 8.27 | 8.32 |
| **Dissolved Manganese** | mg/L | | 0.00054 | | | 0.0922 | 0.174 | 0.114 | 0.0664 | 0.0168 | 0.00041 | 0.00041 | 0.00037 |
| **Dissolved Molybdenum** | mg/L | | 0.000774 | | | 0.00303 | 0.00302 | 0.00291 | 0.00288 | 0.00142 | 0.00168 | 0.00186 | 0.00183 |
| **Dissolved Sodium** | mg/L | | 0.888 | | | 4.61 | 4.72 | 5.2 | 4.39 | 1.89 | 1.96 | 1.89 | 1.89 |
| **Dissolved Nickel** | mg/L | | <0.00050 | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00165 | <0.00050 | <0.00050 | <0.00050 |
| **Dissolved Lead** | mg/L | | 0.000271 | | | <0.000050 | 0.000096 | <0.000050 | <0.000050 | 0.00536 | 0.000266 | 0.00012 | 0.00012 |
| **Dissolved Phosphorus** | mg/L | | <0.050 | | | <0.050 | <0.050 | <0.050 | <0.050 | 0.096 | <0.050 | <0.050 | <0.050 |
| **Dissolved Antimony** | mg/L | | 0.00032 | | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00024 | 0.00012 | 0.00012 | 0.00011 |
| **Dissolved Sulphur** | mg/L | | 19.8 | | | 10.6 | 11.7 | 11.4 | 9.85 | 12.6 | 11.3 | 13.5 | 12.3 |
| **Dissolved Selenium** | mg/L | | 0.00256 | | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | 0.00177 | 0.0015 | 0.00195 | 0.00178 |

| | | MW13-05 | | | | MW13-07 | | | | MW13-10 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Main Access Road - south of the Mill Site on the Main Access Road | | | | North Dam - north of the North Dam and Tailings Pond Area | | | | Mill Site - northeast of the Mill Site | | | |
| | | 08/Feb/22 | 29/Jun/22 | 08/Aug/22 | 25/Oct/22 | 09/Feb/22 | 28/Jun/22 | 09/Aug/22 | 26/Oct/22 | 10/Feb/22 | 29/Jun/22 | 10/Aug/22 | 28/Oct/22 |
| **Dissolved Silicon** | mg/L | | 4.89 | | | 7.61 | 8.32 | 8.17 | 7.28 | 5.7 | 4.5 | 4.17 | 3.93 |
| **Dissolved Tin** | mg/L | | <0.00010 | | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00021 | 0.00035 |
| **Dissolved Strontium** | mg/L | | 0.191 | | | 0.542 | 0.526 | 0.532 | 0.515 | 0.385 | 0.356 | 0.375 | 0.356 |
| **Dissolved Titanium** | mg/L | | <0.00030 | | | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.0366 | <0.00030 | <0.00030 | <0.00030 |
| **Dissolved Thallium** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000014 | <0.000010 | <0.000010 | <0.000010 |
| **Dissolved Uranium** | mg/L | | 0.000856 | | | 0.00637 | 0.00682 | 0.00673 | 0.00697 | 0.00295 | 0.00265 | 0.00291 | 0.00298 |
| **Dissolved Vanadium** | mg/L | | <0.00050 | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00301 | <0.00050 | <0.00050 | <0.00050 |
| **Dissolved Zinc** | mg/L | | 0.0023 | | | 0.0011 | 0.0015 | 0.0012 | <0.0010 | 0.0191 | 0.0019 | 0.0019 | 0.0026 |
| **Dissolved Zirconium** | mg/L | | <0.00020 | | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00080 | <0.00020 | <0.00020 | <0.00020 |
| **Acenaphthene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Acenaphthylene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Acridine** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Anthracene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Benz(a)anthracene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Benzene** | mg/L | | <0.00050 | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **Benzo(a)pyrene** | mg/L | | <0.0000050 | | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **2-Methylnaphthalene** | mg/L | | <0.000010 | | | 0.000013 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Benzo(b,j)fluoranthene** | mg/L | | | | | | | | | | | | |
| **Benzo(g,h,i)perylene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **VPH (C6-C10)** | mg/L | | <0.1 | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Benzo(k)fluoranthene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Methyl t-butyl ether** | mg/L | Dry at sample location. | <0.00050 | Not enough water to sample. | Dry at sample location. | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **Xylenes, total** | mg/L | | | | | | | | | | | | |
| **1-Methylnaphthalene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Dibenz(a,h)anthracene** | mg/L | | <0.0000050 | | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **HEPH** | mg/L | | | | | | | | | | | | |
| **Fluorene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Fluoranthene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Ethylbenzene** | mg/L | | <0.00050 | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **EPH19-32** | mg/L | | <0.25 | | | <0.25 | 1.18 | 2.62 | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 |
| **Chrysene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **EPH10-19** | mg/L | | <0.25 | | | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 | 0.44 | <0.25 |
| **Pyrene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Volatile Hydroc (VH6-10)** | mg/L | | <0.1 | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Toluene** | mg/L | | <0.00050 | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **Quinoline** | mg/L | | <0.000050 | | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **LEPH** | mg/L | | <0.25 | | | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 | 0.44 | <0.25 |
| **Phenanthrene** | mg/L | | <0.000020 | | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **ortho-Xylene** | mg/L | | <0.00030 | | | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **Naphthalene** | mg/L | | <0.000050 | | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **meta- & para-Xylene** | mg/L | | <0.00040 | | | <0.00040 | <0.00040 | <0.00040 | <0.00040 | <0.00040 | <0.00040 | <0.00040 | <0.00040 |
| **Styrene** | mg/L | | <0.00050 | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **Indeno(1,2,3-c,d)pyrene** | mg/L | | <0.000010 | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |

| | | MH-11 | | | | | | MH-12 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Camp Creek located 2km downstream of the Reclaim Pond (Upper False Creek Canyon). | | | | | | East fork of Tributary E — of false Canyon approximately 2 km downstream north tailings dam | | | | | |
| | | 09/Feb/22 | 06/Apr/22 | 30/Jun/22 | 10/Aug/22 | 26/Oct/22 | 04/Dec/22 | 05/Feb/22 | 05/Apr/22 | 27/Jun/22 | 09/Aug/22 | 25/Oct/22 | 01/Dec/22 |
| Total Hardness | mg/L | 242 | 246 | 167 | 187 | 210 | 201 | 190 | 192 | 138 | 160 | 181 | 167 |
| Hardness (Dissolved, CaCO3) | mg/L | 230 | 218 | 160 | 196 | 201 | 201 | 188 | 175 | 128 | 170 | 173 | 168 |
| Temperature - Field | C | 0.1 | 0.2 | 6.5 | 7.1 | 0.6 | -0.2 | 0 | 0.3 | 4.4 | 5.6 | 1.8 | -0.2 |
| pH - Field | pH | 7.95 | 7.9 | 8.32 | 8.2 | 9.28 | 8.17 | 8.11 | 8.07 | 8.38 | 8.3 | 8.28 | 8.22 |
| pH - Lab | pH | 8.32 | 8.36 | 8.36 | 8.23 | 8.39 | 8.25 | 8.29 | 8.42 | 8.28 | 8.3 | 8.4 | 8.22 |
| Conductivity - Field | µS/cm | 390.9 | 431 | 312 | 362.7 | 337.8 | 393.7 | 298.1 | 354.8 | 253 | 310.6 | 373.6 | 264.3 |
| Conductivity - Lab | µS/cm | 405 | 414 | 319 | 375 | 371 | 393 | 339 | 346 | 257 | 317 | 318 | 329 |
| Total Dissolved Solids | mg/L | 258 | 238 | 174 | 201 | 214 | 217 | 200 | 210 | 132 | 177 | 168 | 193 |
| Total Suspended Solids | mg/L | <1.0 | <1.0 | 2 | <1.0 | <1.0 | <1.0 | 4 | 2.8 | 5.1 | 1 | <1.0 | 5.1 |
| Discharge | L/min | 1330 | 990 | 18040 | 3680 | 1030 | 1220 | | | | | | |
| Ammonia Nitrogen | mg/L | <0.0050 | 0.0087 | 0.0124 | <0.0050 | 0.013 | 0.0064 | <0.0050 | <0.0050 | 0.01 | 0.0089 | 0.0058 | 0.012 |
| Nitrite | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Nitrate | mg/L | 0.123 | 0.158 | 0.138 | 0.0854 | 0.118 | 0.135 | 0.126 | 0.133 | 0.0936 | 0.0412 | 0.0579 | 0.0944 |
| Sulphate | mg/L | 14 | 14.3 | 12.4 | 12 | 14.4 | 15.6 | 10.6 | 11 | 5.72 | 7.93 | 8.84 | 9.52 |
| Fluoride | mg/L | 0.085 | 0.086 | 0.086 | | 0.081 | 0.091 | 0.109 | 0.109 | 0.082 | | 0.094 | 0.09 |
| Chloride | mg/L | <0.50 | <0.50 | <0.50 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | | <0.50 | 0.74 |
| Bromide | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Dissolved Oxygen | mg/L | 83.9 | 93.6 | 81.5 | 82.9 | 107.4 | 86.6 | 82.4 | | 96.9 | 73.1 | 77.4 | 80.4 |
| Dissolved Oxygen | % | 12.16 | 13.07 | 10.02 | 8.8 | 15.46 | 12.69 | 12.9 | | 19.5 | 9.25 | 8.94 | 10.22 |
| ORP | mV | 106 | 197.2 | 164.9 | 185.1 | 9.9 | 170.1 | 111.9 | 209.5 | 121.4 | 206.5 | 51.3 | 315.3 |
| Alkalinity (CaCO3) | mg/L | 215 | 217 | 161 | 211 | 190 | 197 | 171 | 181 | 134 | 162 | 164 | 164 |
| Total Silver | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000017 | <0.000010 |
| Total Aluminum | mg/L | 0.0056 | 0.0033 | 0.0291 | 0.0085 | 0.014 | 0.0065 | 0.0128 | 0.0085 | 0.102 | 0.0093 | 0.0074 | 0.0251 |
| Total Arsenic | mg/L | 0.00049 | 0.00046 | 0.00063 | 0.00062 | 0.00052 | 0.00044 | 0.00076 | 0.00066 | 0.00124 | 0.00087 | 0.00077 | 0.00067 |
| Total Barium | mg/L | 0.0754 | 0.072 | 0.0462 | 0.065 | 0.0608 | 0.0633 | 0.0785 | 0.0723 | 0.0505 | 0.0738 | 0.0737 | 0.071 |
| Total Beryllium | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Total Bismuth | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Total Boron | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Total Calcium | mg/L | 80.6 | 83 | 57.4 | 62.4 | 71.1 | 67.5 | 64.5 | 65.7 | 48 | 54.6 | 62.3 | 56.6 |
| Total Cadmium | mg/L | 0.0000525 | 0.000043 | 0.000107 | 0.0000691 | 0.0000535 | 0.0000413 | 0.0000522 | 0.0000392 | 0.0000799 | 0.000041 | 0.0000419 | 0.000049 |
| Total Cobalt | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00011 | <0.00010 | <0.00010 | <0.00010 |
| Total Chromium | mg/L | 0.00245 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Copper | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00054 | <0.00050 | <0.00050 | 0.00199 | <0.00050 | <0.00050 | 0.0176 |
| Total Iron | mg/L | 0.088 | 0.023 | 0.071 | 0.054 | 0.062 | 0.048 | 0.02 | 0.014 | 0.155 | 0.012 | <0.010 | 0.044 |
| Total Mercury | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Total Potassium | mg/L | 0.468 | 0.446 | 0.391 | 0.355 | 0.451 | 0.413 | 0.47 | 0.428 | 0.764 | 0.422 | 0.469 | 0.646 |
| Total Lithium | mg/L | 0.0023 | 0.002 | 0.0015 | 0.0017 | 0.0016 | 0.0017 | 0.0021 | 0.0014 | 0.0013 | 0.0015 | 0.0014 | 0.0014 |
| Total Magnesium | mg/L | 9.9 | 9.32 | 5.69 | 7.58 | 8.01 | 8 | 7.15 | 6.89 | 4.47 | 5.66 | 6.15 | 6.31 |
| Total Manganese | mg/L | 0.0103 | 0.00797 | 0.0083 | 0.00869 | 0.0121 | 0.0107 | 0.00143 | 0.00108 | 0.00979 | 0.00163 | 0.0012 | 0.00222 |
| Total Molybdenum | mg/L | 0.000867 | 0.00197 | 0.000735 | 0.000851 | 0.000824 | 0.000816 | 0.00142 | 0.00622 | 0.00102 | 0.0012 | 0.0013 | 0.0013 |
| Total Sodium | mg/L | 1.38 | 1.28 | 0.797 | 1.04 | 1.16 | 1.18 | 1.19 | 1.05 | 0.983 | 0.95 | 1.05 | 1.27 |
| Total Nickel | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00108 | <0.00050 | <0.00050 | <0.00050 |
| Total Lead | mg/L | 0.000154 | <0.000050 | 0.000908 | 0.000265 | 0.000234 | 0.000144 | 0.000313 | 0.000188 | 0.00194 | 0.000281 | 0.000084 | 0.00149 |
| Total Phosphorus | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Total Antimony | mg/L | 0.00014 | 0.00013 | 0.00023 | 0.00015 | 0.00012 | 0.00012 | 0.00021 | 0.00021 | 0.00032 | 0.00022 | 0.00022 | 0.00023 |
| Total Selenium | mg/L | 0.000733 | 0.000754 | 0.000672 | 0.000532 | 0.000636 | 0.000694 | 0.000862 | 0.000737 | 0.000658 | 0.000579 | 0.000641 | 0.000719 |
| Total Silicon | mg/L | 4.58 | 4.44 | 3.64 | 3.79 | 3.92 | 3.7 | 4.51 | 4.25 | 4.09 | 4.32 | 4.21 | 3.97 |

| | | MH-11 | | | | | | MH-12 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Camp Creek located 2km downstream of the Reclaim Pond (Upper False Creek Canyon). | | | | | | East fork of Tributary E — of false Canyon approximately 2 km downstream north tailings dam | | | | | |
| | | 09/Feb/22 | 06/Apr/22 | 30/Jun/22 | 10/Aug/22 | 26/Oct/22 | 04/Dec/22 | 05/Feb/22 | 05/Apr/22 | 27/Jun/22 | 09/Aug/22 | 25/Oct/22 | 01/Dec/22 |
| Total Tin | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00011 | <0.00010 | <0.00010 | 0.00045 |
| Total Strontium | mg/L | 0.34 | 0.35 | 0.206 | 0.248 | 0.274 | 0.267 | 0.257 | 0.261 | 0.166 | 0.205 | 0.231 | 0.215 |
| Total Sulphur | mg/L | 5.67 | 5.31 | 4.14 | 4.38 | 5.36 | 5.37 | 4.15 | 4.01 | 1.81 | 2.69 | 3.58 | 3.49 |
| Total Titanium | mg/L | <0.00030 | <0.00030 | 0.00068 | <0.00030 | <0.00060 | <0.00030 | <0.00060 | <0.00030 | 0.00288 | <0.00030 | <0.00030 | 0.00085 |
| Total Thallium | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Uranium | mg/L | 0.00137 | 0.00142 | 0.000767 | 0.000952 | 0.00114 | 0.00117 | 0.00112 | 0.00116 | 0.000702 | 0.000854 | 0.00102 | 0.000966 |
| Total Vanadium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00067 | <0.00050 | <0.00050 | <0.00050 |
| Total Zinc | mg/L | 0.0061 | 0.0043 | 0.006 | 0.0058 | 0.0046 | 0.005 | 0.0031 | 0.013 | 0.0246 | <0.0030 | <0.0030 | 0.0071 |
| Total Zirconium | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Dissolved Silver | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Arsenic | mg/L | 0.0014 | 0.0032 | 0.0082 | 0.0069 | 0.0027 | 0.0022 | 0.0023 | 0.0021 | 0.0054 | 0.0025 | 0.0022 | 0.0023 |
| Dissolved Aluminum | mg/L | 0.00036 | 0.00045 | 0.00056 | 0.00062 | 0.00048 | 0.00043 | 0.00073 | 0.00068 | 0.001 | 0.00087 | 0.0007 | 0.00063 |
| Dissolved Barium | mg/L | 0.0683 | 0.0712 | 0.0456 | 0.0617 | 0.0637 | 0.064 | 0.0738 | 0.0782 | 0.0486 | 0.0792 | 0.0758 | 0.071 |
| Dissolved Beryllium | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Dissolved Boron | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Dissolved Bismuth | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Dissolved Calcium | mg/L | 77.5 | 73.7 | 55.4 | 65.4 | 66.8 | 67.8 | 64.3 | 59.6 | 44.7 | 58.2 | 58.7 | 57.5 |
| Dissolved Cadmium | mg/L | 0.0000468 | 0.0000404 | 0.0000824 | 0.0000576 | 0.0000455 | 0.0000392 | 0.0000393 | 0.0000346 | 0.0000427 | 0.0000416 | 0.0000419 | 0.0000422 |
| Dissolved Cobalt | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Chromium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Copper | mg/L | <0.00020 | 0.00027 | 0.00038 | 0.00034 | 0.00025 | 0.00029 | 0.00045 | <0.00020 | 0.00062 | 0.00033 | 0.00022 | 0.00118 |
| Dissolved Iron | mg/L | 0.021 | 0.036 | 0.021 | 0.034 | 0.032 | 0.026 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Dissolved Mercury | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Dissolved Potassium | mg/L | 0.413 | 0.427 | 0.416 | 0.366 | 0.512 | 0.427 | 0.536 | 0.433 | 0.509 | 0.446 | 0.522 | 0.633 |
| Dissolved Lithium | mg/L | 0.0017 | 0.0018 | 0.0015 | 0.0018 | 0.0016 | 0.0015 | 0.0013 | 0.0014 | 0.0012 | 0.0015 | 0.0013 | 0.0012 |
| Dissolved Magnesium | mg/L | 8.77 | 8.36 | 5.28 | 7.84 | 8.42 | 7.72 | 6.68 | 6.37 | 4.06 | 6.01 | 6.34 | 5.96 |
| Dissolved Manganese | mg/L | 0.00824 | 0.00821 | 0.0035 | 0.00745 | 0.0109 | 0.00923 | 0.00045 | <0.00010 | 0.00137 | 0.00078 | 0.0008 | 0.00047 |
| Dissolved Molybdenum | mg/L | 0.0008 | 0.00517 | 0.000734 | 0.00093 | 0.000866 | 0.000831 | 0.00138 | 0.00126 | 0.00102 | 0.00124 | 0.00131 | 0.00136 |
| Dissolved Sodium | mg/L | 1.17 | 1.25 | 0.856 | 1.05 | 1.19 | 1.12 | 1.14 | 1.09 | 0.843 | 1.01 | 1.04 | 1.21 |
| Dissolved Nickel | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Lead | mg/L | <0.000050 | 0.000077 | 0.00043 | 0.000114 | <0.000050 | <0.000050 | 0.000064 | <0.000050 | 0.00024 | <0.000050 | <0.000050 | 0.000072 |
| Dissolved Phosphorus | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Dissolved Antimony | mg/L | 0.00012 | 0.00012 | 0.00018 | 0.00016 | 0.00012 | 0.00012 | 0.00021 | 0.00018 | 0.00021 | 0.00021 | 0.00019 | 0.00021 |
| Dissolved Sulphur | mg/L | 4.85 | 4.69 | 4.08 | 4.28 | 5.49 | 5.48 | 3.7 | 3.64 | 1.79 | 2.99 | 3.24 | 3.25 |
| Dissolved Selenium | mg/L | 0.000741 | 0.000721 | 0.000699 | 0.00068 | 0.000752 | 0.000705 | 0.000924 | 0.000807 | 0.000649 | 0.000668 | 0.000677 | 0.000711 |
| Dissolved Silicon | mg/L | 4.08 | 3.94 | 3.18 | 3.64 | 4.14 | 3.9 | 4.26 | 4.05 | 3.58 | 4.35 | 4.31 | 4.1 |
| Dissolved Tin | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Strontium | mg/L | 0.298 | 0.285 | 0.205 | 0.276 | 0.267 | 0.268 | 0.237 | 0.229 | 0.167 | 0.227 | 0.223 | 0.219 |
| Dissolved Titanium | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| Dissolved Thallium | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Uranium | mg/L | 0.00113 | 0.00131 | 0.000771 | 0.000935 | 0.00109 | 0.00109 | 0.000981 | 0.00114 | 0.000704 | 0.00091 | 0.000964 | 0.000933 |
| Dissolved Vanadium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Zinc | mg/L | 0.0061 | 0.0049 | 0.0052 | 0.0049 | 0.0044 | 0.0044 | 0.0036 | 0.002 | 0.0058 | 0.0015 | 0.0014 | 0.0054 |
| Dissolved Zirconium | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |

| | | MH-15 | | | | | | MH-02 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Trib E, West Fork, u/s of Trib E East Fork | | | | | | Tailings North Dam Seepage | | | | | |
| | | 07/Feb/22 | 07/Apr/22 | 28/Jun/22 | 09/Aug/22 | 27/Oct/22 | 03/Dec/22 | 05/Feb/22 | 06/Apr/22 | 27/Jun/22 | 09/Aug/22 | 26/Oct/22 | 01/Dec/22 |
| Total Hardness | mg/L | 207 | 209 | 176 | 188 | 197 | 190 | | 655 | 427 | 564 | 611 | 593 |
| Hardness (Dissolved, CaCO3) | mg/L | 216 | 193 | 171 | 199 | 188 | 192 | | 598 | 413 | 584 | 584 | 572 |
| Temperature - Field | C | 0.1 | 0 | 10.6 | 9.2 | 0.6 | -0.3 | | 0.1 | 14 | 10.8 | 0.8 | -0.1 |
| pH - Field | pH | 7.99 | 7.69 | 8.11 | 7.96 | -0.043 | 8.11 | | 7.41 | 8.03 | 7.35 | 8.33 | 7.4 |
| pH - Lab | pH | 8.28 | 8.45 | 8.4 | 8.23 | 8.39 | 8.2 | | 8.1 | 8.16 | 7.98 | 8.28 | 8.04 |
| Conductivity - Field | µS/cm | 352.2 | 364.3 | 319.6 | 350.5 | 293.3 | 369 | | 1172 | 794 | 1067 | 892 | 102.2 |
| Conductivity - Lab | µS/cm | 368 | 371 | 322 | 360 | 339 | 372 | | 1100 | 730 | 1070 | 998 | 1080 |
| Total Dissolved Solids | mg/L | 208 | 200 | 238 | 196 | 179 | 210 | | 825 | 534 | 781 | 682 | 786 |
| Total Suspended Solids | mg/L | 2 | 1.7 | 1.6 | 1.3 | 2.1 | <1.0 | | 2.9 | 1.5 | 5.5 | 1.2 | 1.5 |
| Discharge | L/min | 3910 | 3130 | 14980 | 7344 | 5370 | 3860 | | | 60 | 20 | 20 | 10 |
| Ammonia Nitrogen | mg/L | 0.0093 | 0.0098 | 0.0051 | 0.0056 | <0.0050 | 0.007 | | <0.0050 | <0.0050 | <0.0050 | 0.0189 | 0.0118 |
| Nitrite | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Nitrate | mg/L | 0.072 | 0.0776 | 0.0073 | 0.0076 | 0.0201 | 0.0353 | | 0.0262 | <0.0250 | <0.0250 | <0.0250 | 0.0294 |
| Sulphate | mg/L | 4.18 | 3.85 | 3.13 | 2.64 | 3.34 | 4.59 | | 376 | 196 | 267 | 288 | 344 |
| Fluoride | mg/L | 0.093 | 0.09 | 0.085 | | 0.082 | 0.087 | | <0.100 | <0.100 | | <0.100 | <0.100 |
| Chloride | mg/L | <0.50 | <0.50 | <0.50 | | <0.50 | <0.50 | | 18.5 | <2.50 | | <2.50 | <2.50 |
| Bromide | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | | <0.250 | <0.250 | <0.250 | <0.250 | <0.250 |
| Dissolved Oxygen | mg/L | 87.5 | 84.5 | 86.9 | 79.6 | 115.5 | 88.5 | | 94 | 97.8 | 56 | 78 | 87.6 |
| Dissolved Oxygen | % | 12.8 | 12.86 | 10.56 | 9.14 | 16.54 | 12.85 | | 13.24 | 7.14 | 6.14 | 11.02 | 11.04 |
| ORP | mV | 132 | 125.1 | 115.6 | 167.5 | 54.4 | 163.6 | | 225.7 | 194.7 | 144 | -37.4 | 238.2 |
| Alkalinity (CaCO3) | mg/L | 203 | 206 | 179 | 196 | 183 | 189 | | 290 | 249 | 360 | 316 | 308 |
| Total Silver | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Aluminum | mg/L | 0.0092 | 0.0073 | 0.0053 | 0.0101 | 0.0106 | 0.0034 | | 0.0386 | 0.0088 | 0.0128 | 0.0071 | 0.0439 |
| Total Arsenic | mg/L | 0.0004 | 0.00036 | 0.00039 | 0.00048 | 0.00037 | 0.00028 | Site inaccessible. | 0.00266 | 0.00066 | 0.00074 | 0.00038 | 0.00041 |
| Total Barium | mg/L | 0.197 | 0.217 | 0.175 | 0.194 | 0.165 | 0.17 | | 0.0611 | 0.157 | 0.193 | 0.159 | 0.151 |
| Total Beryllium | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Total Bismuth | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Total Boron | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Total Calcium | mg/L | 60.4 | 63 | 51.2 | 54.6 | 58.3 | 55 | | 231 | 154 | 198 | 215 | 207 |
| Total Cadmium | mg/L | 0.0000114 | 0.000011 | 0.0000079 | 0.0000155 | 0.0000084 | 0.0000093 | | 0.0000594 | 0.000219 | 0.000104 | 0.000115 | 0.000149 |
| Total Cobalt | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | 0.00076 | 0.00051 | 0.001 | 0.00074 | 0.00068 |
| Total Chromium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Copper | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | 0.0003 | <0.00050 | <0.00050 | <0.00050 | 0.00119 |
| Total Iron | mg/L | 0.258 | 0.222 | 0.068 | 0.172 | 0.157 | 0.101 | | 0.63 | 0.08 | 0.121 | 0.083 | 0.196 |
| Total Mercury | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Total Potassium | mg/L | 0.422 | 0.412 | 0.287 | 0.3 | 0.387 | 0.415 | | 1.8 | 1.38 | 2.21 | 1.96 | 1.97 |
| Total Lithium | mg/L | 0.0014 | 0.0013 | 0.0011 | 0.0012 | 0.0012 | 0.0012 | | 0.0011 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Magnesium | mg/L | 13.7 | 12.6 | 11.8 | 12.5 | 12.5 | 12.7 | | 19 | 10.4 | 17 | 18 | 18.4 |
| Total Manganese | mg/L | 0.0171 | 0.014 | 0.0059 | 0.0128 | 0.0143 | 0.0082 | | 0.422 | 0.452 | 2.37 | 1.78 | 1.3 |
| Total Molybdenum | mg/L | 0.00195 | 0.002 | 0.00195 | 0.00182 | 0.0017 | 0.00177 | | 0.00024 | 0.000974 | 0.00141 | 0.000636 | 0.00044 |
| Total Sodium | mg/L | 1.07 | 1.01 | 0.792 | 0.975 | 0.985 | 1.05 | | 10.2 | 7.71 | 11 | 10.3 | 9.36 |
| Total Nickel | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | 0.00056 | 0.00107 | 0.00076 | 0.00087 |
| Total Lead | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | | 0.004 | 0.000391 | 0.000346 | 0.000153 | 0.000834 |
| Total Phosphorus | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Total Antimony | mg/L | 0.00013 | 0.00012 | 0.00014 | 0.00011 | 0.00011 | 0.00012 | | <0.00010 | 0.00017 | <0.00010 | <0.00010 | <0.00010 |
| Total Selenium | mg/L | 0.00074 | 0.000755 | 0.000363 | 0.000427 | 0.000471 | 0.000521 | | 0.000078 | 0.000205 | 0.000088 | 0.000052 | <0.000050 |
| Total Silicon | mg/L | 4.54 | 4.24 | 3.42 | 3.91 | 4.08 | 4.03 | | 5.01 | 4.56 | 6.14 | 5.23 | 5 |

| | | MH-15 | | | | | | MH-02 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Trib E, West Fork, u/s of Trib E East Fork | | | | | | Tailings North Dam Seepage | | | | | |
| | | 07/Feb/22 | 07/Apr/22 | 28/Jun/22 | 09/Aug/22 | 27/Oct/22 | 03/Dec/22 | 05/Feb/22 | 06/Apr/22 | 27/Jun/22 | 09/Aug/22 | 26/Oct/22 | 01/Dec/22 |
| Total Tin | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | Site inaccessible. | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Strontium | mg/L | 0.204 | 0.211 | 0.16 | 0.176 | 0.182 | 0.179 | | 0.673 | 0.513 | 0.69 | 0.699 | 0.671 |
| Total Sulphur | mg/L | 1.66 | 1.55 | 0.99 | 0.89 | 1.46 | 1.79 | | 130 | 66.1 | 100 | 102 | 117 |
| Total Titanium | mg/L | <0.00030 | <0.00030 | <0.00030 | 0.00042 | <0.00030 | <0.00030 | | 0.00069 | <0.00030 | <0.00030 | <0.00030 | <0.00150 |
| Total Thallium | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Uranium | mg/L | 0.000926 | 0.000997 | 0.000668 | 0.000688 | 0.000775 | 0.000817 | | 0.0017 | 0.00143 | 0.0014 | 0.00134 | 0.00121 |
| Total Vanadium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Zinc | mg/L | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | | 0.0305 | 0.0196 | 0.0145 | 0.0193 | 0.0195 |
| Total Zirconium | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Dissolved Silver | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Arsenic | mg/L | 0.0014 | 0.0018 | 0.0022 | 0.0029 | 0.0023 | 0.0014 | | <0.0030 | 0.0049 | 0.0024 | 0.0068 | 0.0014 |
| Dissolved Aluminum | mg/L | 0.00028 | 0.00026 | 0.00036 | 0.00046 | 0.00027 | 0.00024 | | 0.0005 | 0.00064 | 0.00071 | 0.00034 | 0.00025 |
| Dissolved Barium | mg/L | 0.202 | 0.198 | 0.168 | 0.195 | 0.167 | 0.172 | | 0.0548 | 0.151 | 0.184 | 0.168 | 0.143 |
| Dissolved Beryllium | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Dissolved Boron | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Dissolved Bismuth | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Dissolved Calcium | mg/L | 64.6 | 57.8 | 49.9 | 57.7 | 54.6 | 57.5 | | 210 | 150 | 205 | 204 | 200 |
| Dissolved Cadmium | mg/L | 0.0000108 | <0.0000050 | 0.0000099 | 0.0000092 | 0.000007 | 0.0000053 | | 0.0000144 | 0.000168 | 0.0000692 | 0.0000998 | 0.0000672 |
| Dissolved Cobalt | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | 0.00058 | 0.00051 | 0.00099 | 0.00072 | 0.00059 |
| Dissolved Chromium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Copper | mg/L | 0.00047 | <0.00020 | <0.00020 | 0.00024 | <0.00020 | <0.00020 | | <0.00050 | 0.00038 | 0.00038 | 0.00029 | 0.00098 |
| Dissolved Iron | mg/L | 0.051 | 0.045 | 0.037 | 0.088 | 0.055 | 0.061 | | 0.099 | 0.053 | 0.07 | 0.072 | 0.02 |
| Dissolved Mercury | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Dissolved Potassium | mg/L | 0.454 | 0.415 | 0.311 | 0.302 | 0.399 | 0.357 | | 1.69 | 1.37 | 2.27 | 2.21 | 1.96 |
| Dissolved Lithium | mg/L | 0.0012 | 0.0012 | 0.0011 | 0.0012 | 0.0011 | 0.0011 | | 0.001 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Magnesium | mg/L | 13.4 | 11.8 | 11.3 | 13.3 | 12.5 | 11.9 | | 17.8 | 9.4 | 17.6 | 18.2 | 17.6 |
| Dissolved Manganese | mg/L | 0.0098 | 0.00702 | 0.00328 | 0.00549 | 0.00597 | 0.00685 | | 0.189 | 0.421 | 2.51 | 1.77 | 1.23 |
| Dissolved Molybdenum | mg/L | 0.00205 | 0.00194 | 0.00189 | 0.00184 | 0.00166 | 0.00184 | | 0.000298 | 0.00104 | 0.00147 | 0.000663 | 0.000429 |
| Dissolved Sodium | mg/L | 1.06 | 1.06 | 0.879 | 0.979 | 0.963 | 0.93 | | 9.55 | 7.9 | 11.1 | 10.1 | 8.74 |
| Dissolved Nickel | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | 0.00061 | 0.00108 | 0.00073 | 0.00072 |
| Dissolved Lead | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | 0.000064 | <0.000050 | | 0.000099 | 0.000388 | 0.00008 | 0.000067 | 0.000055 |
| Dissolved Phosphorus | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Dissolved Antimony | mg/L | 0.00012 | 0.00011 | 0.00012 | 0.0001 | <0.00010 | 0.00012 | | <0.00010 | 0.00015 | 0.0001 | <0.00010 | <0.00010 |
| Dissolved Sulphur | mg/L | 1.52 | 1.24 | 1 | 0.92 | 1.27 | 1.47 | | 140 | 64.3 | 92.7 | 102 | 115 |
| Dissolved Selenium | mg/L | 0.000775 | 0.000658 | 0.00047 | 0.000457 | 0.000452 | 0.000574 | | 0.000129 | 0.00018 | 0.000118 | 0.000057 | 0.000055 |
| Dissolved Silicon | mg/L | 4.17 | 4.05 | 3.06 | 3.88 | 4.13 | 4.18 | | 5.07 | 4.09 | 5.71 | 5.37 | 5.08 |
| Dissolved Tin | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Strontium | mg/L | 0.198 | 0.182 | 0.167 | 0.189 | 0.171 | 0.184 | | 0.749 | 0.509 | 0.729 | 0.694 | 0.671 |
| Dissolved Titanium | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| Dissolved Thallium | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Uranium | mg/L | 0.00093 | 0.000944 | 0.00069 | 0.000695 | 0.000722 | 0.000773 | | 0.00183 | 0.00143 | 0.00143 | 0.00126 | 0.00115 |
| Dissolved Vanadium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Zinc | mg/L | 0.0014 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | 0.0218 | 0.0213 | 0.0134 | 0.0196 | 0.0164 |
| Dissolved Zirconium | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |

| | | MH-04 | | | | | | MH-13 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Alternate site - Lower Camp Cr, immediately above West Interceptor - only when no discharge from MH-3 | | | | | | False Creek Canyon, 10 km d/s of Reclaim Pond | | | | | |
| | | 07/Feb/22 | 06/Apr/22 | 28/Jun/22 | 08/Aug/22 | 28/Oct/22 | 04/Dec/22 | 06/Feb/22 | 07/Apr/22 | 28/Jun/22 | 09/Aug/22 | 27/Oct/22 | 03/Dec/22 |
| Total Hardness | mg/L | 176 | 192 | 137 | 144 | 165 | 150 | 222 | 224 | 161 | 185 | 207 | 210 |
| Hardness (Dissolved, CaCO3) | mg/L | 174 | 168 | 135 | 147 | 158 | 154 | 229 | 204 | 152 | 197 | 199 | 207 |
| Temperature - Field | C | 0.7 | 0.9 | 3.1 | 4.2 | 2 | 0.6 | 0 | 0 | 6.3 | 9.7 | 0.8 | -0.2 |
| pH - Field | pH | 8.13 | 7.94 | 8.12 | 8.22 | -0.12 | 8.19 | 7.93 | 7.78 | 8.25 | 8.26 | 0.43 | 8.05 |
| pH - Lab | pH | 8.22 | 8.35 | 8.26 | 8.17 | 8.34 | 8.26 | 8.29 | 8.41 | 8.34 | 8.27 | 8.38 | 8.22 |
| Conductivity - Field | µS/cm | 301.4 | 333.6 | 263.8 | 290.4 | 344.2 | 315.8 | 372.6 | 410.4 | 289.5 | 348.2 | 317.6 | 394 |
| Conductivity - Lab | µS/cm | 321 | 323 | 265 | 297 | 303 | 315 | 390 | 392 | 293 | 358 | 360 | 394 |
| Total Dissolved Solids | mg/L | 198 | 193 | 144 | 170 | 159 | 165 | 227 | 219 | 145 | 192 | 198 | 231 |
| Total Suspended Solids | mg/L | 6.1 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 4.1 | 2 | 3.4 | 1.7 | <1.0 | <1.0 |
| Discharge | L/min | 470 | 350 | 7422 | 1180 | 590 | 410 | 7662 | 3370 | | 13720 | 6918 | 5150 |
| Ammonia Nitrogen | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0254 | 0.0067 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Nitrite | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Nitrate | mg/L | 0.953 | 0.245 | 0.12 | 0.134 | 0.224 | 0.238 | 0.111 | 0.126 | 0.0601 | 0.0127 | 0.0335 | 0.0687 |
| Sulphate | mg/L | 15.9 | 17 | 13.1 | 14.7 | 18.9 | 19.2 | 8.73 | 8.98 | 6.75 | 6.23 | 7.38 | 8.84 |
| Fluoride | mg/L | 0.147 | 0.152 | 0.128 | | 0.148 | 0.158 | 0.056 | 0.058 | 0.056 | | 0.054 | 0.059 |
| Chloride | mg/L | <0.50 | <0.50 | <0.50 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | | <0.50 | <0.50 |
| Bromide | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Dissolved Oxygen | mg/L | 81.3 | 82.6 | 93.8 | 83.3 | 107.5 | 86.7 | 82.5 | 90.9 | 98.9 | 86.9 | 107.8 | 83.8 |
| Dissolved Oxygen | % | 11.65 | 11.72 | 12.56 | 10.86 | 14.82 | 12.14 | 12 | 13.83 | 13.31 | 8.15 | 15.46 | 12.3 |
| ORP | mV | 131.1 | 196 | 93.6 | 206.2 | 81.2 | 164.7 | 127 | 110.6 | 87.3 | 155.2 | 36.7 | 159.9 |
| Alkalinity (CaCO3) | mg/L | 153 | 165 | 143 | 142 | 144 | 145 | 212 | 213 | 156 | 190 | 192 | 204 |
| Total Silver | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Aluminum | mg/L | 0.0045 | <0.0030 | 0.0039 | 0.0048 | 0.004 | 0.0041 | 0.0066 | 0.004 | 0.0356 | 0.0128 | 0.0096 | 0.0035 |
| Total Arsenic | mg/L | 0.00039 | 0.0004 | 0.00033 | 0.00042 | 0.00043 | 0.00039 | 0.00039 | 0.00033 | 0.00051 | 0.00054 | 0.00038 | 0.00027 |
| Total Barium | mg/L | 0.0249 | 0.0258 | 0.0175 | 0.021 | 0.0216 | 0.0216 | 0.173 | 0.164 | 0.117 | 0.155 | 0.138 | 0.145 |
| Total Beryllium | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Total Bismuth | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Total Boron | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Total Calcium | mg/L | 64.2 | 71.1 | 50.4 | 52.9 | 60.8 | 54.3 | 61.8 | 63.6 | 48.5 | 53.6 | 60.1 | 59.1 |
| Total Cadmium | mg/L | 0.000278 | 0.000273 | 0.000244 | 0.000261 | 0.000264 | 0.00024 | 0.0000204 | 0.0000163 | 0.000033 | 0.000025 | 0.0000173 | 0.0000158 |
| Total Cobalt | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Chromium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Copper | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.0029 | <0.00050 | <0.00050 |
| Total Iron | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | 0.276 | 0.215 | 0.169 | 0.247 | 0.143 | 0.093 |
| Total Mercury | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Total Potassium | mg/L | 0.436 | 0.438 | 0.373 | 0.379 | 0.409 | 0.433 | 0.415 | 0.383 | 0.32 | 0.293 | 0.367 | 0.395 |
| Total Lithium | mg/L | 0.0021 | 0.0018 | 0.0012 | 0.0014 | 0.0016 | 0.0015 | 0.0016 | 0.0014 | 0.0011 | 0.0012 | 0.0012 | 0.0012 |
| Total Magnesium | mg/L | 3.87 | 3.58 | 2.64 | 3 | 3.17 | 3.46 | 16.4 | 15.9 | 9.65 | 12.5 | 13.8 | 15.2 |
| Total Manganese | mg/L | 0.00064 | 0.00049 | 0.00036 | 0.00075 | 0.00073 | 0.00095 | 0.0135 | 0.00873 | 0.013 | 0.0113 | 0.00798 | 0.00636 |
| Total Molybdenum | mg/L | 0.000768 | 0.000784 | 0.000545 | 0.000665 | 0.000738 | 0.000685 | 0.00114 | 0.00124 | 0.000806 | 0.00106 | 0.00107 | 0.00101 |
| Total Sodium | mg/L | 0.939 | 0.948 | 0.685 | 0.785 | 0.854 | 0.899 | 1.05 | 0.978 | 0.696 | 0.875 | 0.961 | 1.02 |
| Total Nickel | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Lead | mg/L | 0.000187 | 0.000125 | 0.000252 | 0.000239 | 0.000132 | 0.000149 | <0.000050 | <0.000050 | 0.000201 | 0.000132 | 0.000052 | <0.000050 |
| Total Phosphorus | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Total Antimony | mg/L | 0.00014 | 0.00014 | 0.00015 | 0.00012 | 0.00013 | 0.00012 | 0.0001 | 0.0001 | 0.00016 | 0.00012 | 0.00011 | <0.00010 |
| Total Selenium | mg/L | 0.000987 | 0.00105 | 0.000604 | 0.000734 | 0.00096 | 0.00113 | 0.000713 | 0.000703 | 0.000636 | 0.000512 | 0.000502 | 0.000618 |
| Total Silicon | mg/L | 3.92 | 3.81 | 3.1 | 3.33 | 3.4 | 3.24 | 3.9 | 3.74 | 3.15 | 3.38 | 3.38 | 3.43 |

| | | MH-04 | | | | | | MH-13 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Alternate site - Lower Camp Cr, immediately above West Interceptor - only when no discharge from MH-3 | | | | | | False Creek Canyon, 10 km d/s of Reclaim Pond | | | | | |
| | | 07/Feb/22 | 06/Apr/22 | 28/Jun/22 | 08/Aug/22 | 28/Oct/22 | 04/Dec/22 | 06/Feb/22 | 07/Apr/22 | 28/Jun/22 | 09/Aug/22 | 27/Oct/22 | 03/Dec/22 |
| Total Tin | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Strontium | mg/L | 0.246 | 0.265 | 0.165 | 0.186 | 0.207 | 0.194 | 0.244 | 0.241 | 0.171 | 0.202 | 0.21 | 0.204 |
| Total Sulphur | mg/L | 6.54 | 6.35 | 4.38 | 5.12 | 6.51 | 6.79 | 3.66 | 3.3 | 2.14 | 2.32 | 2.77 | 3.07 |
| Total Titanium | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | 0.00071 | <0.00030 | <0.00030 | <0.00030 |
| Total Thallium | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Uranium | mg/L | 0.000998 | 0.00107 | 0.000569 | 0.000745 | 0.000924 | 0.000893 | 0.0016 | 0.00178 | 0.000893 | 0.00116 | 0.00141 | 0.00143 |
| Total Vanadium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Zinc | mg/L | 0.0063 | 0.0062 | 0.0053 | 0.0043 | 0.0042 | 0.0046 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 |
| Total Zirconium | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Dissolved Silver | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Arsenic | mg/L | 0.0034 | 0.0035 | 0.0056 | 0.002 | 0.0018 | 0.0015 | 0.001 | 0.0011 | 0.0046 | 0.0029 | 0.0024 | 0.0019 |
| Dissolved Aluminum | mg/L | 0.00041 | 0.00036 | 0.00035 | 0.00042 | 0.00038 | 0.0004 | 0.00024 | 0.00024 | 0.00039 | 0.0005 | 0.00025 | 0.00021 |
| Dissolved Barium | mg/L | 0.0232 | 0.0237 | 0.0172 | 0.0204 | 0.0228 | 0.0217 | 0.164 | 0.162 | 0.105 | 0.153 | 0.143 | 0.145 |
| Dissolved Beryllium | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Dissolved Boron | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Dissolved Bismuth | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Dissolved Calcium | mg/L | 64.1 | 61.6 | 49.9 | 53.7 | 57.6 | 56.4 | 65.6 | 58.1 | 46 | 56.7 | 55.9 | 58.5 |
| Dissolved Cadmium | mg/L | 0.00028 | 0.000224 | 0.000237 | 0.000261 | 0.000259 | 0.000235 | 0.0000131 | 0.0000138 | 0.0000221 | 0.0000149 | 0.0000147 | 0.0000118 |
| Dissolved Cobalt | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Chromium | mg/L | 0.00051 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Copper | mg/L | 0.00085 | 0.00051 | 0.0002 | 0.00048 | <0.00020 | <0.00020 | 0.00024 | 0.00028 | 0.00041 | 0.00048 | 0.00025 | 0.00023 |
| Dissolved Iron | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | 0.023 | 0.018 | 0.082 | 0.108 | 0.025 | 0.015 |
| Dissolved Mercury | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Dissolved Potassium | mg/L | 0.461 | 0.445 | 0.386 | 0.399 | 0.46 | 0.399 | 0.414 | 0.386 | 0.345 | 0.325 | 0.413 | 0.369 |
| Dissolved Lithium | mg/L | 0.0015 | 0.0015 | 0.0013 | 0.0015 | 0.0015 | 0.0014 | 0.0012 | 0.0013 | 0.0011 | 0.0012 | 0.0011 | 0.0011 |
| Dissolved Magnesium | mg/L | 3.43 | 3.38 | 2.49 | 3.09 | 3.36 | 3.17 | 15.8 | 14.4 | 9.13 | 13.4 | 14.4 | 14.7 |
| Dissolved Manganese | mg/L | 0.00072 | 0.00075 | 0.0007 | 0.00046 | 0.00053 | 0.00032 | 0.00955 | 0.00465 | 0.00865 | 0.00727 | 0.00506 | 0.00546 |
| Dissolved Molybdenum | mg/L | 0.000743 | 0.000756 | 0.000526 | 0.000715 | 0.000769 | 0.000733 | 0.00115 | 0.0067 | 0.0008 | 0.00106 | 0.00104 | 0.00102 |
| Dissolved Sodium | mg/L | 0.957 | 0.988 | 0.714 | 0.814 | 0.86 | 0.776 | 1.04 | 1.03 | 0.749 | 0.934 | 0.985 | 0.938 |
| Dissolved Nickel | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Lead | mg/L | 0.000165 | 0.000161 | 0.000434 | 0.000134 | 0.000053 | 0.000062 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Dissolved Phosphorus | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Dissolved Antimony | mg/L | 0.00015 | 0.00012 | 0.00012 | 0.00014 | 0.00012 | 0.00012 | <0.00010 | <0.00010 | 0.00014 | 0.00011 | <0.00010 | <0.00010 |
| Dissolved Sulphur | mg/L | 5.52 | 5.42 | 4.27 | 5.13 | 6.64 | 6.49 | 3.28 | 3.09 | 1.98 | 2.44 | 2.79 | 2.98 |
| Dissolved Selenium | mg/L | 0.000985 | 0.00095 | 0.000591 | 0.000874 | 0.00111 | 0.00108 | 0.000751 | 0.00066 | 0.000594 | 0.000606 | 0.000499 | 0.00059 |
| Dissolved Silicon | mg/L | 3.55 | 3.31 | 2.75 | 3.02 | 3.53 | 3.37 | 3.52 | 3.44 | 2.76 | 3.54 | 3.44 | 3.59 |
| Dissolved Tin | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Strontium | mg/L | 0.228 | 0.215 | 0.169 | 0.207 | 0.204 | 0.203 | 0.226 | 0.208 | 0.169 | 0.211 | 0.208 | 0.214 |
| Dissolved Titanium | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| Dissolved Thallium | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Uranium | mg/L | 0.000868 | 0.000959 | 0.000598 | 0.000765 | 0.000874 | 0.000872 | 0.00155 | 0.00171 | 0.00091 | 0.00127 | 0.00134 | 0.00136 |
| Dissolved Vanadium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Zinc | mg/L | 0.0077 | 0.0088 | 0.0048 | 0.0045 | 0.0044 | 0.0041 | 0.0013 | <0.0010 | 0.0011 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Zirconium | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |

| | | MH-22 | | | | | | MH-29 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Burnick 1200 Portal discharge | | | | | | Access Cr, u/s of Camp Cr | | | | | |
| | | 08/Feb/22 | 06/Apr/22 | 29/Jun/22 | 10/Aug/22 | 25/Oct/22 | 04/Dec/22 | 09/Feb/22 | 06/Apr/22 | 30/Jun/22 | 10/Aug/22 | 26/Oct/22 | 04/Dec/22 |
| Total Hardness | mg/L | | | 107 | 135 | 153 | 149 | 215 | 222 | 153 | 180 | 188 | 185 |
| Hardness (Dissolved, CaCO3) | mg/L | | | 99.7 | 135 | 146 | 140 | 217 | 199 | 144 | 182 | 171 | 174 |
| Temperature - Field | C | | | 2.9 | 2.7 | 2.3 | 1.2 | 0 | 0 | 5.3 | 6.4 | 0.7 | -0.2 |
| pH - Field | pH | | | 7.57 | 7.18 | 9.1 | 8.19 | 8.03 | 7.83 | 8.34 | 8.26 | 8.5 | 8.11 |
| pH - Lab | pH | | | 8.05 | 7.93 | 8.19 | 8.05 | 8.29 | 8.38 | 8.36 | 8.25 | 8.38 | 8.24 |
| Conductivity - Field | µS/cm | | | 218.5 | 274.2 | 248.3 | 309 | 355.8 | 400.5 | 279.5 | 333.9 | 299.8 | 339.6 |
| Conductivity - Lab | µS/cm | | | 215 | 273 | 289 | 303 | 372 | 385 | 285 | 337 | 330 | 347 |
| Total Dissolved Solids | mg/L | | | 122 | 158 | 170 | 180 | 232 | 210 | 159 | 193 | 174 | 200 |
| Total Suspended Solids | mg/L | | | 1.4 | <1.0 | <1.0 | <1.0 | 18.9 | <1.0 | <1.0 | <1.0 | <1.0 | 2 |
| Discharge | L/min | | | 900 | 40 | 6.78 | | 280 | | 4810 | 690 | 310 | 230 |
| Ammonia Nitrogen | mg/L | | | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.005 |
| Nitrite | mg/L | | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Nitrate | mg/L | | | 0.127 | 0.117 | 0.107 | 0.11 | 0.124 | 0.138 | 0.102 | 0.0398 | 0.085 | 0.117 |
| Sulphate | mg/L | | | 21.3 | 33.3 | 40 | 43.7 | 5.64 | 4.53 | 3.02 | 2.79 | 3.74 | 4.45 |
| Fluoride | mg/L | | | 0.801 | | 1.18 | 1.32 | 0.049 | 0.046 | 0.048 | | 0.044 | 0.054 |
| Chloride | mg/L | | | <0.50 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | | <0.50 | <0.50 |
| Bromide | mg/L | | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Dissolved Oxygen | mg/L | | | 98.3 | 80.5 | 101 | 85.3 | 81.8 | 85.2 | 91 | 80.2 | 105.2 | 77.6 |
| Dissolved Oxygen | % | | | 13.13 | 10.74 | 13.82 | 11.85 | 12.26 | 12.36 | 10.25 | 8.64 | 15.17 | 11.42 |
| ORP | mV | | | 95.1 | 73.9 | -50 | 152.9 | 112.6 | 165 | 168.8 | 183.9 | 29.9 | 163.4 |
| Alkalinity (CaCO3) | mg/L | | | 86.8 | 106 | 109 | 110 | 204 | 214 | 155 | 182 | 178 | 179 |
| Total Silver | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Aluminum | mg/L | | | 0.0039 | <0.0030 | <0.0030 | <0.0030 | 0.0063 | 0.0031 | 0.0127 | 0.0066 | 0.0072 | 0.0416 |
| Total Arsenic | mg/L | Site Inaccessible | Snow too deep to sample. | 0.00394 | 0.00383 | 0.00365 | 0.00328 | 0.00059 | 0.00056 | 0.00075 | 0.00082 | 0.00064 | 0.00071 |
| Total Barium | mg/L | | | 0.0134 | 0.0159 | 0.016 | 0.0163 | 0.0548 | 0.052 | 0.0363 | 0.0518 | 0.0456 | 0.0469 |
| Total Beryllium | mg/L | | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Total Bismuth | mg/L | | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Total Boron | mg/L | | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Total Calcium | mg/L | | | 35.8 | 44.1 | 50.5 | 48.3 | 74.5 | 77.6 | 54.4 | 63.2 | 66 | 64.2 |
| Total Cadmium | mg/L | | | 0.00203 | 0.00316 | 0.00373 | 0.00449 | 0.0000563 | 0.0000485 | 0.0000848 | 0.0000609 | 0.0000441 | 0.0000832 |
| Total Cobalt | mg/L | | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Chromium | mg/L | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Copper | mg/L | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00062 | <0.00050 | <0.00050 |
| Total Iron | mg/L | | | <0.010 | <0.010 | <0.010 | <0.010 | 0.017 | 0.016 | 0.023 | 0.014 | 0.022 | 0.124 |
| Total Mercury | mg/L | | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Total Potassium | mg/L | | | 0.437 | 0.545 | 0.557 | 0.611 | 0.291 | 0.27 | 0.328 | 0.254 | 0.263 | 0.268 |
| Total Lithium | mg/L | | | 0.0041 | 0.0052 | 0.006 | 0.006 | 0.0018 | 0.0015 | 0.0013 | 0.0016 | 0.0013 | 0.0015 |
| Total Magnesium | mg/L | | | 4.28 | 5.97 | 6.56 | 6.94 | 7.12 | 6.79 | 4.12 | 5.42 | 5.62 | 6.01 |
| Total Manganese | mg/L | | | 0.00294 | 0.00038 | 0.00013 | 0.0002 | 0.00604 | 0.00721 | 0.00367 | 0.00395 | 0.00888 | 0.0201 |
| Total Molybdenum | mg/L | | | 0.0107 | 0.00876 | 0.00913 | 0.00835 | 0.000679 | 0.00064 | 0.000596 | 0.000655 | 0.000622 | 0.000744 |
| Total Sodium | mg/L | | | 0.708 | 0.834 | 0.852 | 0.888 | 1.01 | 0.956 | 0.646 | 0.893 | 0.916 | 0.947 |
| Total Nickel | mg/L | | | 0.00277 | 0.00333 | 0.00344 | 0.00373 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Lead | mg/L | | | 0.00136 | 0.000223 | 0.000301 | 0.000312 | <0.000050 | <0.000050 | 0.000146 | <0.000050 | <0.000050 | 0.00039 |
| Total Phosphorus | mg/L | | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Total Antimony | mg/L | | | 0.00205 | 0.00231 | 0.00275 | 0.00256 | 0.00016 | 0.00015 | 0.00022 | 0.00018 | 0.00014 | 0.0002 |
| Total Selenium | mg/L | | | 0.00778 | 0.0115 | 0.0135 | 0.0146 | 0.000614 | 0.000565 | 0.000596 | 0.000497 | 0.000337 | 0.000536 |
| Total Silicon | mg/L | | | 4.45 | 4.51 | 4.52 | 4.37 | 4.69 | 4.36 | 3.91 | 4.05 | 3.86 | 3.86 |

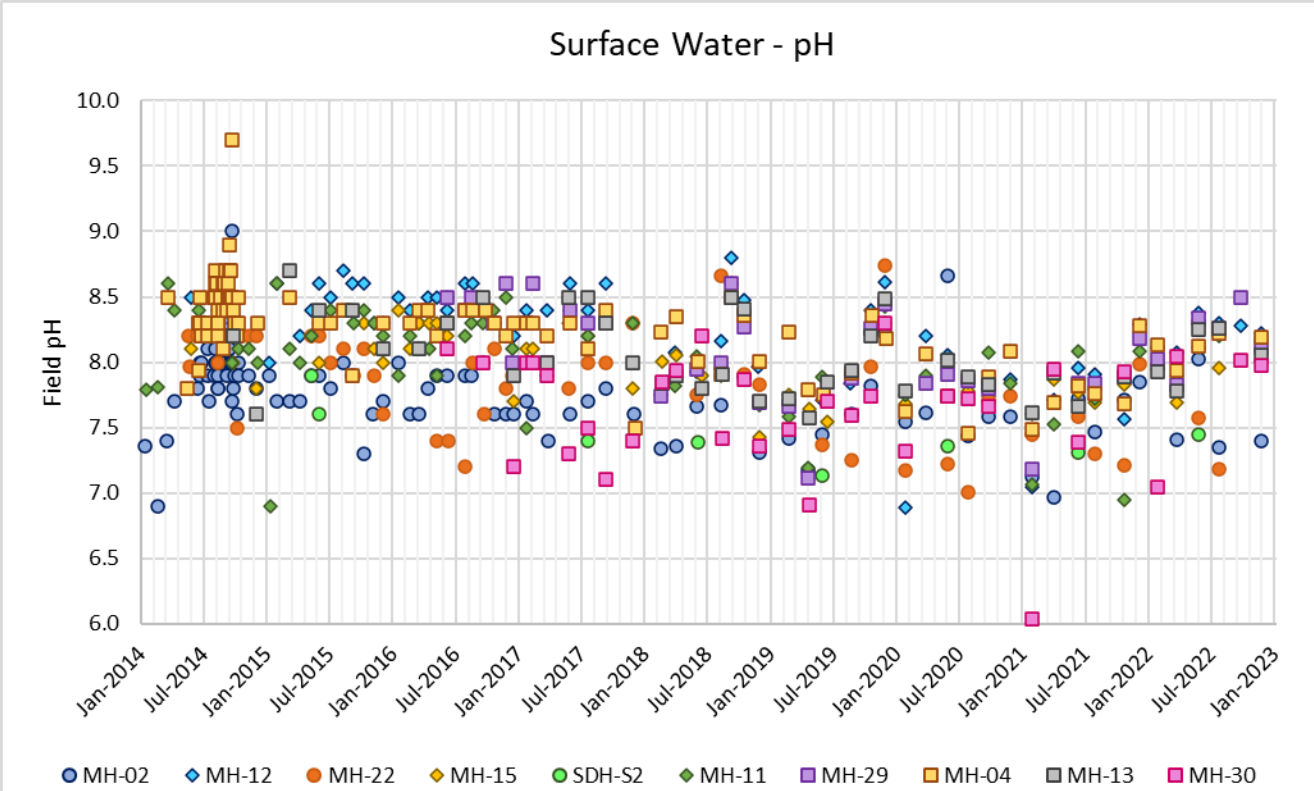
| | | MH-22 | | | | | | MH-29 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Burnick 1200 Portal discharge | | | | | | Access Cr, u/s of Camp Cr | | | | | |
| | | 08/Feb/22 | 06/Apr/22 | 29/Jun/22 | 10/Aug/22 | 25/Oct/22 | 04/Dec/22 | 09/Feb/22 | 06/Apr/22 | 30/Jun/22 | 10/Aug/22 | 26/Oct/22 | 04/Dec/22 |
| Total Tin | mg/L | | | 0.00015 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Strontium | mg/L | | | 0.164 | 0.201 | 0.24 | 0.238 | 0.292 | 0.285 | 0.172 | 0.22 | 0.226 | 0.22 |
| Total Sulphur | mg/L | | | 7.05 | 11.9 | 14.2 | 14.7 | 2.07 | 1.93 | 0.92 | 1.22 | 1.71 | 1.6 |
| Total Titanium | mg/L | | | <0.00030 | <0.00030 | <0.00030 | <0.00030 | 0.00041 | <0.00030 | 0.00034 | <0.00030 | <0.00030 | 0.00093 |
| Total Thallium | mg/L | | | 0.000014 | 0.000016 | 0.000016 | 0.000016 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Uranium | mg/L | | | 0.00161 | 0.00286 | 0.00402 | 0.00396 | 0.000842 | 0.000877 | 0.000469 | 0.000557 | 0.000623 | 0.000704 |
| Total Vanadium | mg/L | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Zinc | mg/L | | | 0.22 | 0.424 | 0.617 | 0.768 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 |
| Total Zirconium | mg/L | | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Dissolved Silver | mg/L | | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Arsenic | mg/L | | | 0.0046 | <0.0010 | 0.0014 | 0.0011 | 0.0022 | 0.0071 | 0.0046 | 0.0022 | 0.0026 | 0.0019 |
| Dissolved Aluminum | mg/L | | | 0.00393 | 0.00378 | 0.00365 | 0.0032 | 0.00053 | 0.00056 | 0.00073 | 0.00081 | 0.00055 | 0.00051 |
| Dissolved Barium | mg/L | | | 0.0128 | 0.0161 | 0.0162 | 0.0164 | 0.0515 | 0.0503 | 0.0354 | 0.054 | 0.0454 | 0.0454 |
| Dissolved Beryllium | mg/L | | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Dissolved Boron | mg/L | | | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Dissolved Bismuth | mg/L | | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Dissolved Calcium | mg/L | | | 33.3 | 44.2 | 47 | 45.6 | 76.2 | 69.5 | 51.5 | 63.9 | 59.4 | 60.9 |
| Dissolved Cadmium | mg/L | | | 0.00195 | 0.00329 | 0.00377 | 0.00423 | 0.0000419 | 0.0000486 | 0.000074 | 0.0000646 | 0.00004 | 0.0000399 |
| Dissolved Cobalt | mg/L | | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Chromium | mg/L | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Copper | mg/L | | | 0.00024 | 0.00037 | <0.00020 | <0.00020 | 0.00021 | 0.00021 | 0.0004 | 0.00037 | 0.0003 | 0.00025 |
| Dissolved Iron | mg/L | Site Inaccessible | Snow too deep to sample. | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | 0.012 | <0.010 | <0.010 | 0.015 | 0.018 |
| Dissolved Mercury | mg/L | | | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Dissolved Potassium | mg/L | | | 0.437 | 0.557 | 0.61 | 0.574 | 0.271 | 0.272 | 0.343 | 0.27 | 0.292 | 0.233 |
| Dissolved Lithium | mg/L | | | 0.0038 | 0.0052 | 0.006 | 0.0056 | 0.0014 | 0.0014 | 0.0013 | 0.0015 | 0.0012 | 0.0012 |
| Dissolved Magnesium | mg/L | | | 4.02 | 6.08 | 6.9 | 6.46 | 6.57 | 6.2 | 3.76 | 5.52 | 5.56 | 5.28 |
| Dissolved Manganese | mg/L | | | 0.00326 | 0.00036 | 0.00014 | 0.00011 | 0.00483 | 0.00591 | 0.00092 | 0.0032 | 0.00773 | 0.00765 |
| Dissolved Molybdenum | mg/L | | | 0.00679 | 0.00886 | 0.00891 | 0.00823 | 0.000641 | 0.000582 | 0.000552 | 0.000633 | 0.00062 | 0.000702 |
| Dissolved Sodium | mg/L | | | 0.716 | 0.813 | 0.862 | 0.786 | 1.02 | 0.924 | 0.692 | 0.888 | 0.893 | 0.825 |
| Dissolved Nickel | mg/L | | | 0.0025 | 0.00326 | 0.00349 | 0.00344 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Lead | mg/L | | | 0.000454 | 0.000189 | 0.000274 | 0.000247 | <0.000050 | <0.000050 | 0.000183 | <0.000050 | <0.000050 | <0.000050 |
| Dissolved Phosphorus | mg/L | | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Dissolved Antimony | mg/L | | | 0.00164 | 0.00234 | 0.0027 | 0.00248 | 0.00016 | 0.00014 | 0.00019 | 0.00017 | 0.00012 | 0.00013 |
| Dissolved Sulphur | mg/L | | | 6.73 | 11.8 | 14.5 | 14.1 | 1.58 | 1.46 | 0.92 | 1.05 | 1.32 | 1.47 |
| Dissolved Selenium | mg/L | | | 0.00746 | 0.012 | 0.0139 | 0.0137 | 0.000529 | 0.000512 | 0.000668 | 0.000456 | 0.000453 | 0.00045 |
| Dissolved Silicon | mg/L | | | 3.88 | 4.63 | 4.7 | 4.43 | 3.99 | 4.02 | 3.36 | 4.16 | 3.96 | 3.88 |
| Dissolved Tin | mg/L | | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Strontium | mg/L | | | 0.16 | 0.217 | 0.234 | 0.234 | 0.255 | 0.25 | 0.176 | 0.218 | 0.22 | 0.22 |
| Dissolved Titanium | mg/L | | | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| Dissolved Thallium | mg/L | | | 0.000012 | 0.000018 | 0.000015 | 0.000015 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Uranium | mg/L | | | 0.00162 | 0.00294 | 0.00371 | 0.00354 | 0.000765 | 0.000845 | 0.000492 | 0.000589 | 0.000587 | 0.000612 |
| Dissolved Vanadium | mg/L | | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Zinc | mg/L | | | 0.216 | 0.454 | 0.632 | 0.734 | 0.002 | 0.0038 | 0.0014 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Zirconium | mg/L | | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |

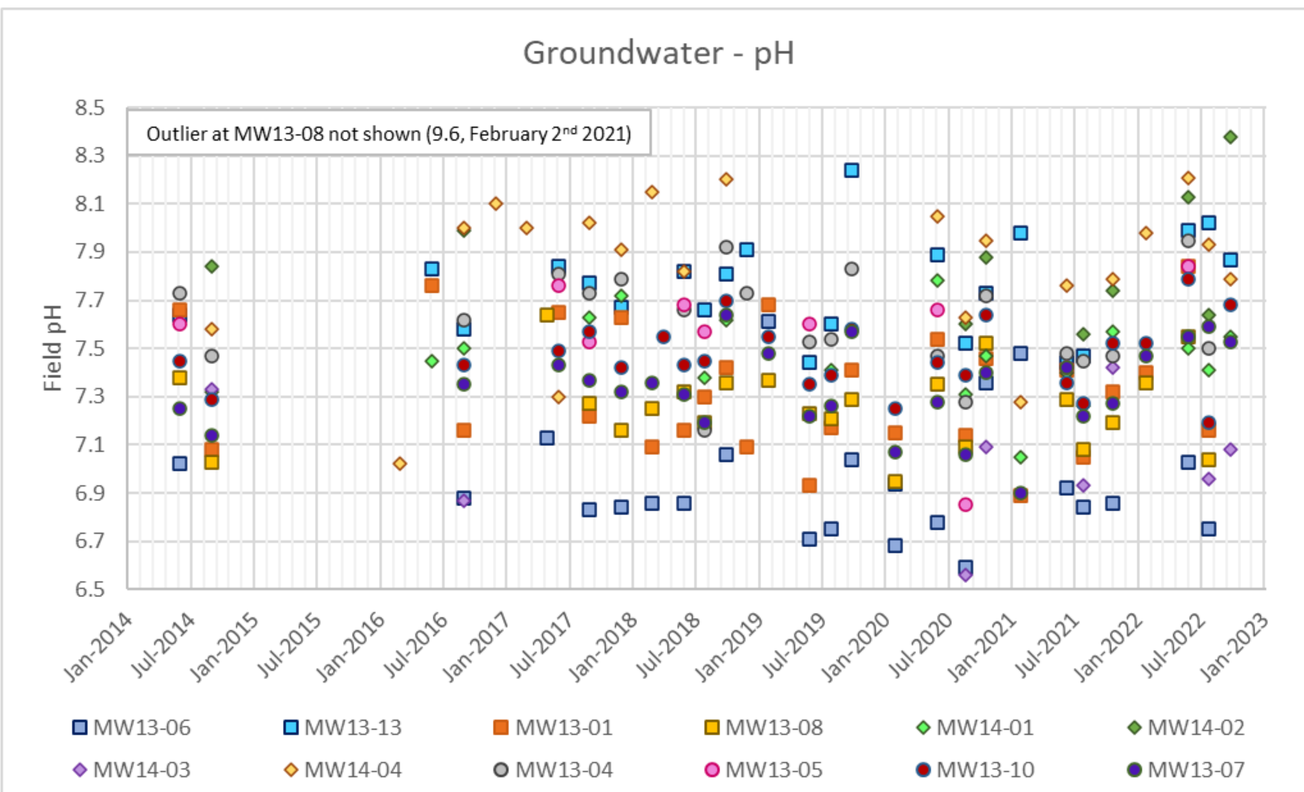
| | | MH-30 | | | | | | SDH-S2 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Unnamed tributary to False Canyon Creek, approximately 3 km d/s of MH-11 | | | | | | Waste rock below Main Zone | | | | | |
| | | 06/Feb/22 | 07/Apr/22 | 28/Jun/22 | 09/Aug/22 | 27/Oct/22 | 03/Dec/22 | 06/Feb/22 | 06/Apr/22 | 15/Jun/21 | 10/Aug/22 | 25/Oct/22 | 04/Dec/22 |
| Total Hardness | mg/L | 197 | 207 | | | 171 | 186 | | | 209 | | | |
| Hardness (Dissolved, CaCO3) | mg/L | 196 | 185 | | | 166 | 179 | | | 191 | | | |
| Temperature - Field | C | 0.1 | 0.1 | | | 2.3 | -0.2 | | | 0 | | | |
| pH - Field | pH | 7.05 | 8.04 | | | 8.02 | 7.98 | | | 7.45 | | | |
| pH - Lab | pH | 8.08 | 8.18 | | | 8.23 | 8.03 | | | 7.59 | | | |
| Conductivity - Field | µS/cm | 323.9 | 360.5 | | | 267.7 | 349.6 | | | 405.8 | | | |
| Conductivity - Lab | µS/cm | 320 | 361 | | | 302 | 356 | | | 428 | | | |
| Total Dissolved Solids | mg/L | 178 | 177 | | | 154 | 196 | | | 281 | | | |
| Total Suspended Solids | mg/L | 3.1 | 2.4 | | | <1.0 | 2.6 | | | 19.2 | | | |
| Discharge | L/min | | | | | | | | | | | | |
| Ammonia Nitrogen | mg/L | 0.071 | 0.0279 | | | 0.0185 | 0.0168 | | | <0.0050 | | | |
| Nitrite | mg/L | <0.0010 | <0.0010 | | | <0.0010 | <0.0010 | | | <0.0010 | | | |
| Nitrate | mg/L | 0.0641 | 0.0929 | | | 0.0178 | 0.0406 | | | 0.204 | | | |
| Sulphate | mg/L | 4.72 | 5.58 | | | 3.72 | 4.88 | | | 165 | | | |
| Fluoride | mg/L | 0.053 | 0.072 | | | 0.043 | 0.051 | | | 0.09 | | | |
| Chloride | mg/L | <0.50 | <0.50 | | | <0.50 | <0.50 | | | <0.50 | | | |
| Bromide | mg/L | <0.050 | <0.050 | | | <0.050 | <0.050 | | | <0.050 | | | |
| Dissolved Oxygen | mg/L | 65.2 | 86.3 | | | 64.5 | 57.8 | | | 84.8 | | | |
| Dissolved Oxygen | % | 9.72 | 12.7 | | | 8.9 | 8.44 | | | 12.51 | | | |
| ORP | mV | 56 | 130.5 | | | -71.6 | 159.2 | | | 159.8 | | | |
| Alkalinity (CaCO3) | mg/L | 174 | 198 | | | 166 | 183 | | | 52.2 | | | |
| Total Silver | mg/L | 0.000019 | <0.000010 | | | <0.000010 | <0.000010 | | | 0.0002 | | | |
| Total Aluminum | mg/L | 0.0103 | 0.0065 | | | 0.0078 | 0.0056 | | | 0.151 | | | |
| Total Arsenic | mg/L | 0.00034 | 0.0003 | Site inaccessible. | Site inaccessible. | 0.0003 | 0.00035 | Site inaccessible. | Site inaccessible. | 0.00063 | Dry at sample location. | Dry at sample location. | Site inaccessible. |
| Total Barium | mg/L | 0.256 | 0.278 | | | 0.202 | 0.231 | | | 0.0193 | | | |
| Total Beryllium | mg/L | <0.000020 | <0.000020 | | | <0.000020 | <0.000020 | | | <0.000100 | | | |
| Total Bismuth | mg/L | <0.000050 | <0.000050 | | | <0.000050 | <0.000050 | | | <0.000250 | | | |
| Total Boron | mg/L | <0.010 | <0.010 | | | <0.010 | <0.010 | | | <0.050 | | | |
| Total Calcium | mg/L | 49.3 | 52.6 | | | 43.4 | 46.6 | | | 79.3 | | | |
| Total Cadmium | mg/L | 0.0000436 | 0.0000509 | | | 0.0000205 | 0.0000261 | | | 0.109 | | | |
| Total Cobalt | mg/L | 0.00012 | <0.00010 | | | <0.00010 | 0.00013 | | | 0.00058 | | | |
| Total Chromium | mg/L | <0.00050 | <0.00050 | | | <0.00050 | <0.00050 | | | <0.00050 | | | |
| Total Copper | mg/L | 0.00141 | 0.00091 | | | <0.00050 | <0.00050 | | | <0.00250 | | | |
| Total Iron | mg/L | 0.717 | 0.555 | | | 0.438 | 0.727 | | | 0.354 | | | |
| Total Mercury | mg/L | <0.0000050 | <0.0000050 | | | <0.0000050 | <0.0000050 | | | <0.0000050 | | | |
| Total Potassium | mg/L | 0.827 | 0.579 | | | 0.326 | 0.401 | | | 0.632 | | | |
| Total Lithium | mg/L | 0.0011 | <0.0010 | | | <0.0010 | <0.0010 | | | <0.0050 | | | |
| Total Magnesium | mg/L | 17.9 | 18.3 | | | 15.2 | 17 | | | 2.63 | | | |
| Total Manganese | mg/L | 0.0317 | 0.0287 | | | 0.0208 | 0.035 | | | 0.04 | | | |
| Total Molybdenum | mg/L | 0.00152 | 0.00658 | | | 0.00136 | 0.00142 | | | 0.00405 | | | |
| Total Sodium | mg/L | 1.01 | 0.908 | | | 0.726 | 0.866 | | | 0.363 | | | |
| Total Nickel | mg/L | 0.00079 | <0.00050 | | | <0.00050 | 0.00056 | | | <0.00250 | | | |
| Total Lead | mg/L | 0.000273 | 0.000165 | | | 0.000051 | <0.000050 | | | 0.442 | | | |
| Total Phosphorus | mg/L | <0.050 | <0.050 | | | <0.050 | <0.050 | | | <0.250 | | | |
| Total Antimony | mg/L | 0.00019 | <0.00010 | | | <0.00010 | 0.00018 | | | <0.00050 | | | |
| Total Selenium | mg/L | 0.000634 | 0.000633 | | | 0.000365 | 0.000491 | | | 0.00312 | | | |
| Total Silicon | mg/L | 3.89 | 3.82 | | | 3.03 | 3.41 | | | 2.72 | | | |

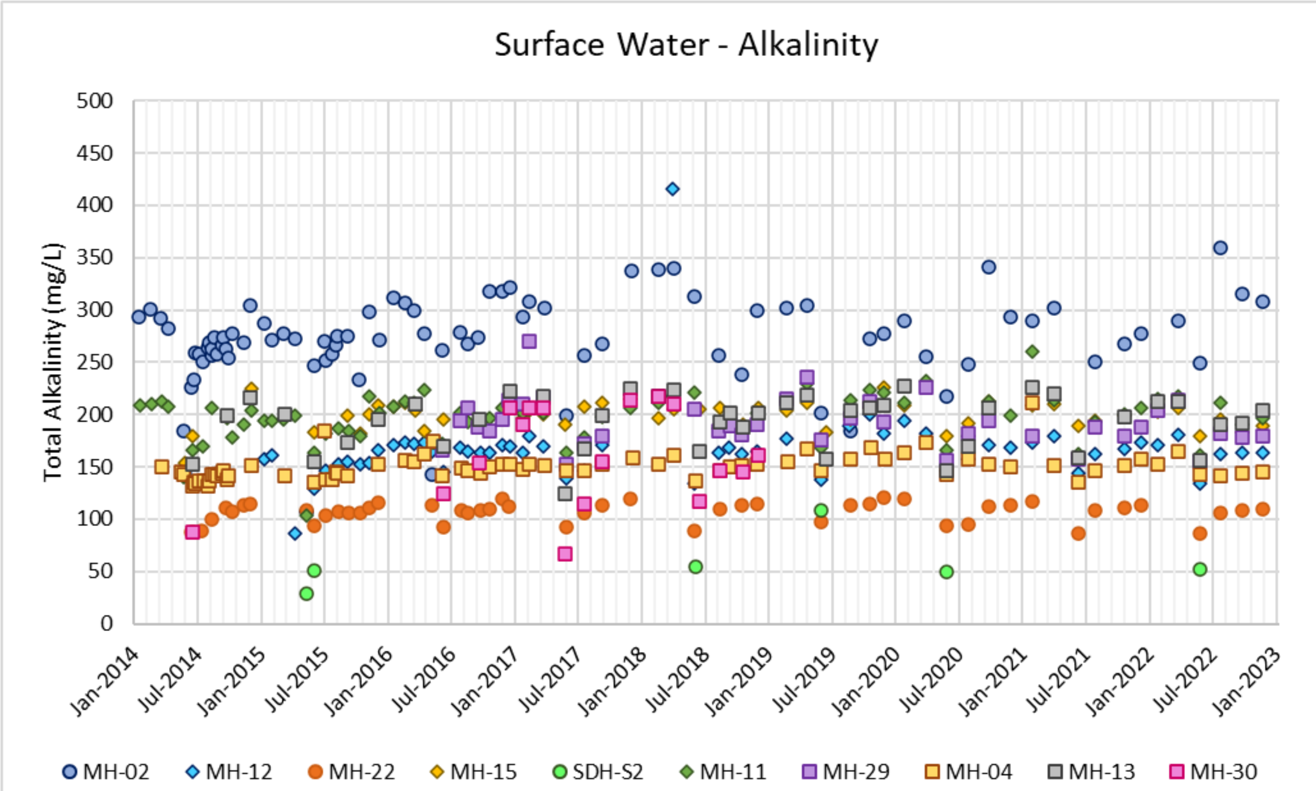
| | | MH-30 | | | | | | SDH-S2 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Unnamed tributary to False Canyon Creek, approximately 3 km d/s of MH-11 | | | | | | Waste rock below Main Zone | | | | | |
| | | 06/Feb/22 | 07/Apr/22 | 28/Jun/22 | 09/Aug/22 | 27/Oct/22 | 03/Dec/22 | 06/Feb/22 | 06/Apr/22 | 15/Jun/21 | 10/Aug/22 | 25/Oct/22 | 04/Dec/22 |
| Total Tin | mg/L | <0.00010 | <0.00010 | | | <0.00010 | <0.00010 | | | <0.00050 | | | |
| Total Strontium | mg/L | 0.146 | 0.155 | | | 0.119 | 0.126 | | | 0.0882 | | | |
| Total Sulphur | mg/L | 2.09 | 2 | | | 1.78 | 1.85 | | | 53.4 | | | |
| Total Titanium | mg/L | <0.00030 | <0.00030 | | | <0.00030 | <0.00030 | | | 0.00341 | | | |
| Total Thallium | mg/L | <0.000010 | <0.000010 | | | <0.000010 | <0.000010 | | | <0.000050 | | | |
| Total Uranium | mg/L | 0.00165 | 0.00189 | | | 0.00141 | 0.00161 | | | 0.000258 | | | |
| Total Vanadium | mg/L | <0.00050 | <0.00050 | | | <0.00050 | <0.00050 | | | <0.00250 | | | |
| Total Zinc | mg/L | 0.0467 | 0.0197 | | | <0.0030 | <0.0030 | | | 12.5 | | | |
| Total Zirconium | mg/L | <0.00020 | <0.00020 | | | <0.00020 | <0.00020 | | | <0.00100 | | | |
| Dissolved Silver | mg/L | <0.000010 | <0.000010 | | | <0.000010 | <0.000010 | | | <0.000050 | | | |
| Dissolved Arsenic | mg/L | 0.0024 | 0.0069 | | | 0.0032 | 0.0025 | | | <0.0050 | | | |
| Dissolved Aluminum | mg/L | 0.0002 | 0.0002 | | | 0.00023 | 0.00022 | | | <0.00050 | | | |
| Dissolved Barium | mg/L | 0.243 | 0.246 | | | 0.198 | 0.226 | | | 0.0158 | | | |
| Dissolved Beryllium | mg/L | <0.000020 | <0.000020 | | | <0.000020 | <0.000020 | | | <0.000100 | | | |
| Dissolved Boron | mg/L | <0.000050 | <0.000050 | | | <0.000050 | <0.000050 | | | <0.000250 | | | |
| Dissolved Bismuth | mg/L | <0.010 | <0.010 | | | <0.010 | <0.010 | | | <0.050 | | | |
| Dissolved Calcium | mg/L | 49.7 | 46.2 | | | 41.4 | 44.4 | | | 72.8 | | | |
| Dissolved Cadmium | mg/L | 0.0000275 | 0.000161 | | | 0.0000147 | 0.0000157 | | | 0.099 | | | |
| Dissolved Cobalt | mg/L | <0.00010 | <0.00010 | | | <0.00010 | 0.00012 | | | <0.00050 | | | |
| Dissolved Chromium | mg/L | <0.00050 | <0.00050 | | | <0.00050 | <0.00050 | | | <0.00050 | | | |
| Dissolved Copper | mg/L | 0.00036 | 0.00313 | | | <0.00020 | 0.00035 | | | <0.00100 | | | |
| Dissolved Iron | mg/L | 0.179 | 0.095 | Site inaccessible. | Site inaccessible. | 0.234 | 0.106 | Site inaccessible. | Site inaccessible. | <0.050 | Dry at sample location. | Dry at sample location. | Site inaccessible. |
| Dissolved Mercury | mg/L | <0.0000050 | <0.0000050 | | | <0.0000050 | <0.0000050 | | | <0.0000050 | | | |
| Dissolved Potassium | mg/L | 0.503 | 0.937 | | | 0.369 | 0.341 | | | 0.661 | | | |
| Dissolved Lithium | mg/L | <0.0010 | <0.0010 | | | <0.0010 | <0.0010 | | | <0.0050 | | | |
| Dissolved Magnesium | mg/L | 17.4 | 17 | | | 15.1 | 16.5 | | | 2.32 | | | |
| Dissolved Manganese | mg/L | 0.0281 | 0.0216 | | | 0.0202 | 0.0342 | | | 0.00837 | | | |
| Dissolved Molybdenum | mg/L | 0.00147 | 0.00613 | | | 0.0014 | 0.00142 | | | 0.000449 | | | |
| Dissolved Sodium | mg/L | 0.857 | 1.18 | | | 0.728 | 0.738 | | | 0.393 | | | |
| Dissolved Nickel | mg/L | 0.00054 | 0.00241 | | | <0.00050 | 0.00075 | | | <0.00250 | | | |
| Dissolved Lead | mg/L | 0.000072 | 0.000584 | | | <0.000050 | <0.000050 | | | 0.0416 | | | |
| Dissolved Phosphorus | mg/L | <0.050 | <0.050 | | | <0.050 | <0.050 | | | <0.250 | | | |
| Dissolved Antimony | mg/L | <0.00010 | 0.00012 | | | <0.00010 | <0.00010 | | | <0.00050 | | | |
| Dissolved Sulphur | mg/L | 1.89 | 1.86 | | | 1.35 | 1.51 | | | 56.2 | | | |
| Dissolved Selenium | mg/L | 0.000591 | 0.000623 | | | 0.000415 | 0.00045 | | | 0.00372 | | | |
| Dissolved Silicon | mg/L | 3.56 | 3.6 | | | 3.17 | 3.48 | | | 2.31 | | | |
| Dissolved Tin | mg/L | <0.00010 | <0.00010 | | | <0.00010 | <0.00010 | | | <0.00050 | | | |
| Dissolved Strontium | mg/L | 0.129 | 0.127 | | | 0.117 | 0.126 | | | 0.0866 | | | |
| Dissolved Titanium | mg/L | <0.00030 | <0.00030 | | | <0.00030 | <0.00030 | | | <0.00150 | | | |
| Dissolved Thallium | mg/L | <0.000010 | <0.000010 | | | <0.000010 | <0.000010 | | | <0.000050 | | | |
| Dissolved Uranium | mg/L | 0.00157 | 0.00179 | | | 0.00136 | 0.00152 | | | 0.000201 | | | |
| Dissolved Vanadium | mg/L | <0.00050 | <0.00050 | | | <0.00050 | <0.00050 | | | <0.00250 | | | |
| Dissolved Zinc | mg/L | 0.0164 | 0.02 | | | <0.0010 | 0.0011 | | | 11.4 | | | |
| Dissolved Zirconium | mg/L | <0.00020 | <0.00020 | | | <0.00020 | <0.00020 | | | <0.00100 | | | |

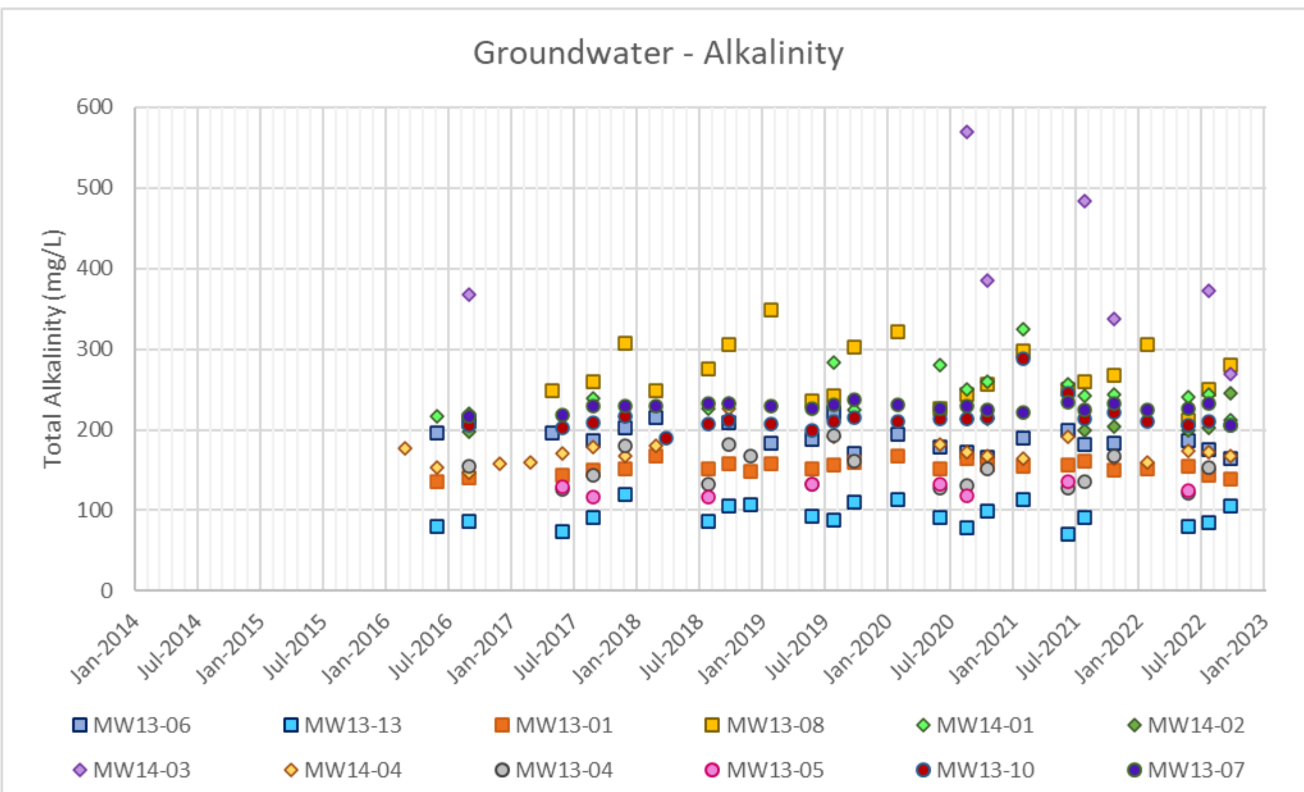
# Appendix E:

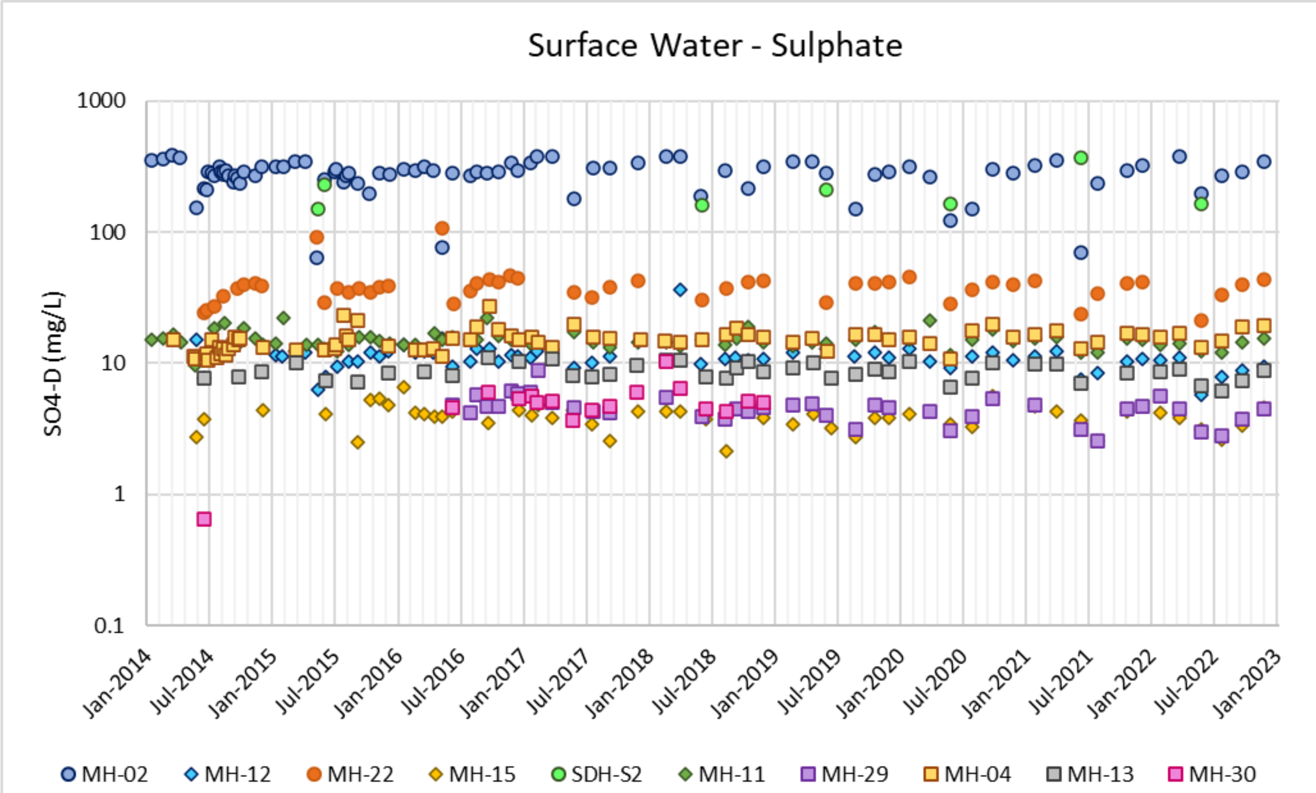
# Water Quality Plots

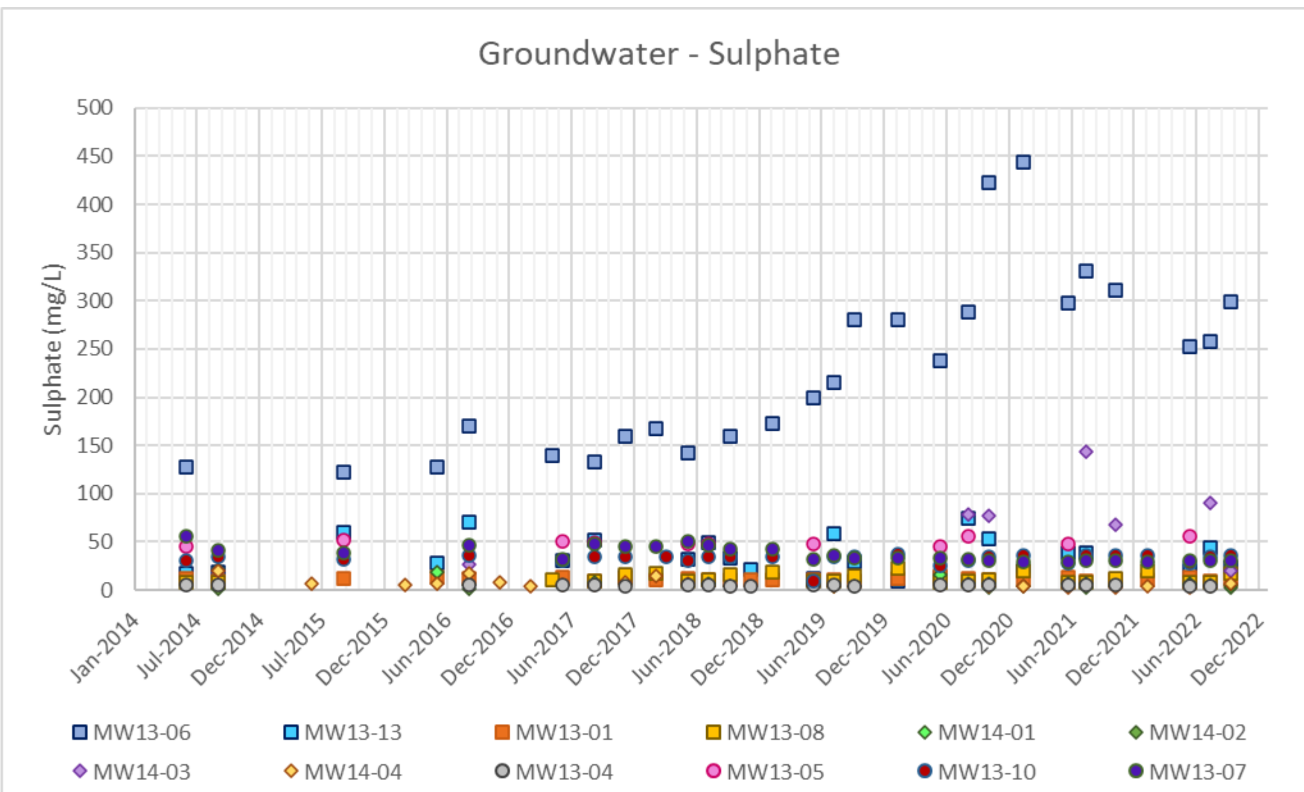

Surface Water - pH
Field pH
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MH-02
MH-12
MH-22
MH-15
SDH-S2
MH-11
MH-29
MH-04
MH-13
MH-30

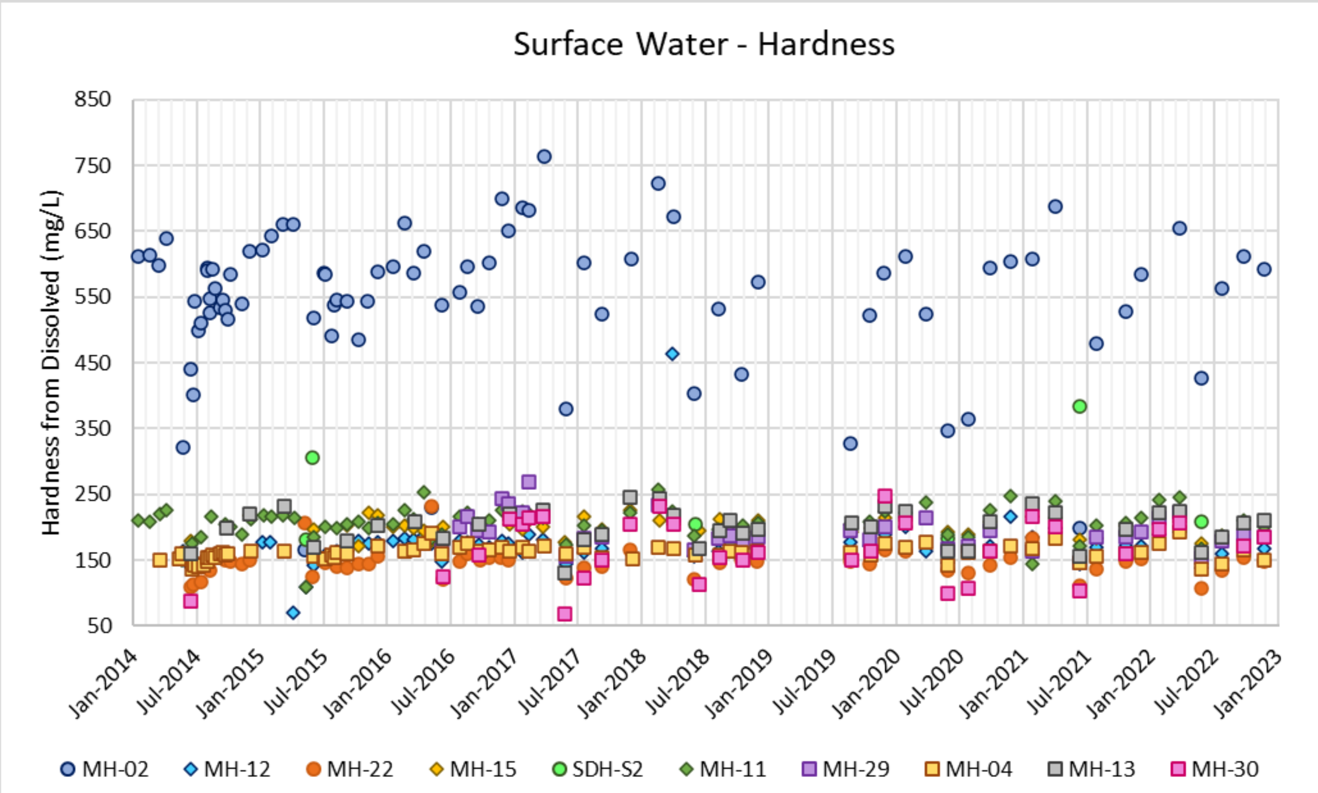

Groundwater - pH
Outlier at MW13-08 not shown (9.6, February 2nd 2021)
Field pH
8.5
8.3
8.1
7.9
7.7
7.5
7.3
7.1
6.9
6.7
6.5
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MW13-06
MW13-13
MW13-01
MW13-08
MW14-01
MW14-02
MW14-03
MW14-04
MW13-04
MW13-05
MW13-10
MW13-07

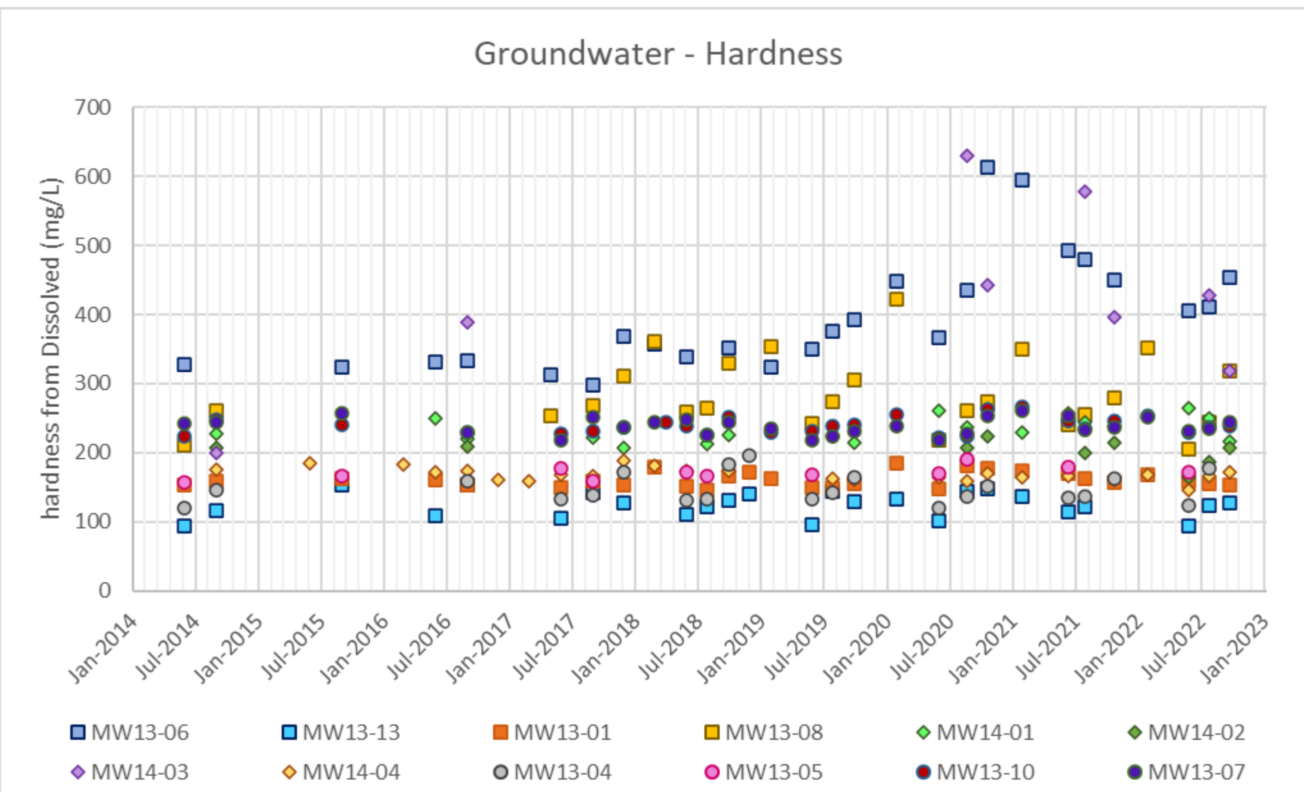

Surface Water - Alkalinity
Total Alkalinity (mg/L)
0
50
100
150
200
250
300
350
400
450
500
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MH-02
MH-12
MH-22
MH-15
SDH-S2
MH-11
MH-29
MH-04
MH-13
MH-30

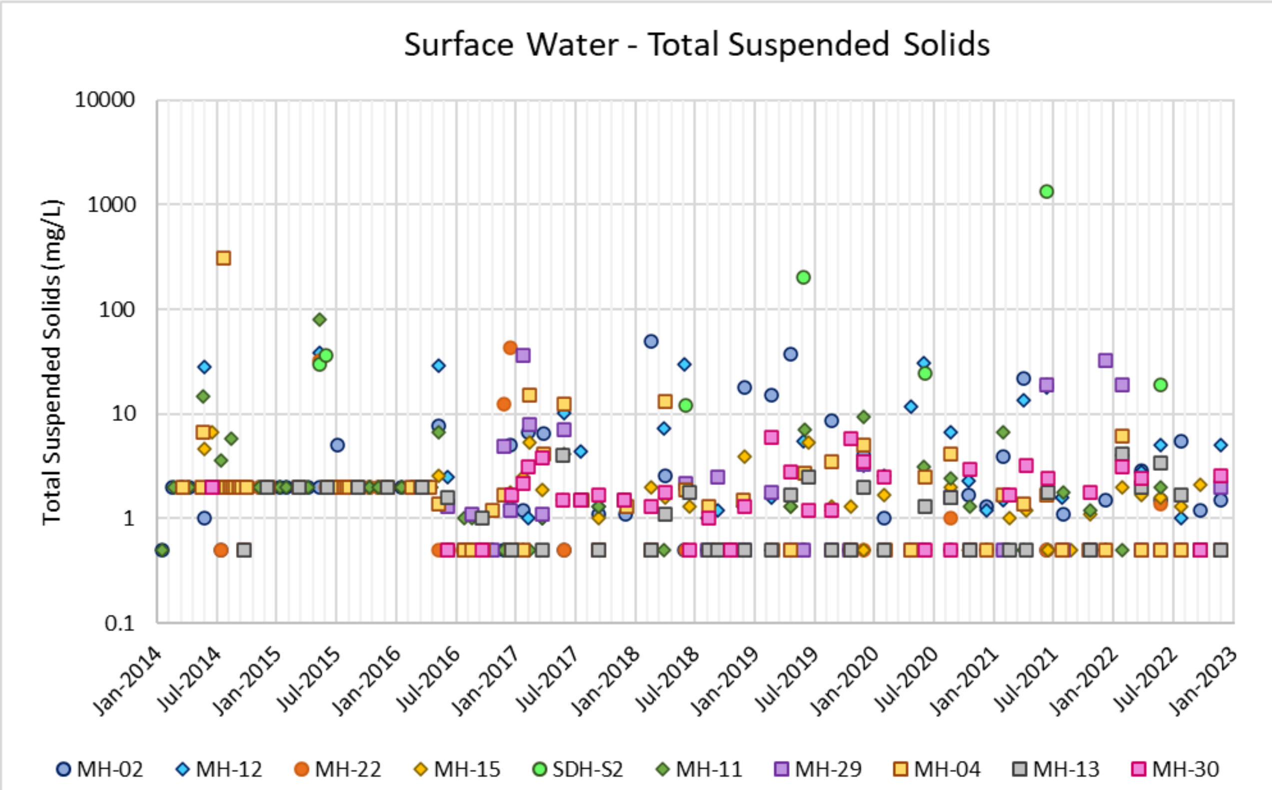

Groundwater - Alkalinity
Total Alkalinity (mg/L)
0
100
200
300
400
500
600
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MW13-06
MW13-13
MW13-01
MW13-08
MW14-01
MW14-02
MW14-03
MW14-04
MW13-04
MW13-05
MW13-10
MW13-07

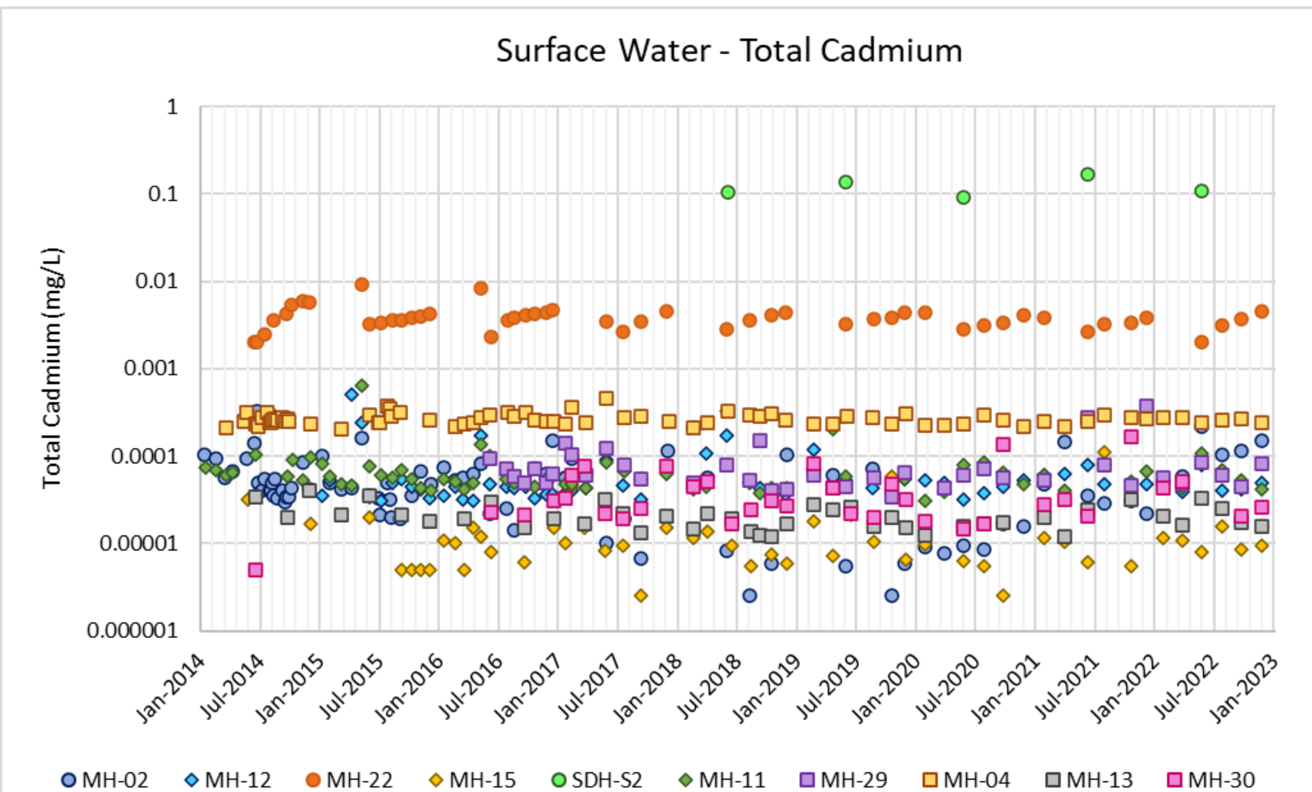

Surface Water - Sulphate
SO4-D (mg/L)
1000
100
10
1
0.1
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MH-02
MH-12
MH-22
MH-15
SDH-S2
MH-11
MH-29
MH-04
MH-13
MH-30

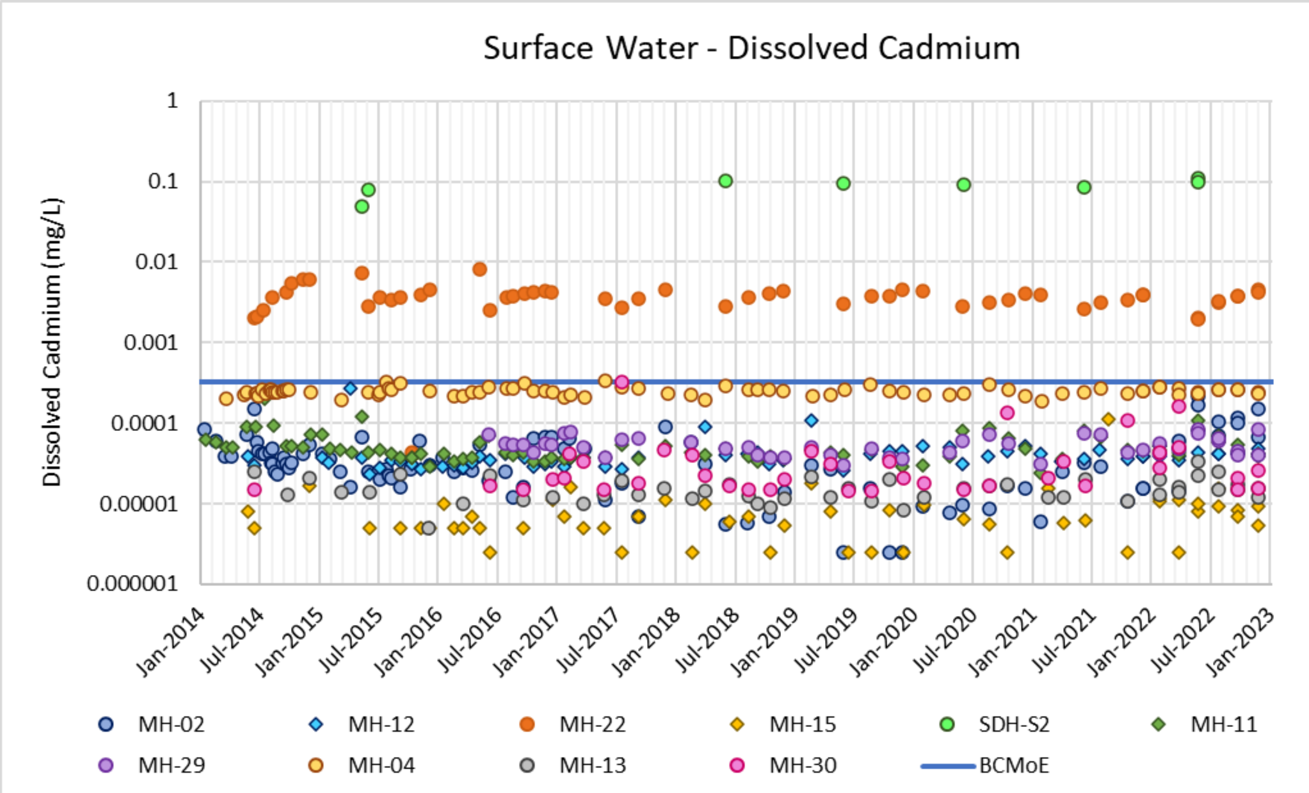

Groundwater - Sulphate
Sulphate (mg/L)
500
450
400
350
300
250
200
150
100
50
0
Jan-2014
Jul-2014
Dec-2014
Jul-2015
Dec-2015
Jun-2016
Dec-2016
Jun-2017
Dec-2017
Jun-2018
Dec-2018
Jun-2019
Dec-2019
Jun-2020
Dec-2020
Jun-2021
Dec-2021
Jun-2022
Dec-2022
MW13-06
MW13-13
MW13-01
MW13-08
MW14-01
MW14-02
MW14-03
MW14-04
MW13-04
MW13-05
MW13-10
MW13-07

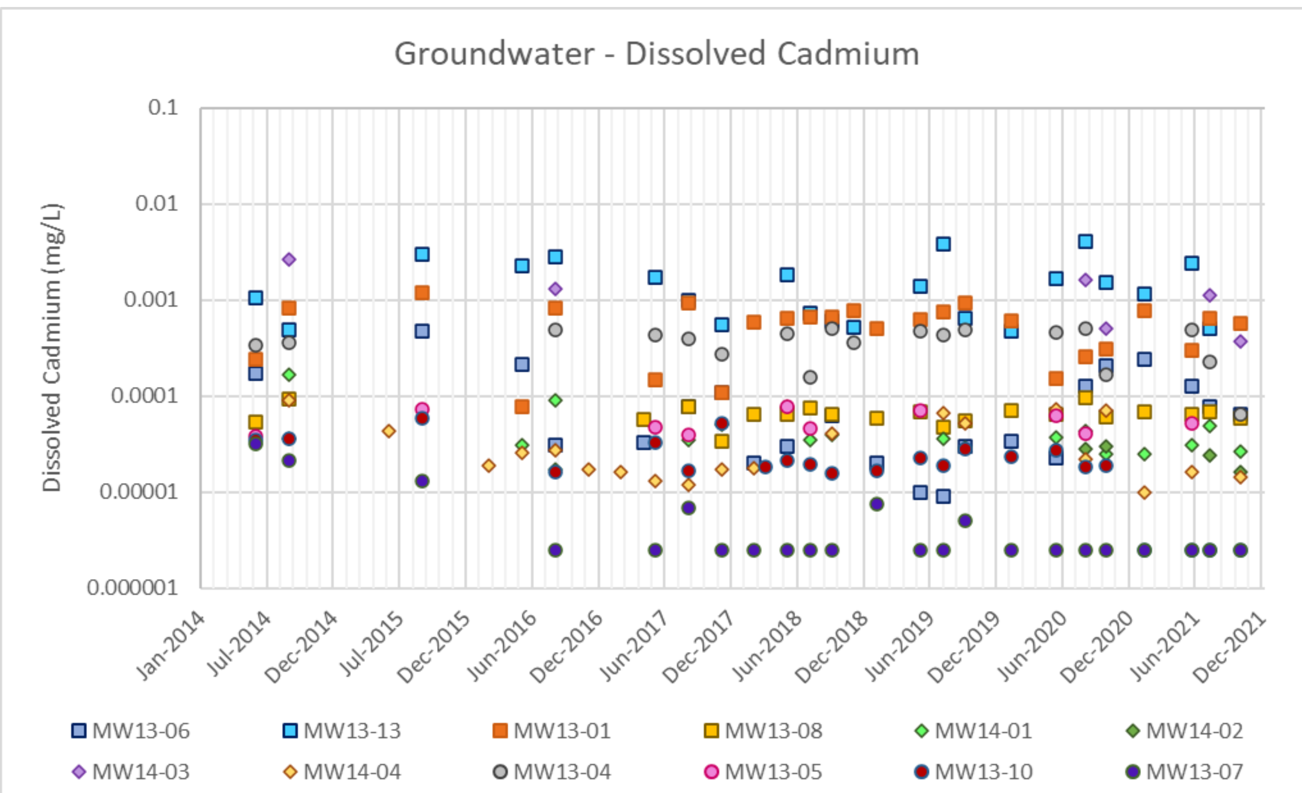

Surface Water - Hardness
Hardness from Dissolved (mg/L)
850
750
650
550
450
350
250
150
50
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MH-02
MH-12
MH-22
MH-15
SDH-S2
MH-11
MH-29
MH-04
MH-13
MH-30

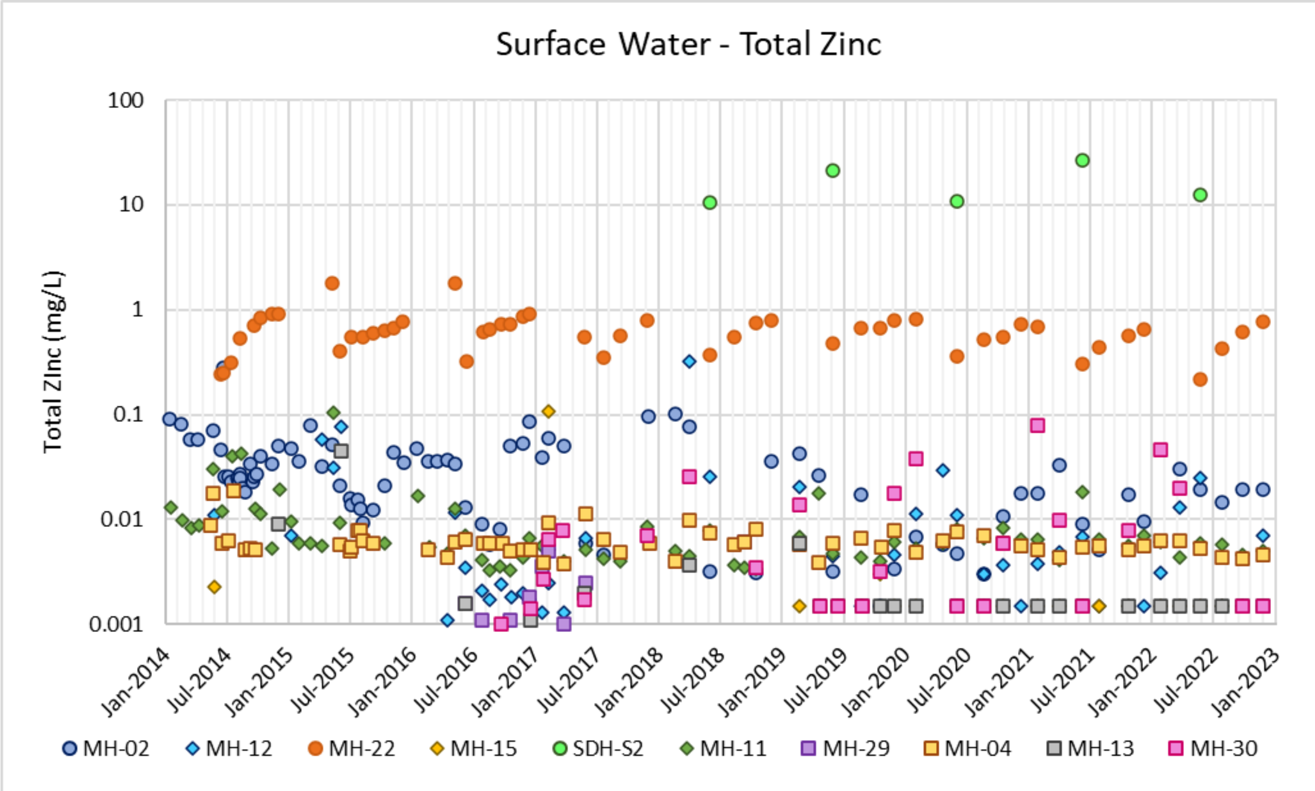

Groundwater - Hardness
hardness from Dissolved (mg/L)
700
600
500
400
300
200
100
0
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MW13-06
MW13-13
MW13-01
MW13-08
MW14-01
MW14-02
MW14-03
MW14-04
MW13-04
MW13-05
MW13-10
MW13-07

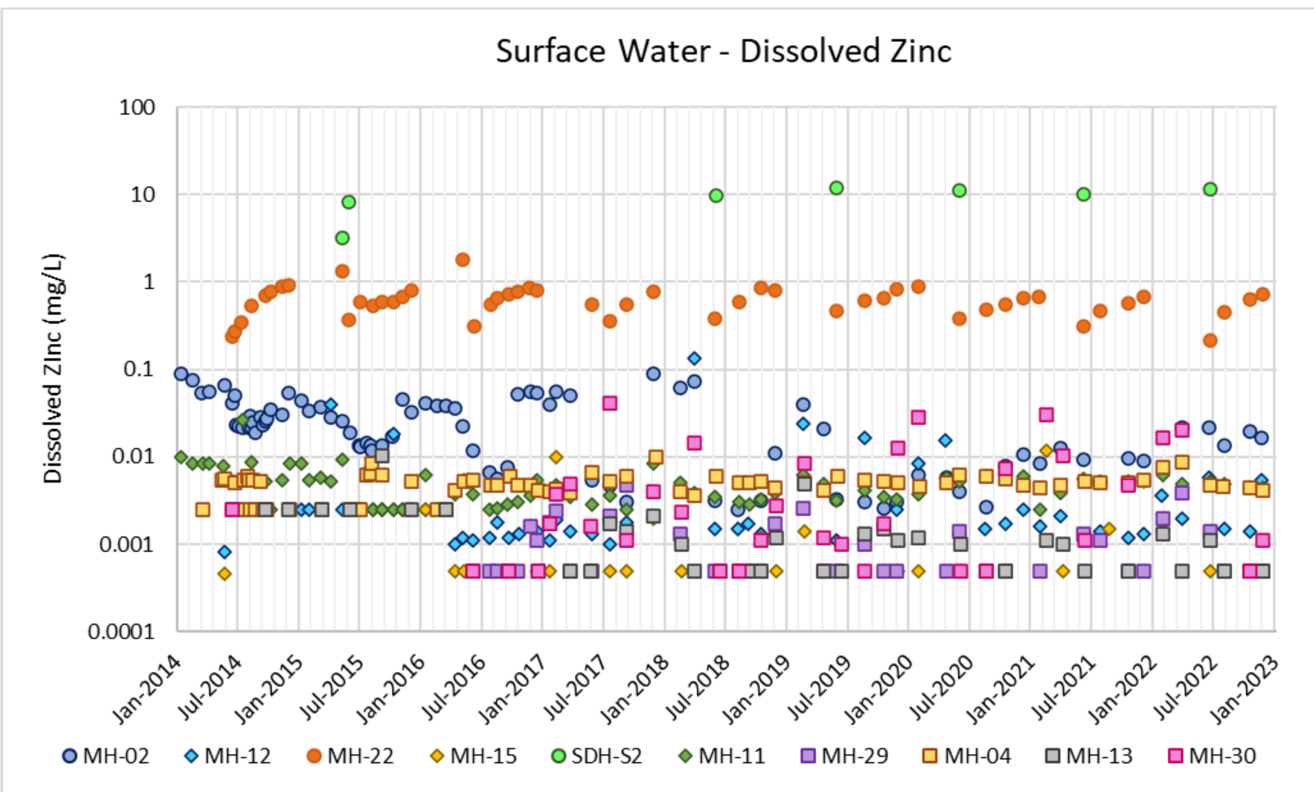

Surface Water - Total Suspended Solids
Total Suspended Solids (mg/L)
10000
1000
100
10
1
0.1
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MH-02
MH-12
MH-22
MH-15
SDH-S2
MH-11
MH-29
MH-04
MH-13
MH-30

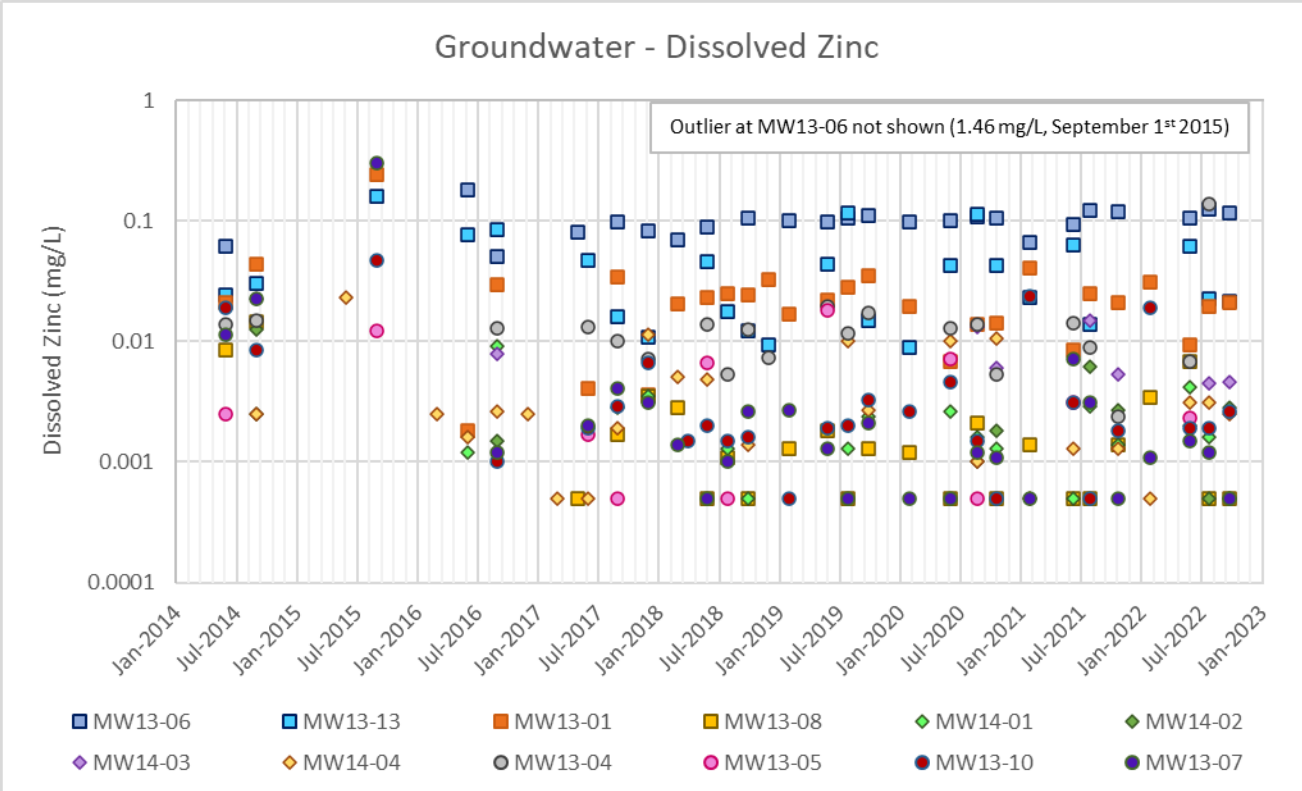

Surface Water - Total Cadmium
Total Cadmium (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
0.000001
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MH-02
MH-12
MH-22
MH-15
SDH-S2
MH-11
MH-29
MH-04
MH-13
MH-30

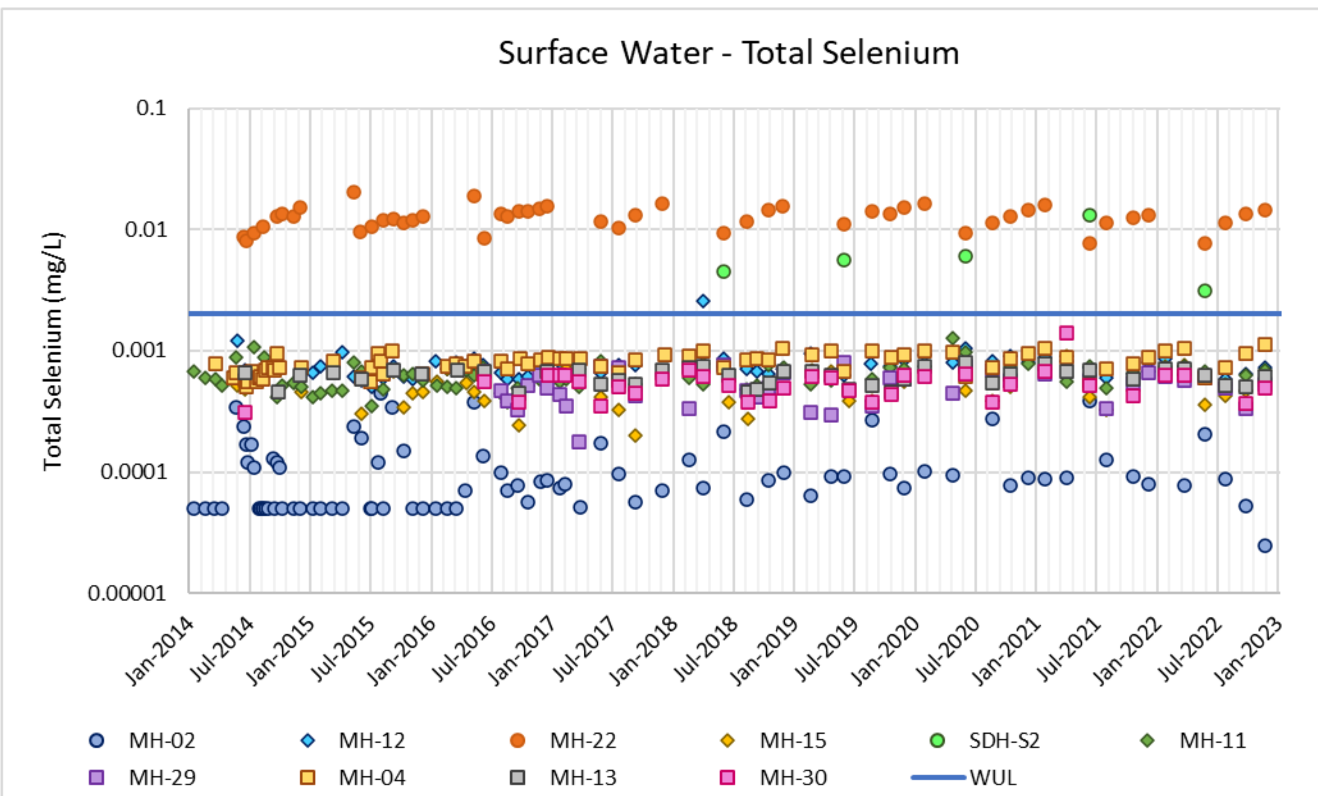

Surface Water - Dissolved Cadmium
Dissolved Cadmium (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
0.000001
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MH-02
MH-12
MH-22
MH-15
SDH-S2
MH-11
MH-29
MH-04
MH-13
MH-30
BCMoE

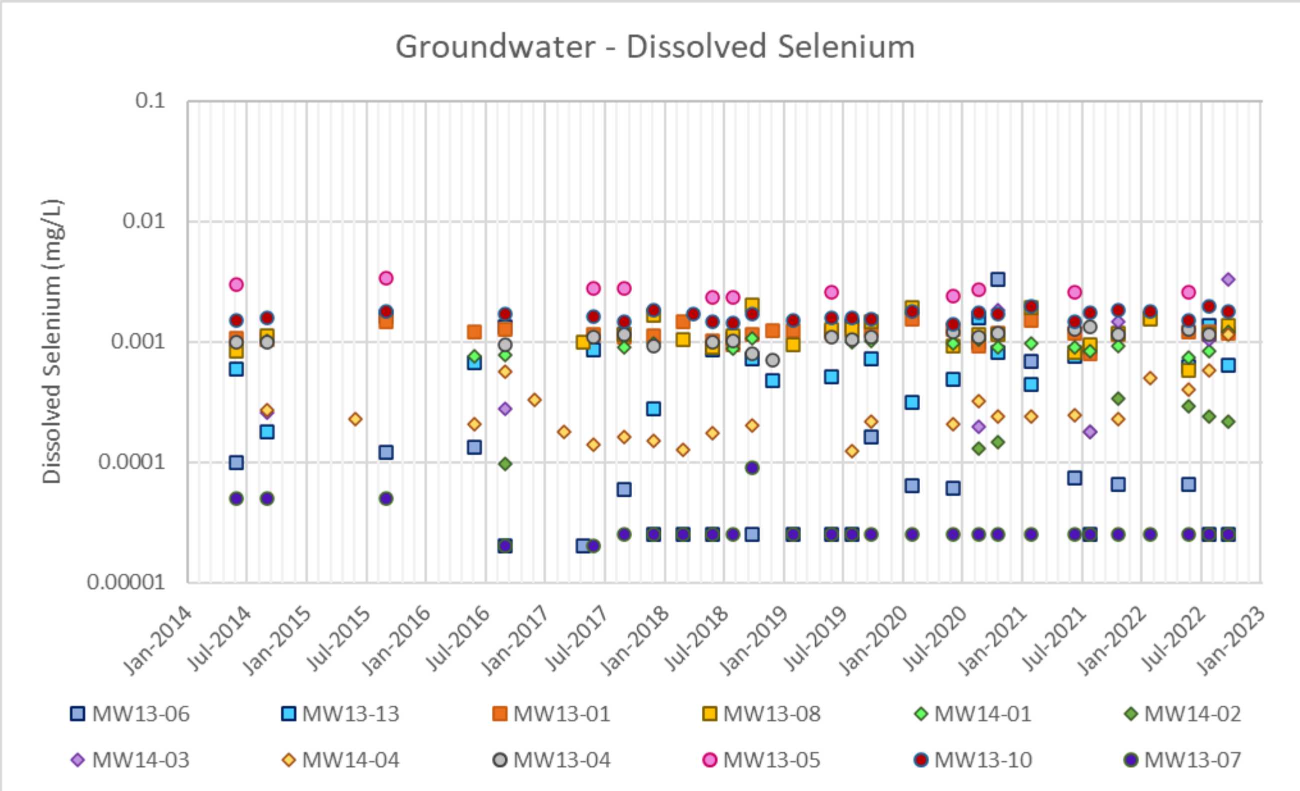

Groundwater - Dissolved Cadmium
Dissolved Cadmium (mg/L)
0.1
0.01
0.001
0.0001
0.00001
0.000001
Jan-2014
Jul-2014
Dec-2014
Jul-2015
Dec-2015
Jun-2016
Dec-2016
Jun-2017
Dec-2017
Jun-2018
Dec-2018
Jun-2019
Dec-2019
Jun-2020
Dec-2020
Jun-2021
Dec-2021
MW13-06
MW13-13
MW13-01
MW13-08
MW14-01
MW14-02
MW14-03
MW14-04
MW13-04
MW13-05
MW13-10
MW13-07

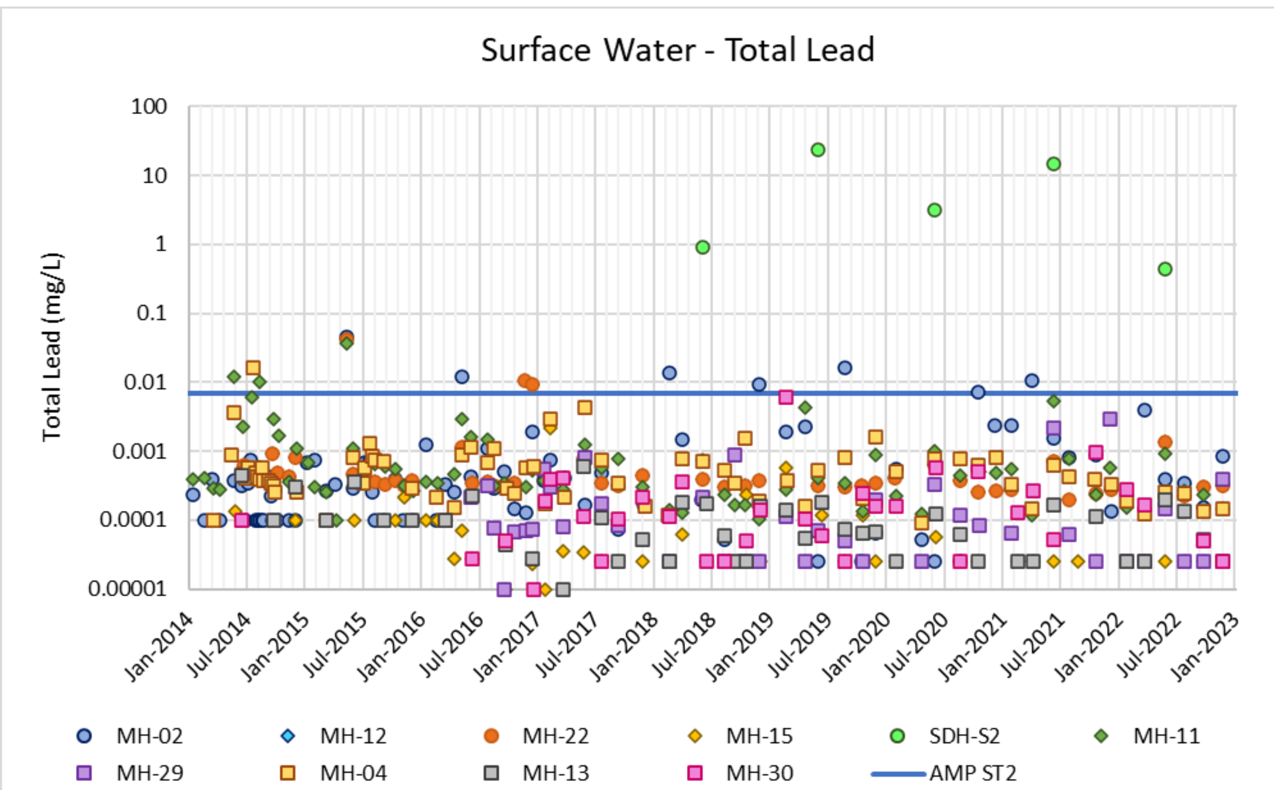

Surface Water - Total Zinc
Total ZInc (mg/L)
100
10
1
0.1
0.01
0.001
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MH-02
MH-12
MH-22
MH-15
SDH-S2
MH-11
MH-29
MH-04
MH-13
MH-30

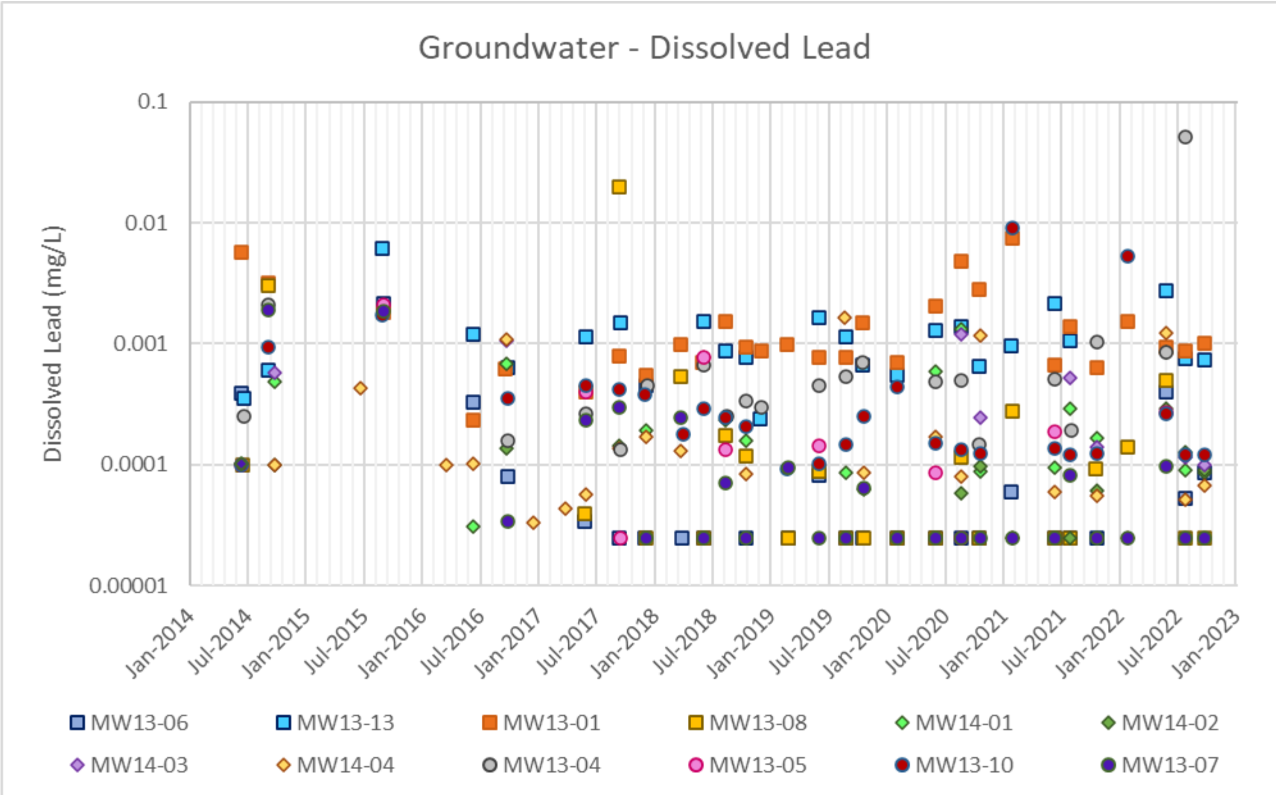

Surface Water - Dissolved Zinc
Dissolved Zinc (mg/L)
100
10
1
0.1
0.01
0.001
0.0001
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MH-02
MH-12
MH-22
MH-15
SDH-S2
MH-11
MH-29
MH-04
MH-13
MH-30


Groundwater - Dissolved Zinc
Outlier at MW13-06 not shown (1.46 mg/L, September 1st 2015)
Dissolved Zinc (mg/L)
1
0.1
0.01
0.001
0.0001
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MW13-06
MW13-13
MW13-01
MW13-08
MW14-01
MW14-02
MW14-03
MW14-04
MW13-04
MW13-05
MW13-10
MW13-07


Surface Water - Total Selenium
Total Selenium (mg/L)
0.1
0.01
0.001
0.0001
0.00001
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MH-02
MH-12
MH-22
MH-15
SDH-S2
MH-11
MH-29
MH-04
MH-13
MH-30
WUL


Groundwater - Dissolved Selenium
Dissolved Selenium (mg/L)
0.1
0.01
0.001
0.0001
0.00001
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MW13-06
MW13-13
MW13-01
MW13-08
MW14-01
MW14-02
MW14-03
MW14-04
MW13-04
MW13-05
MW13-10
MW13-07


Surface Water - Total Lead
Total Lead (mg/L)
100
10
1
0.1
0.01
0.001
0.0001
0.00001
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MH-02
MH-12
MH-22
MH-15
SDH-S2
MH-11
MH-29
MH-04
MH-13
MH-30
AMP ST2


Groundwater - Dissolved Lead
Dissolved Lead (mg/L)
0.1
0.01
0.001
0.0001
0.00001
Jan-2014
Jul-2014
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
Jul-2017
Jan-2018
Jul-2018
Jan-2019
Jul-2019
Jan-2020
Jul-2020
Jan-2021
Jul-2021
Jan-2022
Jul-2022
Jan-2023
MW13-06
MW13-13
MW13-01
MW13-08
MW14-01
MW14-02
MW14-03
MW14-04
MW13-04
MW13-05
MW13-10
MW13-07

# APPENDIX F:
# NORTH DAM REPAIR MEMO 2022

**Teck**

**Teck Resources Limited**
Canadian Legacy Properties
Bag 2000
Kimberley, B.C. V1A 3E1

www.teck.com

**Memorandum**

| | | | |
|---|---|---|---|
| **To:** | Yukon Water Board | **Date:** | August 8, 2022 |
| **From:** | Wendy McBain, Environmental Coordinator | **Cc:** | Michelle Unger, Manager Environmental Performance, Teck Legacy Properties |

**Subject:** North Dam Erosion Event

During a routine inspection on June 17, 2022 an area of surface erosion was identified on the north embankment of the Tailings Storage Facility at Sa Dena Hes (aka North Dam) (Photo 1). Based on satellite images the event occurred between June 1 and 7th when a pool of water had developed near the dam crest during rapid snow melt period and resulted in overtopping and release of the ponded water. The exact cause is under review. It was determined that the impacted material was dam embankment material only and no release of tailings from the impoundment occurred.

In response, the Engineer of Record, Teck representative, and contractors were immediately mobilized to site to assess the situation and complete repairs. Silt fencing was installed at the toe of the embankment and upstream of the seepage monitoring location MH-02 (Photo 2). The Natural Resources Inspector was also notified of the event and proposed repair work.

During the initial mobilization and assessment, a killdeer nest was identified on the crest of the north dam near the erosion area. Environmental Dynamics, Inc. (EDI) was retained to commence a nest survey prior to any repair activities. A visual barrier was installed between the work area and the nest.

As part of the repair work, an environmental monitoring plan was prepared and implemented during construction:

- Sediment and erosion control measures included:
- Try to avoid working under wet/flowing conditions.
- Install sediment controls including silt fencing below the work area. The fencing must be secured so that water and sediment cannot bypass the area (flow under or around).
- Ongoing maintenance shall be conducted, if/when required, and removal of any accumulated sediments shall occur prior to removal of the dam(s); and
- Oil absorbent spill booms should also be available on site in case of releases to water.

Water quality monitoring locations are relevant to the erosional event included:

- MH-02 - Source sampling location -– North Tailings Dam Seepage
- MH-12 -Compliance sampling location - located at the East Fork of Tributary E – of False Canyon Creek, approximately 2 km downstream of the north tailings dam

Prior to commencement of repair activities, baseline water quality sampling at MH-02 was conducted on June 17th-19th and at MH-12 on June 21st for the following parameters:

- Field parameters (Table 1); and
- Laboratory analysis of physical parameters (pH, specific conductance, total alkalinity, TSS, TDS, hardness) and analytical parameters (anions and nutrients, dissolved organic carbon, total and dissolved metals, and total hexavalent chromium).

The following observations were made:

- Mine source water quality parameters measured at station MH-02 were below the specific thresholds (ST), as defined by the adaptive management plan (AMP) (Table 2).
- All constituents were below the Receiving Water Quality Standards (QZ16-051 Clause 40) at receiving environment station MH-12 (Table 3).

Estimated flow volume and turbidity were measured at MH-02 and MH-12 at least 3 times per day. Photographs, weather conditions, and appearance were recorded (Table 1).

During the repair activities from June 25$^{th}$ – 29$^{th}$, water quality samples were collected from MH-02 and MH-12 and analyzed according to Schedule A of Water License QZ16-051. The following observations were made:

- Mine source water quality parameters measured at station MH-02 were below the specific thresholds (ST), as defined by the adaptive management plan (AMP) (Table 2).
- All constituents were below the Receiving Water Quality Standards (QZ16-051 Clause 40) at receiving environment station MH-12 (Table 3).

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Bag 2000
Kimberley, B.C.  V1A 3E1

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*Table 1. North Dam Repairs Environmental Monitoring - Field Parameters*

| Date | Time | Sample Location | Estimated Flow volume | Turbidity NTU | Observations (clear, cloudy, turbid) | Photographs (Y/N) | Weather Conditions | Comments |
|---|---|---|---|---|---|---|---|---|
| 06-17-2022 | 8:20pm | MH-02 | 40-50 L/min | clear | Clear | Y | +18, sun | |
| 06-18-2022 | 1:40 pm | MH-02 | 40-50 L/min | | Clear | N | +21, overcast | |
| 06-19-2022 | 6:55 pm | MH-02 | 40-50 L/min | | Clear | N | +18, sunny | |
| 06-21-2022 | 7:00pm | MH-12 | Overflowing all banks | | Clear | Y | +16, overcast | Water very high flowing all directions |
| 06-24-2022 | 9:30am | | | | | Y | +15, overcast | |
| 06-24-2022 | 3:30pm | MH-02 | | | Clear | Y | +14, sunny | Temp=19.2 |
| 06-24-2022 | 4:15pm | MH-12 | | 4.8 | Clear | Y | +14, sunny | |
| 06-25-2022 | 9:15am | MH-02 | 1.02 L/sec | 7.92 | Clear | Y | +14, sunny | Temp=12.8 |
| 06-25-2022 | 10:05am | MH-12 | | 6.47 | Clear | Y | +14, sunny | Temp=3.6 |
| 06-25-2022 | 1:15pm | MH-12 | | 5.29 | Clear/cloudy | N | +14, cloudy | Temp=4.7 |
| 06-25-2022 | 3:00pm | MH-02 | 0.98 L/sec | 4.20 | clear | Y | +19, sunny | Temp=19.8 |
| 06-25-2022 | 3:45pm | MH-12 | | 1.25 | clear | n | +18, overcast | Temp = 4.8, pH=8.87 |

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| Date | Time | Sample Location | Estimated Flow volume | Turbidity NTU | Observations (clear, cloudy, turbid) | Photographs (Y/N) | Weather Conditions | Comments |
|---|---|---|---|---|---|---|---|---|
| 06-25-2022 | 5:30pm | MH-02 | 0.89 l/sec | 1.79 | Clear | N | Overcast | Temp = 18.9, pH=7.87 |
| 06-26-2022 | 9:20am | MH-12 | - | 0.99 | Clear | N | +14, sunny | Temp=3.5, pH=8.53 |
| 06-26-2022 | 10:00am | MH-02 | 0.91 L/sec | 0.15 | Clear | N | +14, sunny | Temp=13.3, pH=8.04 |
| 06-26-2022 | 11:00am | MH-12 | - | 0.99 | Clear | N | Overcast | Temp=4.6, pH=8.44 |
| 06-26-2022 | 1:45pm | MH-02 | 0.79 L/sec | 0.42 | Clear | N | Sunny | Temp=15.6, pH=8.04 |
| 06-26-2022 | 3:45pm | MH-12 | - | 0.98 | Clear | | Sunny | Temp=4.8, pH=8.43 |
| 06-26-2022 | 4:20pm | MH-02 | 0.86 L/sec | 0.15 | Clear | | Sunny | Temp=19.1, pH=8.44 |
| 06-27-2022 | 9:10am | MH-12 | - | Can't calibrate/error | Clear | | +16, sunny | Temp=3.8, pH=8.45 |
| 06-27-2022 | 4:09pm | MH-12 | - | No turbidity results | Clear | N | +18, overcast | Temp=4.4, pH=8.48 |
| 06-27-2022 | 5:09pm | MH-02 | 0.87 L/sec | No turbidity results | Clear | N | +18, rain little bit | Temp=14.8, pH= 8.20 |

*Table 2. Mine Source Station MH-02 Compare to AMP ST1*

| Location | Date | T-Zn | T-Cd | T-Pb | SO4 |
|---|---|---|---|---|---|
| | Unit | mg/L | mg/L | mg/L | mg/L |
| | ST1 | 0.4 | 0.014 | 0.006 | 600 |
| MH-02 | **Before Repairs** | | | | |
| | 17-Jun-22 | 0.0266 | 0.000215 | 0.000254 | 130 |
| | 18-Jun-22 | 0.02 | 0.000214 | 0.000239 | 129 |
| | 19-Jun-22 | 0.024 | 0.000206 | 0.000232 | 138 |
| | **During Repairs** | | | | |
| | 25-Jun-22 | 0.0204 | 0.000254 | 0.00097 | 153 |
| | 26-Jun-22 | 0.0193 | 0.000214 | 0.000372 | 170 |
| | 27-Jun-22 | 0.0229 | 0.000256 | 0.00196 | 192 |
| | 29-Jun-22 | 0.0191 | 0.000222 | 0.000651 | 148 |

*Table 3. Receiving Environment Station MH-12 Compared to Receiving Water Guidelines*

| Location | Date | Hardness | D-Al | T-Sb | T-As | T-Be | D-Cd | | T-Cr VI | T-Co | T-Cu | | T-Fe | T-Pb | | T-Mo | T-Ni | | T-Se | T-Ag | $SO_4$ | | T-Tl | T-Zn | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unit | mg/L | mg/L | µg/L | µg/L | µg/L | µg/L | | µg/L | µg/L | µg/L | | mg/L | µg/L | | mg/L | µg/L | | µg/L | µg/L | mg/L | | µg/L | µg/L | |
| | Max Conc | | 0.05 | 9 | 5 | 0.13 | | calc | 1 | 4 | | calc | 1 | | calc | 0.073 | | calc | 2 | 0.25 | | calc | 0.8 | | Calc |
| MH-12 | **Before Repairs** | | | | | | | | | | | | | | | | | | | | | | | | |
| | 21-Jun-22 | 134 | 0.0058 | 0.29 | 1.52 | 0.022 | 0.0347 | 0.26232 | <0.500 | 0.24 | 1.07 | 5.36 | 0.549 | 6.55 | 7.932566 | 0.000982 | 1.04 | 119.3856 | 0.762 | 0.015 | 6.17 | 309 | <0.0100 | 18.3 | 40.5 |
| | **During Repairs** | | | | | | | | | | | | | | | | | | | | | | | | |
| | 25-Jun-22 | 136 | 0.0067 | 0.23 | 1.21 | <0.020 | 0.034 | 0.265196 | <0.500 | <0.100 | <0.500 | 5.44 | 0.098 | 0.799 | 8.020574 | 0.00096 | <0.500 | 120.7374 | 0.615 | <0.010 | 5.6 | 309 | <0.0100 | <3.00 | 42 |
| | 26-Jun-22 | 409 | 0.005 | 0.23 | 1.16 | <0.020 | 0.0355 | 0.596363 | <0.500 | <0.100 | <0.500 | 16.36 | 0.094 | 0.74 | 22.44386 | 0.000977 | <0.500 | 150 | 0.626 | <0.010 | 5.59 | 429 | <0.0100 | <3.00 | 246.75 |
| | 27-Jun-22 | 142 | 0.0054 | 0.23 | 1.14 | <0.020 | 0.0324 | 0.273758 | <0.500 | <0.100 | <0.500 | 5.68 | 0.056 | 0.537 | 8.286704 | 0.00106 | <0.500 | 124.7646 | 0.674 | <0.010 | 5.59 | 309 | <0.0100 | <3.00 | 46.5 |
| | 29-Jun-22 | 142 | 0.0051 | 0.24 | 1.21 | <0.020 | 0.0379 | 0.273758 | <0.500 | <0.100 | <0.500 | 5.68 | 0.094 | 0.798 | 8.286704 | 0.00105 | <0.500 | 124.7646 | 0.761 | <0.010 | 5.5 | 309 | <0.0100 | <3.00 | 46.5 |

*Photo 1. North Dam Erosion*

*Photo 2. Silt fence installed upstream of seepage monitoring pipe MH-02*

*Photo 3. North Dam after Repair*

# APPENDIX G:

# 2022 TECK MINE WASTE FACILITIES INSPECTION

Final

# 2022 Annual Facility Performance Review

Sä Dena Hes Mine, Yukon Territory

Teck Resources Limited

SRK Consulting (Canada) Inc. ▪ CAPR001928 ▪ November 2022

**Final**

# 2022 Annual Facility Performance Review

Sä Dena Hes Mine, Yukon Territory

**Prepared for:**
Teck Resources Limited
601 Knighton Road
Kimberley, BC, V1A 3E1
Canada

+1 250 427 8413
www.teck.com

**Prepared by:**
SRK Consulting (Canada) Inc.
1066 West Hastings Street, Suite 2200
Vancouver, BC V6E 3X2
Canada

+1 604 681 4196
www.srk.com

**Lead Author:** Peter Mikes, P.Eng. **Initials:** PHM
**Reviewer:** John Kurylo, P.Eng **Initials:** JBK

**File Name:**
SDH_2022_AFPR_CAPR001928_2022-11-14.docx

**Suggested Citation:**
SRK Consulting (Canada) Inc. 2022. 2022 Annual Facility Performance Review. Final. Prepared for Teck Resources Limited: Kimberley, BC. Project number: CAPR001928. Issued November. 2022.

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## Tables



## Figures

## Appendices

# Useful Definitions

This list contains definitions of symbols, units, abbreviations, and terminology that may be unfamiliar to the reader.

| | |
|---|---|
| AEP | Annual Exceedance Probability |
| AFPR | Annual Facility Performance Review |
| ALARP | As Low As Reasonably Practical |
| AMECFW | AMEC Foster Wheeler |
| CDA | Canadian Dam Association |
| DDRP | Detailed Decommissioning Reclamation Plan |
| DSR | Dam Safety Review |
| EOR | Engineer of Record |
| FOS | Factor of Safety |
| GISTM | Global Industry Standard on Tailings Management |
| HSRC | Health, Safety and Reclamation Code |
| IDF | Inflow Design Flood |
| MAP | Mean Annual Precipitation |
| MERP | Mine Emergency Response Plan |
| NBC SHC | National Building Code Seismic Hazard Calculator |
| OMS | Operation, Maintenance and Surveillance |
| PGA | Peak Ground Acceleration |
| PMF | Probable Maximum Flood |
| RTFE | Responsible Tailings Facility Engineer |
| SRS | Sediment Retaining Structure |
| TARP | Trigger Action Response Plan |
| TMA | Tailings Management Area |
| WRD | Waste Rock Dumps |
| YG | Yukon Government |

# Executive Summary

This report presents the results of the 2022 Annual Facility Performance Review (AFPR) of the Sä Dena Hes Tailings Management Area (TMA). The TMA forms part of the closed Sä Dena Hes mine located near Watson Lake, Yukon. The only remaining tailings retaining embankment at the closed site is the North Dam. A small dike, referred to as the Sediment Retaining Structure (SRS), was also retained after closure of the site to collect any sediment that would be generated from the till cap that was placed over the exposed tailings. Other facilities are included in the AFPR scope to fulfill annual inspection and reporting requirements of the site Water Licence QZ16-051 (issued April 2017) and the Quartz Mining License QML-0004 (issued December 2015). These other facilities consist of a series of riprapped lined diversion channels and the reclaimed waste rock dumps at the location of the closed portals adjacent to the Main, Jewelbox and Burnick ore zones

The inspection was completed by Mr. Peter Mikes, P.Eng. and Kisa Elmer, P.Eng., of SRK Consulting (Canada) Inc. on August 16 and 17, 2022 while accompanied by Jeff Basarich (Teck). Peter Mikes is Engineer of Record (EOR) for the TMA.

The work was completed in accordance with Teck's Tailings and Water Retaining Structures Guideline and Policy (2019) and in observation of the Global Industry Standard on Tailings Management (GISTM) (ICMM 2020), inclusive of its expectation to be a public domain document indicative of the EOR's summary commentary of the annual performance of the TMA.

## Summary of Facility Description

The original TMA consisted of three earth structures, which were referred to as the North Dam, the South Dam, and the Reclaim Dam. The North and South Dams, which impounded the tailings, were constructed between July 1990 and October 1991. The dams for both structures were built to a height of about 13 meters.  The reclaim dam was built to detain supernatant water decanted from the tailings pond. The mine operation involved recycling of the detained water to the mill, with a controlled discharge when required into the adjacent Camp Creek from April to October each year.

Operations at Sä Dena Hes Mine commenced in July 1991 and were suspended in December 1992. Decommissioning of the site began in 2014 and was completed in 2015 by the Sä Dena Hes Operating Corp.

Tailings and water retaining structures that currently remain on the site are the North Dam and the Sediment Retaining Structure (SRS). The SRS is a 7 m high dike which impounds a small pond.

## Summary of Key Observations and Significant Changes

### North Dam

The North Dam is currently stable. The dam does not retain water except during snow melt when the tailings cover drainage may be restricted due to ice or snow blockages in the drainage channels. During the June 2022 snow melt, the ponded water overtopped the dam sometime between June 1 and June 7 resulting in the development of an erosion gully in the North Dam that eroded approximately 415 $m^3$ of dam fill with no tailings displaced. Once the pond drained, the erosion discontinued. Repairs to the North Dam were completed in June, with additional erosion protection measures implemented in October 2022. During the August site inspection, no signs of any instability on the crest or the downstream slope were observed.

The piezometers are in good condition and continue to function as designed. The seasonal fluctuations in the piezometers were consistent with those in previous years. Like the 2021 freshet, water levels in Piezometer 2A triggered an alert indicating an exceedance just above the 'minor risk alert level' trigger criteria during the 2021 freshet. Following a review of the data and the local precipitation records for the same period, it is SRK's opinion that these unexpected rises in the water levels in Piezometer 2A were attributed to an unseasonably high snowpack and rainfall. Subsequent readings are more consistent with trends seen in previous years. No further action is required outside of continued monitoring.

**Sediment Retaining Structure**

The SRS is in good physical condition and the spillway is functioning in accordance with design parameters. A transverse crack that was first observed in 2021 remains across the dam crest approximately 1 m east of the spillway that is believed to be caused by frost heave. No further action is required as the crack does not extend deep enough to act as a preferential seepage pathway through the structure, and the structure is considered to be temporary, with Teck planning to remove the structure in the future as part of an overall "safe closure" landscape.

**North Creek**

The North Creek crosses three access roads that were decommissioned in 2014 with the creek conveyed across the roads in riprap lined channels. Riprap movement and bank erosion or deformation has occurred at all three crossings. The North Creek will continue to erode these channel sections but will eventually sustain itself without maintenance. No remedial action is required.

## Summary of Hazards and Potential Consequences

Aa required component of the AFPR is to review hazards and the consequences of different potential failure modes of the North Dam and the SRS. There are only three potential failure modes for tailings facilities – instability, internal erosion, and overtopping. Any number of failure mechanisms can be present to hypothetically create one of those modes for a given facility – when a hypothetical mechanism is shown to be credible then the facility has a credible failure mode.

The main hypothetical failure mechanisms of the SRS are:

- Overtopping from one of:
  - runoff from extreme precipitation events that exceeds the flow capacity of the SRS spillway
  - ice build up and debris in the SRS spillway
- Internal Erosion (Piping)

- Slope instability

The main hypothetical failure mechanisms for the North Dam are:

- Overtopping due to a blockage of tailings cover drainage channels and subsequent build-up of a pond due to extreme precipitation and/or snowmelt
- Internal Erosion (Piping)
- Slope Stability

At the Sä Dena Hes TMA, there exists no credible catastrophic failure modes for the North Dam and SRS and, as a result, no life safety concerns from these facilities. This performance review concluded that the North Dam and the SRS are in adequate condition fall within acceptable guidelines for stability.

SRK understands that Teck's long-term goal for all tailings facilities is to reach a condition of "Safe Closure" which is taken to be landform status with all failure modes being reduced to non-credible. Erosion caused by snow melt water at North Dam in a similar manner that occurred in 2022 is a concern that will require to be addressed as noted in the AFPR recommendations. The likelihood of the other non-catastrophic mechanisms is judged to be extremely rare based on extreme consequence loading conditions and conservative assumptions. Whether those non-catastrophic failure modes are credible or non credible will be evaluated over 2022 and 2023 and that work will verify or refine the conservative assumptions.

## Summary of OMS Manual and MERP

The Operation, Maintenance and Surveillance (OMS) Manual was last updated on December 21, 2021 and is reviewed annually. The next revision of the manual should be revised to incorporate the North Dam erosion gully repairs and additional monitoring and maintenance requirements to prevent a similar incident in the future.

Teck developed a Mine Emergency Response Plan (MERP) for the site that was finalized on July 27, 2021 and replaces the Emergency Preparedness and Response Plan. The MERP is also reviewed annually. SRK has reviewed the TMA applicable sections of the MERP and found the plan to be adequate for the site.

## Recommendations

A list of deficiencies or non-conformances noted from the 2021 performance review are summarized in Tables E1 and E2. All recommendations from previous inspections have been implemented.

**Table E1: Table of Recommendations**

| Structure | ID No. | Deficiency or Non-Conformance | Applicable Regulation or OMS Reference | Recommended Actions | Priority (Table 7.1) | Recommended Deadline / Status |
|---|---|---|---|---|---|---|
| **2021 Recommendations** | | | | | | |
| TMA | 2021-1 | Since 2015, all revisions to the OMS Manual have remained in 'draft' status. | OMS Section 1.3 | Finalize the next revision of the OMS Manual. | 3 | **Complete**<br>OMS updated in December 2021 |
| North Dam | 2021-2 | The soup can used as a cap on NDW-4A was displaced at time of the inspection. | OMS Section 5.2.1 | Install a proper 2-inch PVC pipe plug and trim the PVC pipe such that it fits in steel protective casing. Water pooled within the casing should be removed (either siphoned or by drilling a small hole within the steel casing). | 4 | **Complete** |
| North Dam | 2021-3 | A long-term goal for the TMA is to reduce all potential failure modes to non-credible. | - | Undertake a credible failure modes assessment for the TMA. | 4 | **In Progress**<br>Before end of 2022 |
| North Dam | 2021-4 | Water levels in Piezometer 2A triggered alerts and event-driven inspections during the last two freshets that are attributable to higher snowpacks and rainfall. The event-driven inspection resulted in no dam safety concerns. | OMS Section 6.2.2 | Undertake a review of the trigger action alert levels and consider additional levels for seasonal freshet conditions.<br><br>Establish snowpack monitoring stations to investigate the impact between snowmelt and the North Dam foundation pressures. | 4 | **In Progress**<br>Before end of 2022. |
| **2022 Recommendations** | | | | | | |
| Tailings Cover | 2022-2 | An erosion gully is present in the reclamation cover north of the SRS pond that has eroded through the cover and has exposed geotextile. | OMS Section 5.2.1 | Shape the erosion gully to form a channel with a nominal amount of fill overtop of the base of the gully. Armour the gully with a layer of geotextile and riprap. | 4 | **New**<br>Before end of 2024. |
| North Dam | 2022-3 | Drainage channel blockages on the tailings cover during snowmelt results in the formation of a pond adjacent to the North Dam. In 2022, the pond overtopped the North Dam and formed an erosion gully that required repairs. | OMS Section 5.2.1 | Modify the dam to eliminate the risk of future erosion events. Due to limitations in the tailings cover thickness, increasing the grade of the cover drainage channels is not possible without exposing tailings. As a result, raising the dam to increase the freeboard is recommended. | 2 | **New**<br>Before end of 2024. |

| Structure | ID No. | Deficiency or Non-Conformance | Applicable Regulation or OMS Reference | Recommended Actions | Priority (Table 7.1) | Recommended Deadline / Status |
|---|---|---|---|---|---|---|
| North Dam and Tailings Cover | 2022-4 | As above | OMS Sections 5 and 6 | Modify the TMA maintenance and surveillance programs in the OMS Manual to include monitoring for the development of a pond against the North Dam and maintenance to clear drainage pathways on the tailings cover during the snowmelt period. The modifications should include use of satellite monitoring to track pond development, an additional site inspection in early-May to establish site access and clear a drainage path to the south. As a contingency, a plan should be developed for the mobilization of a pump and associated equipment to pump the ponded water downstream of the North Dam.<br><br>The OMS Manual should also be updated to include the as-built information from the North Dam erosion gully repairs as outlined in Section 6.4. | 2 | **New**<br>Before end of Q1 2023. |

### Table E2: General Description of Priority Rankings

| Priority | Description |
|---|---|
| 1 | A high probability or actual dam safety issue considered immediately dangerous to life, health or the environment, or a significant regulatory concern. |
| 2 | If not corrected, could likely result in dam safety issues leading to injury, environmental impact or significant regulatory action; or, a repetitive deficiency that demonstrates a systematic breakdown of procedures. |
| 3 | Single occurrences of deficiencies or non-conformances that alone would not be expected to result in dam safety issues. |
| 4 | Best Management Practice as a suggestion for continuous improvement towards industry best practices that could further reduce potential risks. This typically includes ongoing construction items within the appropriate construction cycle. |

Notes: Based on the Health, Safety and Reclamation Code (HSRC) for Mines in British Columbia.

# 1. Introduction

## 1.1 Purpose, Scope of Work, and Methodology

SRK Consulting (Canada) Inc. was retained by Teck Resources Limited (Teck) on behalf of the Sä Dena Hes Operating Corp to complete the Annual Facility Performance Report (AFPR) of the closed Sä Dena Hes mine located near Watson Lake, Yukon.

The site inspection was completed was completed on August 16 and 17, 2022 by Peter Mikes, P.Eng., and Kisa Elmer, P.Eng., of SRK while accompanied by Jeff Basarich (Teck). Peter Mikes has filled the role of Engineer of Record (EOR) for the TMA since 2021. The Responsible Tailings Facility Engineer (RTFE) is Morgan Lykpa, P.Eng. (Teck) who has filled this roll since 2019. Ms. Lypka was unavailable for the site inspection in 2022 but was consulted in follow-up discussions from the visit.

This report presents the results of the 2022 AFPR for the period of September 2021 through August 2022 (reporting period) and includes the following structures and features:

- The Tailings Management Area (TMA) that includes:
  - The North Tailings Dam
  - Till Tailings Cover
  - North and South drainage channels
  - Sediment Retaining Structure (SRS)
- The North Creek Channel that was reclaimed following decommissioning of the North Creek Dike and Second Crossing of North Creek
- The relocated Camp Creek drainage channel
- The Burnick, Main Zone and Jewelbox Waste Rock Dump areas

The scope of the work consisted of:

- A visual inspection of the physical condition of the structures and features to identify any deficiencies and non-conformances:
- A review of the Operation, Maintenance and Surveillance Manual (OMS) and the Emergency Response Plan for the TMA as documented in Mine Emergency Response Plan (MERP)
- A review of the potential consequences of failure
- A review of the routine site inspection forms provided by Teck
- A review of the piezometer and settlement records of the North Dam provided by Teck

## 1.2 Regulatory Requirements and Guidelines

The site is regulated under Quartz Mining Licence QML-0004 and management of water is regulated by Water Use Licence QZ16-051.  Both licenses approved the “Detailed Decommissioning and Reclamation Plan (DDRP) prepared by Teck (2015) that was implemented in 2014.  While this report focuses on the TMA and associated water management infrastructure, the waste rock dump areas are also included in the inspection in accordance with Clause 45 of the water license.

This report reviews the performance of the facilities relative to the following:

- Guideline for Tailings and Water Retaining Structures (Teck 2019)
- Dam Safety Guidelines (CDA 2013)
- Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams (CDA 2019)
- Developing an Operation, Maintenance, and Surveillance Manual for Tailings and Water Management Facilities (MAC 2021)

The site is also working towards a “landform” status and eventual “safe closure” per the GISTM with all failure modes being reduced to non-credible as per the Executive Summary.

# 2 Background

## 2.1 Facility Description

### 2.1.1 Overview

This section provides a description of the components remaining at the mine site after decommissioning in 2014 and 2015. A map showing the overall mine site is provided on Figure 1 with a general arrangement map of the TMA provided in Figure 2.

### 2.1.2 Tailings Management Area

The original TMA which extended from the North Dam to the South Dam covered an area of approximately 0.2 $km^2$. During the operating life of the mine, approximately 700,000 tonnes of tailings (400,000$m^3$ based on tailings density of 1.8 tonnes/$m^3$) were deposited into the impoundment, primarily at the northern end.

The tailings at the northern end of the TMA are retained by the North Dam. The North Dam is approximately 15 m high with a crest elevation of 1,100 m, a crest length of about 260 m, and a crest width of 10 m. A site plan and section through the dam are shown in Figures 3 and 4. The dam is an earthen, zoned embankment structure constructed between July 1990 and October 1991 in a single stage.

Most of the tailings are within the northern half of the TMA, north of the original cofferdam that was removed in 2014. The tailings behind the North Dam were capped with a till cover in 2014 to provide a means of controlling wind erosion of tailings to provide a growth medium of the tailings for revegetation. The cover thickness varies between approximately 0.4 m and 2.2 m and was constructed of excavated dam fill material. The cover was sloped away from the crest of the North Dam in a southerly direction towards the SRS. Water is no longer regularly impounded behind the dam. A shallow swale was constructed down the middle of the cover to direct surface runoff on the cover to the SRS.

The SRS was constructed in 2014 by leaving in place a low-profile dike composed of the former South Dam. The SRS is considered temporary and Teck plans to remove the structure in the future. The primary function of the SRS is to retain any sediment that may be transported from the till cover over time. The SRS is approximately 7 m high, with a crest length of about 80 m and crest width of 4 m. The depth of water behind the structure is a maximum of about 1.7 m. An emergency spillway was constructed through the SRS to convey flows from the upstream catchment to the South Drainage Channel. The as-built spillway and drainage channel geometries are presented in Figures 5 and 6.

### 2.1.3 Tailings

The mineralization at Sä Dena Hes is characterized by zinc and lead sulphides with low concentrations of iron sulphides in association with abundant carbonates. Therefore, acid generation will not occur.

Zinc, cadmium and lead leaching are controlled by the oxidation of sphalerite (Zn, Cd) and galena under pH-neutral atmospheric conditions. Breakdown of sphalerite is apparent throughout the site. Acceleration of sphalerite oxidation is not expected in the absence of a mechanism to lower pH. Zinc and cadmium leaching will continue but is not expected to accelerate. Most sources will continue to leach zinc and cadmium at the current rates (Teck 2015).

### 2.1.4 Water Management Infrastructure

#### Overview

Three drainage channels were built as part of the 2014 TMA decommissioning (Figure 9). The longest of the three was constructed through the former Reclaim Dam and the pond area to route Camp Creek flows along its historical alignment. The other two drainages (the North Channel and the South Channel) were constructed to direct runoff from the covered tailings areas to the new Camp Creek Drainage Channel. There is also a drainage channel located down the middle of the cover that directs runoff from the tailings cover at the northern end of the TMA.

#### South Drainage Channel

The South Drainage Channel was constructed from the SRS spillway through the former South Dam and connects with the Camp Creek Drainage Channel. The channel length is about 230 m and it was installed with riprap erosion protection placed on top of a non-woven geotextile (Figure 10). The channel is designed for the 1 in 1000-year, 24-hour Inflow Design Flood (IDF). Upstream and downstream side slopes are 2H:1V. Average grade of the channel is 4%.

#### Camp Creek Drainage Channel

The Camp Creek Drainage Channel was constructed through the former Reclaim Dam and pond area to route Camp Creek flows along its historical alignment (Figure 9). The channel length is about 940 m and it was installed with riprap erosion protection placed on top of a non-woven geotextile (see Figure 8). The channel is designed for the 1 in 1000-year, 24-hour IDF. Upstream and downstream side slopes are 2H:1V. Average grade of the channel is 5%.

#### North Diversion Channel

The North Diversion Channel was constructed along the east side of the former South Pond to divert as much runoff as possible away from the tailings and soil cover during the first few years after the cover placement. Conveyed water is detained in the SRS to allow for sediments to deposit before the water is discharged into Camp Creek (Figure 11). The channel length is about 300 m and it was installed with riprap erosion protection placed on top of a non-woven geotextile. The channel is designed for the 1 in 1000-year, 24-hour IDF. Upstream and downstream side slopes are 2H:1V. Average grade of the channel is 3%.

**North Creek**

During operation of the mine, a dike was built over the North Creek as a water storage facility for the mill. The dike (see Figure 1 for location) was decommissioned in 2015 and a riprapped channel was built through the old dike to convey the flow along North Creek to False Canyon Creek. A similar channel was also built downstream to convey the North Creek flow through a decommissioned access road.

### 2.1.5 Waste Rock Dumps

During operation of the mine, waste rock dumps were developed at each of the main portals, associated with the Main Zone, the Jewelbox Zone and the Burnick Zone ore bodies (Figure 1). At closure, the portals were closed off with waste rock, and the dumps were resloped to direct runoff away from the openings and to provide more stable conditions.

## 2.2 TMA Design Basis

Table 2.1 on the following page provides the relevant design criteria adopted for the TMA decommissioning in 2014 and 2015 (SRK 2013).

Teck has since advised that they are aligned with the most conservative interpretation of the Global Industrial Standard on Tailings Management (GISTM) (ICMM 2020), which in turn, is consistent with their safety culture. Commensurately, Teck has advised that consequence classification is not a part of their management governance going forward and has asked that it not be reported in this AFPR. Instead, they intend to adopt the extreme consequence case design loading for any facility with credible flow failure modes. For facilities without a credible failure mode in terms of a life safety issue, Teck indicates they will reduce credible risks to As Low As Reasonably Practical (ALARP). This consequence case applies for both earthquake and flood scenarios for all tailings facilities, consistent with the GISTM.

## 2.4 Summary of History

The Sä Dena Hes mine was constructed in 1991 and operated for a 16-month period between August 1991 and December 1992. The Sä Dena Hes Operating Corporation (SDHOC) purchased the property from Curragh Resources Inc. in March 1994. The Sä Dena Hes Mining Corporation (the Company) is a joint venture between Teck Resources Limited (“Teck” - 50% ownership) and Pan Pacific Metal Mining Corp (50% ownership, a wholly owned subsidiary of Korea Zinc.) Teck is the operator and manages the property under the joint venture agreement.

In 2014 and 2015 the mine site was closed and decommissioned in accordance with the DDRP (Teck 2015). The decommissioning and reclamation activities consisted of:

- Removal of the South and Reclaim dams
- Relocation of the existing Camp Creek Diversion to its original creek alignment

- Construction of the SRS at the toe of the removed South Dam
- Construction of ancillary riprap lined drainage channels
- Placement of the till cover over the tailings that would remain stored on site behind the North Dam
- Dismantling, decommissioning, and disposal of all site infrastructure including the mill
- Regrading and capping of the waste rock dump areas
- Landforming and capping of the mill area and other site disturbances
- Decommissioning of site access roads
- Revegetation (scarification, tree planting and seeding)

**Table 2.1: TMA Design Criteria**

| Parameter | North Dam | SRS |
|---|---|---|
| **Inflow Design Flood** (IDF | | |
| Minimum AEP | 1/3 between the 1,000-year event and the PMF | 1 in 1,000-year event |
| IDF Peak Flow ($m^3/s$) | Not applicable (no spillway). | 5.4 |
| **Freeboard** | | |
| Minimum operating freeboard | Not applicable (no water impounded) | 1.0 |
| Freeboard during passage of IDF | | 0.5 |
| **Seismic Event** | | |
| Minimum AEP | 1 in 2,475-year event | 1 in 1,000-year event |
| PGA (g) | 0.20 g | 0.073 g |
| **Slope Stability Factors of Safety (FOS)** | | |
| Static | 1.5 | |
| Pseudo-static | 1.0 | |
| Post-earthquake | 1.2 | |

Notes:

[1] AEP = Annual exceedance probability
[2] PMF = Probable maximum flood
[3] PGA = peak ground acceleration

# 3 Surveillance and Maintenance during Reporting Period

The TMA is a closed facility. Teck conducts on-going maintenance and surveillance of the TMA and the water management infrastructure at the site including the access road from the Robert Campbell Highway as per the Sä Dena Hes OMS Manual (Teck 2021). Considering the erosion event at the North Dam in 2022 (Section 3.2), active management is needed during the snow melt period to manage melt water near the North Dam as described in Section 7 Recommendations.

## 3.1 Surveillance

Routine visual inspections are completed by the Site Caretaker in the spring and the fall, with an additional summer inspection (this report) completed by an engineer (EOR for the TMA). The fall 2021 inspection was completed concurrently with the 2021 EOR inspection on September 22, 2021 and the spring inspection was completed on June 29, 2022. The spring 2022 routine inspection form is provided in Appendix E. The 2022 fall inspection was completed on October 13, 2022 (after the reporting period of this report) with the results to be included in the 2023 AFPR.

Water quality sampling is completed bimonthly, which includes monitoring of seepage at the toe of the North Dam. During the site visits by the sampling team, inspections of the North Dam and the SRS spillway are made to check for any blockages or subsidence.

## 3.2 North Dam Erosion Maintenance Event

On June 17, 2022, during a site visit by the site caretaker, an erosion gully was observed on the North Dam that required repairs. The North Dam repairs occurred between June 23 and 28, 2022. The initial site visit was completed to assess site access prior to the June water quality sampling campaign. The observation of the gully prompted the initiation of the emergency response procedures as per the Mine Emergency Response Plan (MERP), that included the EOR's site presence and guidance throughout the repairs.

Based on SRK's current understanding of the dam construction, foundation, seepage, site topography and weather observations, the following describes the erosion mechanism that SRK judges to be most likely:

> *Surface water from melting snow was confined within the northern tailings management area due to ice/snow blockages in drainage channels to the south and a snow cornice that developed along the dam crest. As snow continued to melt, the pond reached a critical level with water migrating through the snow and ice to eventually erode a channel through the dam within a rapid timeframe (sometime between June 1 and June 7 based on satellite imagery). Once the pond had drained, the erosion discontinued.*

The potential contributing factors to the erosion event and supporting evidence are provided in as follows:

- **Extreme snowpack**: At the start of May 2022, the average snow water equivalent (SWE) in the Liard River basin was the highest snowpack on record for this time of the year with records dating back to 1980 (YG 2022).
- **Rapid Snowmelt**: Snowmelt at site typically occurs in May and early June. May temperatures were slightly higher than normal, with significantly higher temperatures between May 31 and June 8. Watson Lake Airport daily maximum temperatures ranged between 19°C and 25°C during this period. Satellite imagery at this time shows extensive snow coverage in the TMA on May 22 and general snow-free conditions on June 7, 2022.
- **Ponding water within the TMA adjacent to the North Dam**: Satellite Imagery (Appendix B) shows a pond developing against the North Dam in late May. A review of historical satellite imagery shows a pond also developed in 2020 and 2021, indicating that the pond formation may be an annual occurrence during snowmelt.
- **Drainage blockages to the south**: A survey of the tailings cover on June 20, 2022 (Figure 4) shows drainage channels on the cover surface that are intended to direct snowmelt and precipitation to the south and away from the dam. Within 250 m of the dam, the channel has minimal positive drainage with ponded water present in the channel bottom throughout most of the year. Due to the shallow grade and slow flow velocity, the channels may be prone to blockages from ice and/or snow.
- **Limited Freeboard**: The tailings cover ties-into the downstream dam crest resulting in an approximate 0.3 m freeboard across the dam crest in the area of the gully.
- **Snowdrift and development of a cornice at the North Dam**: There is a prevalent northernly wind at the TMA that results in the drifting of snow to the north and the development of a cornice at the North Dam as evidenced by site observations and satellite imagery (Appendix B).

Extreme rainfall and internal erosion are not believed to be factors in the initiation of the erosion gully. The highest 24-hour rainfall measured at the Watson Lake Airport between June 1 and 9, was 9.3 mm on June 8 (after the overtopping event). The second highest event was 0.6 mm on June 6. Internal erosion is not believed to be a factor in the gully formation as the embankment pore pressures were typical and the gully did not appear to extend into the foundation during the embankment repairs.

The erosion gully was located approximately 155 m from the west abutment of the dam, or 30 m east of Settlement Gauge NDS-3. A plan showing the erosion gully location and cross section is provided in Figures 4 and 5. The gully was U-shaped with near vertical side-walls. The size of the gully was more pronounced within the “Sand and Gravel” embankment fill downstream of the dam crest, with the appearance of a plunge pool that suggests waterfall erosion and the release of pooled water from the TMA. The typical gully width within the “Sand and Gravel” fill ranged between 3 m and 7.5 m, with a depth of up to 4 m immediately below the downstream crest. The erosion was less through the till zones across the dam crest with a typical width of 3 m and depths ranging from 1 m at the upstream crest to 3 m at the downstream crest. A minor amount of cover material also eroded with no tailings were visible within the eroded area. The total volume of displaced material was approximately 415 $m^3$.

The eroded material flowed to the valley bottom, with most of the displaced mass retained above the MH-02 seepage monitoring station (located approximately 35 m downstream of the dam toe), with minor amounts of sediment deposition visible at the outlet of the former eastern diversion channel.

Photos of the erosion gully and its repair are provided in Appendix C, with as-built repair drawings provided in Figure 6. Sand and Gravel material from the vertical gully side-slopes were excavated and placed at the base of the gully to create a drainage layer. The remainder of the gully was filled with a well graded sandy till sourced from a decommissioned access road located immediately to the west of the TMA. The layer of geotextile was installed as a separated layer between the two fill types. In addition, a 0.5 m thick and 2 m wide French Drain was installed at the base of the gully near the dam toe after a small seep was encountered during excavation of the erosion debris.

An as-built report of the gully repairs has been prepared (SRK 2022) that documents the site observations, contributing factors to the event, construction procedures, QA/QC activities, as well as short-term and long-term recommendations. Following the August 17, site inspection, a number of the short-term recommendations have been implemented, with the installation of jute netting, erosion control blankets, and seeding of the repair areas completed in early October 2022. The remaining short-term recommendations are included within Section 7.5 of this report.

# 4 Climate Data and Water Balance

## 4.1 Review and Summary of Climate Data

This section presents the current climate data for the site. As there is no weather station at the site, data from select local meteorological stations were used to determine temperatures, mean annual precipitation, and evaporation for the site. Regional and regression analyses were carried out by SRK to develop correlations from the available data to the site in absence of any site-specific data. Details of the correlation development are provided in SRK (2018).

Table 4.1 presents a comparison of the estimated climate conditions from September 2020 through August 2021 compared to average values. Mean site temperatures are estimated to be 3.5 °C cooler than temperatures at the Watson Lake Airport. The regression analysis predicted a Mean Annual Precipitation (MAP) for the site of 646 mm based on an elevation of 1080 m.

**Table 4.1: Site Climate Data (September 2021 through August 2022) compared to Climate Averages**

| | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Normals** | | | | | | | | | | | | | |
| Daily Max. Temp [°C] | 8.4 | -0.4 | -13.1 | -18.0 | -20.2 | -12.3 | -5.3 | 1.3 | 8.1 | 14.2 | 17.1 | 14.5 | -0.5 |
| Daily Min. Temp [°C] | -2.3 | -10.1 | -24.4 | -27.9 | -31.3 | -28.2 | -22.6 | -13.2 | -3.2 | 1.7 | 5.3 | 3.7 | -12.7 |
| Daily Mean Temp [°C] | 3.0 | -5.3 | -18.7 | -22.9 | -25.7 | -20.3 | -14.0 | -6.0 | 2.5 | 7.9 | 11.2 | 9.1 | -6.6 |
| MAP (Site) [mm] | 71.7 | 75.6 | 58.8 | 64.6 | 58.1 | 49.1 | 39.4 | 23.9 | 33.6 | 47.8 | 60.7 | 63.3 | 646 |
| Lake Evap. (Site) [mm] | 10.4 | 8.4 | 18.2 | 41.4 | 75.5 | 96.9 | 99.5 | 71.6 | 33.4 | 11.0 | 7.2 | 9.7 | 483.2 |
| **Reporting Period (September 2021 through August 2022)** | | | | | | | | | | | | | |
| Mean Temp [°C] | 3.8 | -3.0 | -16.6 | -32.7 | -24.1 | -19.6 | -12.9 | -7.4 | 2.4 | 11.0 | 13.0 | 11.8 | -6.2 |
| Precipitation [mm] | 34 | 14 | 147 | 94 | 160 | 110 | 74 | 10 | 28 | 90 | 42 | 37 | 830 |

Source: file: https://srk.sharepoint.com/sites/FS261/Internal/Monitoring%20Data/Climate/WatsonLake_Precip_rev01.xlsx?web=1

The Watson Lake A station was used as the reference station for 2021 and 2022 data as it is the most representative station close to the site that is currently active. Total precipitation recorded at Watson Lake Airport (Climate ID: 2101204) from September 2021 through August 2022 was reported as 517 mm. Using the undercatch correction factor of 1.13 (SRK 2018), total corrected annual precipitation at Watson Lake for the same period was 584 mm. A 1.42 ratio was applied to convert the corrected Watson Lake Airport precipitation to a representative site precipitation based on the regression analysis (SRK 2018) to result in a total precipitation of 830 mm for the site during the reporting period.

The climate data indicates that precipitation was higher than the average (28% higher) with over two times the normal precipitation during the winter (November 2021 through March 2022) when 585 mm of precipitation occurred compared to a normal precipitation of 270 mm. The high winter precipitation resulted in an extreme snowpack, which as noted in Section 3, at the start of the 2022 freshet (May

2022), the average SWE in the Liard River basin was the highest snowpack on record with records dating back to 1980 (YG 2022).

## 4.2 Review of Water Balance and Freeboard

### SRS

The SRS Pond has a maximum surface area of about 1,600 $m^2$ during the freshet high flow period. The catchment area for the SRS spillway is 1.33 $km^2$ as shown on Figure 12.

A simplified mean annual average water balance calculation for the catchment above the SRS is summarized in Table 4.2 based on data compiled for the recent SRK hydrological study (SRK 2018), the estimate of the site MAP during the reporting period (September through August), and the following assumptions:

- Inflow from the surrounding hillside catchment (1.17 $km^2$) based on a runoff coefficient of 0.60
- Inflow from the tailings till cover (0.16 $km^2$) based on a runoff coefficient of 0.50
- Direct precipitation input to the SRS pond (0.0016 $km^2$)

Outflow from the SRS pond is calculated as the difference between pond inputs and outputs based on the following assumptions:

- Historical mean annual pond evaporation of 483 mm
- Seepage losses estimated at 0.5 L/s

**Table 4.2: TMA Water Balance**

| Item | Units | Mean Annual | 2019-2020 | 2020-2021 | 2021-2022 |
|---|---|---|---|---|---|
| Precipitation | mm | 646 | 491 | 519 | 830 |
| Mean annual lake evaporation | mm | 483 | 483 | 483 | 483 |
| Mean annual run-on from the hillside catchment above the SRS | $m^3$ | 453,492 | 344,687 | 364,057 | 582,660 |
| Direct Precipitation on the SRS pond surface | $m^3$ | 1,034 | 786 | 830 | 1,328 |
| Mean annual runoff from tailings cover material | $m^3$ | 50,388 | 38,299 | 40,451 | 64,740 |
| Total Annual Inflow | $m^3$ | 504,914 | 383,772 | 405,338 | 64,740 |
| Annual pond evaporation losses | $m^3$ | 773 | 773 | 773 | 773 |
| Seepage losses | $m^3$ | 15,768 | 15,768 | 15,768 | 15,768 |
| Net Annual Discharge Volume over spillway | $m^3$ | 488,373 | 367,231 | 388,797 | 632,187 |

Sources: https://srk.sharepoint.com/sites/FS261/Internal/Site%20Water%20balance/2019-2020%20Water%20Balance%20SDH.xlsx?web=1
Note: The time period for each column is September through August.

The SRS was designed to convey the 1 in 1,000-year flood event while maintaining 1 m of freeboard to the crest of the dike. The climate data review found no indication of an extreme precipitation event that would have compromised the design freeboard during the past year.

### North Dam

The tailings behind the North Dam were capped with a till cover in 2014 with the cover tied into the upstream crest of the dam. The cover was sloped to drain water away from the crest and towards the SRS to the south. A shallow swale (Main Drainage Channel) was constructed down the middle of the cover to direct the surface runoff on the cover to the SRS. As shown in Appendix B, satellite imagery shows that a pond develops annually during the snowmelt period adjacent to the dam that is believed to be primarily caused by restricted drainage to the south, likely due to snow and/or ice blockages. As described in Section 3, an overtopping event occurred sometime between June 1 and June 7, 2022 that resulted in the formation of an erosion gully through the dam.

Prior to the erosion event, the as-built survey of the tailings cover showed that there was a 0.3 m freeboard across the North Dam crest in the gully area. During the gully repairs, the crest in the area was graded with the 3-5% grade to drain to the south away from the dam with the downstream crest raised by approximately 0.5 m (SRK 2022). The new low point in the downstream crest is located immediately east of the repair area and is 0.2 m higher than the low point in the downstream crest prior to the repair. While the dam freeboard has slightly increased, it remains vulnerable to a similar overtopping event in the future. Remedial actions to increase the North Dam freeboard have been recommended (refer to Section 7.5).

## 4.3 Water Discharge Quality

The surface water quality discharging from the TMA is currently monitored bi-monthly under the Yukon Water License QZ16-051. The groundwater quality is currently monitored under the same license. Water quality results are submitted to the Yukon Water Board as part of the Annual Water Licence Report in March the year following the operational period covered.

# 5 Site Observations

## 5.1 Visual Inspection

Weather during the August 16 and 17, 2022 site inspection was mostly sunny with temperatures ranging between approximately 8°C and 23°C. Minor precipitation occurred overnight between the 16th and 17th. The ground surface was free of snow and dry, with some damp areas on the tailings cover on the August 17.

Site observations are provided in the following subsections. Select photographs taken during the inspection are provided in Appendix A. The start of Appendix A also includes figures that provide the photograph locations and a tracklog of the inspection route.

### 5.1.1 TMA Drainage Channels

The three riprapped drainage channels (North Diversion Channel, South Drainage Channel, and the Camp Creek Channel) were constructed during the TMA decommissioning in 2014. Table 5.1 provides the inspection observations along with references to corresponding photographs and applicable recommendations. Figure 9 provides a plan view of the channels.

**Table 5.1: TMA Drainage Channel Observations**

| Channel | Observation | Figure (App. A) | Photo | Associated Recommend-ation |
|---|---|---|---|---|
| North Diversion Channel | ■ The condition of the channel is unchanged compared to the 2021 inspection. The channel is in good condition with no signs of major subsidence of movement of the riprap erosion protection. | A-8 | DC-04 | n/a |
| South Diversion Channel | ■ The condition of the channel is unchanged compared to the 2021 inspection. The channel is in good condition with no signs of major subsidence or movement of the riprap erosion protection. | A-7, A-8 | DC-01, DC-03 | n/a |
| | ■ As noted in the 2021, minor cracking is present parallel to the channel that was typically offset from the crest by 1 to 2 meters. The cracking is suspected to have resulted from frost heave and does not impact channel performance. | | | n/a |
| Camp Creek Channel | ■ The Camp Creek Channel is in good condition with no signs of major subsidence or movement of the riprap erosion protection. | A-7, | DC-01, DC-02 | n/a |

### 5.1.2 North Creek

The 2015 site reclamation works included decommissioning of culvert crossings of North Creek at three locations: the access road to the Burnick Zone, the North Creek Dike, and the access road to the landfill area. Table 5.2 provides the inspection observations along with references to corresponding photographs and applicable recommendations.

**Table 5.2: North Creek Observations**

| Observation | Figure (App. A) | Photo | Associated Recommend -ation |
|---|---|---|---|
| ▪ New channel erosion observed across the decommissioned access road to the Burnick Zone. In the 2021 inspection, subsidence of the south slope of the road crossing was observed with the erosion protection material in good condition (jute netting and riprap). In the 2022 inspection, the south slope was in similar condition, but new erosion observed on the north bank, along with some displacement of the erosion protection riprap and exposing of the underlying geotextile. Seepage was observed entering the channel on the north bank with rusty reddish coloured staining. The creek will continue to erode this section of the channel area but will eventually sustain itself with no intervening maintenance required. | A-9 | NC-01, NC-02 | n/a |
| ▪ A beaver dam is present at the upstream end of the decommissioned North Creek Dike structure. A beaver dam was previously removed in 2020, with no dam observed in 2021. | A-10 | NC-03 | 2022-1 |
| ▪ No change in condition was observed of the channel erosion at the downstream end of the decommissioned North Creek Dike Structure. The creek will continue to erode this section of the channel area but will eventually sustain itself with no intervening maintenance required. | A-10 | NC-04 | n/a |
| ▪ At the landfill area road crossing, erosion of the road fill on the north side of the channel is ongoing. Additional sloughing of the bank has occurred since the 2021 site inspection. Like the other North Creek crossing locations, the creek will continue to erode this section of the channel area but will eventually sustain itself without maintenance. No remedial action is required. | A-11 | NC-05, NC-06 | n/a |

### 5.1.3 North Dam

A site plan and a section of the North Dam are presented on Figures 3 and 4. Table 5.3 provides the inspection observations along with references to corresponding photographs and applicable recommendations.

**Table 5.3: North Dam Observations**

| Observation | Figure (App. A) | Photo | Associated Recommend -ation |
|---|---|---|---|
| ▪ The crest of the North Dam is in good condition and shows no signs of deformation or abnormal settling. | A-12, A-13 | ND-01, ND-04 | n/a |
| ▪ The downstream slope shows no signs of mass deformation nor is there any sign of bulging at the downstream toe. While there are a few shrubs and small trees on the slope, no excessive vegetation growth beyond the guidelines in OMS Manual was noted. | A-12, A-15 | ND-01, ND-07 | n/a |
| ▪ The downstream slope in the erosion gully repair area consisted of bare soil and was prone to erosion. Since the inspection, jute netting (like that at the SRS) was installed on the downstream dam slope with additional erosion control blankets along the dam crest in the affected area, with the entire area newly seeded. These additional remedial actions were completed in early October. | A-12, A-13 | ND-01, ND-03 | n/a |
| ▪ Historical areas of exposed wind-blown tailings are present in the downstream dam face where no vegetation is present. The tailings were present prior to remediation of the site in 2015 and with the human health and ecological risk assessment (part of the DDRP (Teck 2015)) determining that risk management of the area was considered acceptable as opposed to remediation. | A-13 | ND-03 | n/a |
| ▪ The piezometers and settlement gauges on the North Dam are in good condition and continue to function as designed. The PVC pipe at NDW-4A extends above the protective casing and is prone to damage and weathering. A remedial action is included in the Section 7 recommendations. | A-12, A-14 | ND-01, ND-05 | 2021-2 |
| ▪ Seepage downstream of the dam is collected at a monitoring station referred to as MH-02 and is a combination of groundwater discharge from the surrounding hillsides to the west and minimal seepage flow from the impoundment. The small pond upstream of the monitoring pipe has filled in with debris from the North Dam erosion event but remains functional. Seepage was clear at the time of the inspection. No change in the flow rate or consistency of the flow was noted during the site visit or during the routine site inspections and water quality sampling. | A-14 | ND-06 | n/a |
| ▪ Along the downstream toe of the North Dam there is an 80 m long seepage zone. The seepage pathway has established overtop of the erosion debris. Seepage at the toe of dam was observed to be clear. | A-15 | ND-08 | n/a |
| ▪ The till borrow area used for the erosion gully repairs is located approximately 80 m south of the west abutment of the dam on a decommissioned access road. At the time of the inspection, decommissioning of the borrow was partially completed with half of the slopes graded and landformed. Since the inspection, the remaining slopes have been regraded, and all disturbed areas have been seeded. | A-12 | ND-02 | n/a |

### 5.1.4 Sediment Retaining Structure

Figures 5 and 6 provide a site plan and sections of the SRS. Table 5.4 provides the inspection observations along with references to corresponding photographs and applicable recommendations.

**Table 5.4: SRS Observations**

| Observation | Figure (App. A) | Photo | Associated Recommend-ation |
|---|---|---|---|
| ▪ The condition of the SRS is unchanged compared to the 2021 inspection. A minor amount of seepage was observed at the SRS toe east of the spillway that is consistent with previous years observations. | A-18 | SRS-05, SRS-06 | n/a |
| ▪ The rock cofferdam and the sedimentation pond are functional. The sedimentation pond was clear at the time of our inspection with no evidence of any sediment buildup. | A-16 | SRS-01, SRS-02 | n/a |
| ▪ The SRS spillway is stable with no apparent riprap displacement. | A-17 | SRS-03, SRS-10 | n/a |
| ▪ A transverse crack is present across the dam crest approximately 1 m east of the spillway. The crack was first observed in 2021 and is believed to be caused by frost heave. The depth of the crack is unknown but is not likely to extend deep enough to act as a preferential seepage pathway through the structure. | | | n/a |
| ▪ The east crest of the spillway also appears to be lower in elevation compared to the west crest of the spillway; however, a comparison of previous inspection photos shows no visible change in ground conditions. No actions are recommended as the structure is considered temporary, with Teck planning to remove the structure in the future. | A-16 | SRS-02 | n/a |

### 5.1.5 Tailings Cover

Table 5.5 provides the inspection observations related to the TMA cover along with references to corresponding photographs and applicable recommendations.

**Table 5.5: Tailings Cover Observations**

| Observation | Figure (App. A) | Photo | Associated Recommend-ation |
|---|---|---|---|
| ▪ The till tailings cover has overall downward gradient away from the North Dam. Near the North Dam, three small puddles were observed due to recent precipitation. These puddles were created because of truck trafficking during the North Dam repairs in June 2022. No remedial action is required. | A-19 | TC-01 | n/a |
| ▪ The swale constructed within the cover to assist in directing runoff away from North Dam was clear of any debris or vegetation and functional. Small areas of ponding water were observed where there is no positive gradient along the channel. | A-20 | TC-03 | n/a |
| ▪ Vegetation is slowly developing over the entire area of the cover and is more developed along the east, west and south edges of the cover. | A-19, A-20, A-21 | TC-01 to TC-04 | n/a |
| ▪ An erosion gulley is present in the reclamation cover immediately to the north of the SRS Pond that is approximately 20 m long, 0.5 m wide and up to 1 m deep. The gully was observed during the 2021 inspection but appears to have increased in size in the past year. Several areas of | A-21, A-22 | TC-06, TC-07, TP-08 | 2022-2 |

| Observation | Figure (App. A) | Photo | Associated Recommend -ation |
|---|---|---|---|
| exposed geotextile were observed with no signs of tailings. This area of the cover was placed due to elevated metal concentrations within the pond, but based on historical aerial photographs, it is not located in an area where tailings deposition occurred. A remedial action is included in the Section 7.5 recommendations. | | | |

### 5.1.6 Burnick, Jewelbox and Main Zone Waste Rock Dumps

The Burnick, Jewelbox and Main Zone Waste Rock Dump (WRD) areas were reclaimed in 2015 with the mine openings sealed and the dumps resloped and covered to provide more stable conditions. The conditions of the WRDs were mostly the same largely the same as those observed during the 2021 inspection. Table 5.6 provides the inspection observations along with references to corresponding photographs and applicable recommendations. Figures 13 and 14 provides a plan view of the Burnick Zone, and Main Zone/Jewelbox Zones, respectively.

**Table 5.6: Waste Rock Dump Area Observations**

| Area | Observation | Figure (App. A) | Photo | Associated Recommend -ation |
|---|---|---|---|---|
| Burnick | ■ The regraded fill over the 1200 Portal is in good conditions and the portal drainpipe is functional. Minor settlement of the fill that was placed over the 1200 portal has resulted in a settlement crack in the fill. This crack was noted in previous inspections. No action is required. | A-31 | WR-17, WR-18 | n/a |
| | ■ The regraded waste rock in the 1300 Portal area is also in good condition with no signs of deformation. The 1300 Portal drainpipe is functional with no flow observed. | A-32 | WR-19, WR-20 | n/a |
| Jewelbox / Main Zone | ■ At the low point of the Jewelbox waste rock dump, the 2 to 3 m deep erosion gully that has been monitored over the last few years showed some additional deterioration since last year. The base of the gully is primarily situated in bedrock. The sidewalls of the gully are near vertical and prone to further erosion. There is no impact on the stability of the dump and no action is required. | A-24<br>A-25 | WR-03, WR-04, WR-05 | n/a |
| | ■ Water that flows down the gully mentioned above, crosses the decommissioned access road to the waste rock area at four locations. Erosion gullys were noted at the upper three crossings that are up to 0.3 m deep. These gullys appear to be self-armouring and no action is needed at this time. | A-23 | WR-01, WR-02 | n/a |
| | ■ Surficial sloughing of the soil cover is located downslope of the 1408 Portal. The circular sloughs are typically 0.3 m deep and resulted in bulges at the slough toe. There is no impact on the overall dump stability and no action is required. | A-26 | WR-08 | n/a |
| | ■ The 1408 Portal drainpipes and the vent pipe in the 1408 Portal area are in good condition. | A-27 | WR-09, WR-10 | n/a |

| Area | Observation | Figure (App. A) | Photo | Associated Recommend-ation |
|---|---|---|---|---|
| | ▪ Rill erosion in the soil cover is present at the south end of the 1408 Portal WRD where the slope is approximately 2H:1V. The condition of the rill erosion appears unchanged compared to the 2021 inspection and no action is required. | A-28 | WR-12 | n/a |
| | ▪ Two to three shallow openings were observed in the pit wall at the Main Zone area. These openings may have been caused by internal subsidence but currently do not pose a safety concern. No action is required. | A-29 | WR-13, WR-14 | n/a |
| | ▪ A new erosion gully was observed in the Main Zone Pit backfill above the 1380 Portal. The gully is situated in waste rock and appears to be self-armouring with no significant catchment that reports to the gully at the upstream end. No remedial action is required. | A-30 | WR-15, WR-16 | n/a |

## 5.2 Instrumentation Review

There are seven standpipe piezometers and three settlement gauges at the North Dam. The instrumentation locations are shown in Figure 3. All elevations are based on a datum that was established during a LiDAR survey carried out in 2012. The original site datum used to design and build the structures in the early 1990’s was about 2 m lower than the 2012 datum. All previous inspection reports, prior to 2014, used the 1990 datum.

The current instrumentation monitoring system is adequate for the facility. The need for any additional instrumentation will be reviewed following credible failure modes assessment and TARP review that are currently in progress.

### 5.2.1 Water Levels

The water levels in the North Dam standpipe piezometers are manually recorded bi-monthly and the results are reviewed by the EOR after each monitoring session. Figures B-1 to B-4 in Appendix D provides a plot of seasonal water levels since 2012.

The piezometers are in good condition and continue to function as designed. The seasonal fluctuations recorded during the reporting period are consistent with those in previous years.

Piezometers NDW-1A and NDW-2A exceeded the ‘minor risk alert level criteria’ in the Trigger and Action Response Plan (TARP) during readings collected on June 17, 2021 (during the identification of the North Dam erosion (Section 3.2)). The same exceedances occurred during the 2020 and 2021 freshets and the exceedances are attributed to a deeper snowpacks than usual based on a review of YG snow surveys from these years. Subsequent readings collected during the North Dam erosion repairs indicated the freshet groundwater level peaked and was receding.

The minor risk alert level criteria for the piezometers were established based on a stability analysis sensitivity study (SRK 2019) to correspond to a condition when the stability factor of safety is equal to

1.5. Given that this criterion has been triggered at NDW-2A the last three years with no issues related to instability, a review of the trigger levels is recommended in Section 7.5.

### 5.2.2 Deformation/Settlement

Settlement gauge readings for the North Dam were collected between 1993 and 2020. The annual readings were discontinued after the 2020 readings as no unexpected settlement of the embankment has been observed over the 27-year monitoring period. The gauges remain in operational condition and are to be read following any major seismic event as per the OMS Manual. Figure B-5 in Appendix D provides the settlement gauge readings between 2015 and 2020 that show no significant elevation changes.

### 5.2.3 Discharge Flows

There is no discharge from the tailings surface behind the North Dam. There is seepage from the hillside to the west of the North Dam and minor seepage from the TMA which reports to MH-02. Runoff from the tailings cover is directed away from the North Dam towards the sedimentation pond located behind the SRS.

Outflows from the SRS are not measured.

## 5.3 Site Inspection Forms

Routine inspections of the TMA are made by the Teck Site Caretaker twice a year in the spring and the fall. No safety concerns related to the North Dam and the SRS were identified during review of the routine inspection forms. The Spring 2022 routine inspection form is provided in Appendix E.

# 6 Facility Safety Assessment

## 6.1 Hazards and Failure Modes Review

As a permanently closed site, structures that have the potential to endanger human life or create environmental damage were either removed or upgraded to enhance long-term physical stability.

Hazards that could manifest themselves were identified for the North Dam and SRS include runoff from extreme precipitation events, seismic events, ice-buildup and debris in the SRS spillway and Tailings Cover Drainage Channels, potential for liquefaction of the tailings, and flow capacity of the SRS spillway. This section reviews the hazards that have been identified for the North Dam and the SRS and provides an assessment of the safety of these structures relative to the potential failure modes listed in the CDA (2014) Technical Bulletin.

SRK understands that Teck's long-term goal for this tailings facility is to a state of safe closure that includes reaching landform status with all potential failure modes being reduced to non-credible. The likelihood of the any credible failure mode at the site is extremely rare based on extreme consequence loading conditions and conservative assumptions. Further, there are no credible catastrophic failure modes present at the site. A catastrophic failure is a failure that results in a material disruption to social, environmental, and local economic systems (ICMM 2020). Whether the non-catastrophic failure modes are credible or non credible will be evaluated in 2022 and 2023 to verify or refine the conservative assumptions.

### 6.1.1 Dam Overtopping

#### North Dam

While the tailings cover is graded to allow water to drain to the south and away from the North Dam Crest, a review of publicly available satellite imagery between 2018 and 2022 indicates that water pools against the north dam during snow melt. The pooling is suspected to be caused by ineffective drainage to the south, likely due to the blockage of drainage channels due to snow and/or ice. Due to the limited freeboard, there is a risk that ponded water can overtop the dam in response to a rainfall event or snowmelt like that occurred in June 2022. Details of the erosion gully, including the initiation mechanism, potential contributing factors and subsequent repairs are provided in Section 3.

This overtopping mechanism was raised as a credible failure mechanism in the 2015 Dam Safety Review (DSR) (AMECFW 2016). In response to this concern, a hydrological study was completed (SRK 2018) to assess the likelihood of overtopping of the North Dam in the event of an extreme design flood event that conserved a blockage of the central main drainage channel. The results indicated that during the Probable Maximum Flood (PMF), the North Dam crest was not overtopped with ponded water reaching within a few centimetres of the dam crest and with water diverted around the blockage through a secondary drainage channel to the east. The study did not consider blockages within the secondary channel. Considering the 2022 overtopping event, the hydrological study is currently being revised to determine if additional freeboard is needed to prevent a similar future event.

As part of the dam repairs (Section 2), the dam crest within the vicinity of the repair area was raised by approximately 0.5 m and the minimum crest elevation is now approximately 20 cm higher than it was prior to the gully; however, the dam remains vulnerable to future erosion events during future snow melt periods. Remedial actions to mitigate this risk are recommended in Section 7.5.

#### SRS

The spillway in the SRS is a riprap lined channel designed to convey the 1 in 1,000-year IDF with 0.5 m of freeboard. The spillway shows no sign of movement of the riprap and is functioning in accordance with the design parameters. The spillway and freeboard are effective controls to manage overtopping risks.

### 6.1.2 Internal Erosion

#### North Dam

The North Dam was built as a tailings retaining structure designed to allow seepage through the dam. The dam has three zones: an upstream low permeability compacted zone of silty till, a semi pervious compacted central zone of sandy till and a compacted outer downstream shell of pervious sand and gravel. Underlying the dam is a native sandy, gravelly silt (till). There are no indicators of fines being washed through to dam, although there is some seepage evident at the downstream toe. This seepage is mixed in with historical spring activity that was noted during the construction of the dam and the annual dam inspections. The tailings placed up against the upstream face of the dam have significantly reduced the seepage loss since initial construction.

The hydraulic gradient across the North Dam is in the range of 0.1 to 0.2. The dam material consists of a mixture of silty till to sandy till which is estimated to have a critical hydraulic gradient ranging from 1 to 1.3. The likelihood of internal erosion as a failure mode is considered to be extremely rare based on extreme consequence loading conditions and conservative assumptions. Whether this non-catastrophic failure mode is credible or non-credible will be evaluated over 2022 and 2023 and that work will verify or refine the conservative assumptions.

#### SRS

The SRS is an earthfill dam constructed of silty till that is classified as SM and ML as per to the Unified Soil Classification System. This material type is considered to have a low resistance to piping (Rivard 1981). A coarse rock seepage control layer is present east of the spillway while no seepage control is present west of the spillway. While seepage through the dike is barely measurable, there is one small boil that has been noted at the downstream toe of the SRS dike, but no loss of fines detected. The pond behind the SRS has a maximum depth of about 1.5 m and the average hydraulic gradient through the structure is 0.15. Based on the hydraulic gradient, material type, and guidance provided by Rivard (1981), internal erosion is plausible and should be monitored.

### 6.1.3 Slope Stability

#### North Dam

The most recent stability analysis for the North Dam was completed in 2017 and 2018 (SRK 2017, 2018) with the results shown in Table 6.2. The pseudo-static stability analysis completed for this study was based on the 2015 National Building Code Seismic Hazard Calculator (NBC SHC) that lists the 1 in 2,475-year peak ground acceleration (PGA) as 0.14 g (Site Class C). The PGA in the most recent 2020 NBC Seismic Hazard Calculator lists the 1 in 2,475-year PGA to be 0.164 g (Site Class C). The stability analysis results show that the North Dam is stable under both static and seismic assessments with the structure exceeding minimum target FOS requirements. Whether this non-catastrophic failure mode is credible or non-credible will be evaluated over 2022 and 2023 and that work will verify or refine the conservative assumptions. A site-specific seismic hazard assessment is currently in development that will be used to assess the credibility.

**Table 6.1: North Dam Stability Analysis Results**

| Loading Condition | Target FOS | Calculated FOS | Reference |
|---|---|---|---|
| Long Term Static | 1.5 | 1.6 | SRK (2017) |
| Pseudo-Static | 1.0 | 1.2 | SRK (2017) |
| Post-earthquake | 1.2 | 1.6 | SRK (2018) |

#### SRS

The most recent stability analysis of the current configuration of the SRS (SRK 2015) indicates that the structure meets minimum target FOS requirements under both static and pseudo-static conditions. The stability analysis results are provided in Table 6.3. The seismic calculation was completed using the full PGA value of 0.15 g (2010 NBC SHC), which was based on the target level for earthquake hazards suggested by CDA (2019) guidelines for a low consequence class dam in the passive care phase. It is also noted that the PGA based on the 2020 NBC SHC is now 0.10 g.

**Table 6.2: SRS Stability Analysis Results**

| Loading Condition | Target FOS | Calculated FOS |
|---|---|---|
| Long Term Static | 1.5 | 1.7 |
| Pseudo-Static | 1.0 | 1.2 |
| Post-earthquake | 1.2 | 1.6 |

### 6.1.4 Surface Erosion

#### North Dam

The erosion gully observed in June 2022 was caused by a release of ponded water from the TMA and is considered an overtopping failure mode (Section 5.2.1) and not a surface erosion failure mode. No other signs of surface erosion were observed at the North Dam.

Teck personnel conduct routine and event-driven inspections of the TMA and monitor the downstream dam slope for surface erosion caused by snow melt and rainfall runoff. The inspection frequency is considered appropriate to effectively monitor, track, and repair any erosion prior to any failure.

SRK completed a study (SRK 2018) to assess the erosion potential of the material on the downstream face that could occur due to extreme precipitation. The study concluded that existing sand and gravel material exposed on the downstream face is adequate to withstand the runoff from the 200-year, 24-hour rainfall event without any significant erosion.

#### SRS

GeoJute fabric protection on the downstream face of the SRS is in good condition and provides adequate protection against surface erosion. No signs of surface erosion were observed at the SRS.

## 6.2 Review of Upstream and Downstream Conditions

The TMA is located on a catchment divide so all conditions are predominantly downstream. There are no identifiable hazards to the east and west sides of the valley adjacent to the TMA. There is no change in the downstream condition of the TMA to the north and to the south that affects the potential consequences of failure.

The North Dam erosion event eroded approximately 415 $m^3$ of dam fill based on a survey of the gully completed by Underhill Geomatics on June 20, 2022. The majority of the eroded debris was deposed at the dam toe and valley bottom upstream of seepage monitoring station MH-02 as shown in Figure 4.

## 6.3 Consequence of Failure Review

#### North Dam

Downstream of the North Dam, the valley grade falls at approximately 7 to 9% towards False Canyon Creek, which conveys flows into the Frances River, a tributary of the Liard River. The area downstream is undeveloped with no identifiable population at risk, public roads, or any other infrastructure. The probability of a failure mode leading to large scale loss of tailings from the TMA is very low as there is no water impounded except for a limited volume during snow melt, no identifiable brittle failure mode as the dam is founded on dense till with a post-seismic FOS that indicates that the dam would still have a FOS above 1 in the event of an earthquake. As a result, no significant loss or deterioration of fish or wildlife habitat is expected with restoration highly possible.

### SRS

Like the North Dam, the area downstream of the SRS is undeveloped with no identifiable population at risk, public roads, or any other infrastructure. In addition, the reservoir capacity is small (800 $m^3$ of water) and as a result, no long-term environmental losses are expected.

## 6.4 OMS Manual Review

The latest revision of the OMS Manual was updated on December 21, 2021. The OMS Manual is reviewed annually and generally follows the Mining Association of Canada's guidelines for OMS Manuals (MAC 2021) and is considered adequate for the TMA. The next revision of the manual should include changes to incorporate the North Dam erosion gully repairs specifically:

1. Section 3.1.1 (Site History): Update section to mention the gully and reference the as-built documentation.
2. Section 3.3.2 (North Dam Description): Update section to describe the gully repair cross-section and reference the as-built drawings.
3. Section 5.2 (Routine and Preventative Maintenance Schedule and Triggers): Update section to include a site visit during the snowmelt period and snow clearing TMA cover to minimize pond formation near the North Dam.
4. Section 6.1.1 (Monitoring Frequency, Schedule, and Procedures): Revise the monitoring frequency to include a site inspection of the North Dam during the snow melt period (typically early-May) and to include Satellite Monitoring for track the pond formation on the TMA cover.
5. Section 6.1.2 (Identified Performance Objectives and Indicators for Potential Failure Modes): Update Table 19 to include the overtopping/erosion gully potential failure mode at the North Dam.
6. Figures: Update to include the North Dam repair as-built drawings.
7. Trigger Action Response Plan: Update the visual inspection section to include triggers/responses related to observations of a water pooling adjacent to the North Dam.

## 6.5 Mine Emergency Response Plan Review

Teck developed a Mine Emergency Response Plan (MERP) for Sä Dena Hes that was finalized on July 27, 2021, and replaces the sites' Emergency Preparedness and Response Plan. A tabletop test exercise of the MERP was completed during the 2020 annual inspection of the TMA, which involved a simulated tailings emergency scenario and included the EOR and Teck personnel, with the test findings incorporated into the MERP on December 14, 2021. SRK reviewed the TMA applicable sections of the MERP in 2022 and found the plan to be adequate for the site.

The adequacy of the MERP was demonstrated during the response to the discovery of the North Dam erosion gully on June 17, 2022, with risk mitigations and repairs implemented in a timely manner to minimize environmental impacts.

# 7 Summary and Recommendations

## 7.1 Summary of Construction and Operation Activities

The site is currently closed and there are no operation activities. Earthworks were completed in June 2022 to repair an erosion gully in the North Dam.

## 7.2 Summary of Performance

The North Dam is currently stable. The dam does not retain water except during snow melt when the tailings cover drainage may be restricted due to ice or snow blockages in the drainage channels. During the June 2022 snow melt, the ponded water overtopped the dam sometime between June 1 and 7 resulting in the development of an erosion gully in the North Dam that eroded approximately 415 $m^3$ of dam fill with no tailings were displaced. Once the pond had drained, the erosion discontinued. Repairs to the North Dam were completed in June, with additional erosion protection measures implemented in October 2022. During the August site inspection, no signs of any instability on the crest or the downstream slope were observed.

The SRS is in good physical condition and the spillway is functioning in accordance with design parameters. A transverse crack that was first observed in 2021 remains across the dam crest approximately 1 m east of the spillway that is believed to be caused by frost heave. No further action is required as the crack does not extend deep enough to act as a preferential seepage pathway through the structure, and the structure is considered to be temporary, with Teck planning to remove the structure in the future as part of an overall “safe closure” landscape.

## 7.3 Summary of Climate and Water Balance

Based on observations at the Watson Lake Airport climate station, the climate during the reporting period of September 2021 through August 2022 was wetter than average with a total precipitation of 830 mm at the Site compared to the mean annual precipitation of 646 mm. Winter precipitation was particularly higher than normal that resulted in the highest recorded snowpack on record within the Liard River basin in May 2022 (YG 2022). The high snowpack and rapid snowmelt are believed to be the main contributing factors in the development of the erosion gully at the North Dam.

The TMA is designed to be a flow-through facility with no active water management required. The tailings cover is graded to drain to the south, away from the North Dam, and towards the SRS. The SRS spillway can pass the design flow associated with a 1 in 1,000-year precipitation event. During the 2022 snowmelt, a blockage of the drainage channels to the south due to snow and/or ice, resulted in the formation of a pond and the overtopping of the North Dam leading to an erosion gulley. Remedial actions to prevent future overtopping events are provided in the Section 7.5 recommendations.

## 7.4 Summary of Changes to Facility or Upstream or Downstream Conditions

There were no significant changes in upstream or downstream conditions of the TMA that would affect the potential consequences of failure.

## 7.5 Table of Deficiencies and Non-Conformances

SRK has completed the 2021 facility performance review of Sä Dena Hes Mine, TMA and water management infrastructure and concluded that the North Dam, the SRS, the diversion channels and the waste rock dumps are in good condition.

Table 7.1 and Table 7.2 provide a summary of deficiencies and non-conformances noted during the 2022 performance review and outstanding deficiencies or non-conformances from the 2021 performance review.

**Table 7.1: General Description of Priority Rankings**

| Priority | Description |
|---|---|
| 1 | A high probability or actual dam safety issue considered immediately dangerous to life, health or the environment, or a significant regulatory concern. |
| 2 | If not corrected, could likely result in dam safety issues leading to injury, environmental impact or significant regulatory action; or, a repetitive deficiency that demonstrates a systematic breakdown of procedures. |
| 3 | Single occurrences of deficiencies or non-conformances that alone would not be expected to result in dam safety issues. |
| 4 | Best Management Practice as a suggestion for continuous improvement towards industry best practices that could further reduce potential risks. This typically includes ongoing construction items within the appropriate construction cycle. |

Notes: Priority ratings developed by Teck (2019) and are consistent with the BC Health, Safety and Reclamation Code (HSRC) for Mines in British Columbia.

**Table 7.2: Table of Recommendations from the 2022 Mine Waste Facilities Inspections**

| Structure | ID No. | Deficiency or Non-Conformance | Applicable Regulation or OMS Reference | Recommended Actions | Priority (Table 7.1) | Recommended Deadline / Status |
|---|---|---|---|---|---|---|
| **2021 Recommendations** | | | | | | |
| TMA | 2021-1 | Since 2015, all revisions to the OMS Manual have remained in ‘draft’ status. | OMS Section 1.3 | Finalize the next revision of the OMS Manual. | 3 | **Complete**<br>OMS updated in December 2021 |
| North Dam | 2021-2 | The soup can used as a cap on NDW-4A was displaced at time of the inspection. | OMS Section 5.2.1 | Install a proper 2-inch PVC pipe plug and trim the PVC pipe such that it fits in steel protective casing. Water pooled within the casing should be removed (either siphoned or by drilling a small hole within the steel casing). | 4 | **Complete** |
| North Dam | 2021-3 | A long-term goal for the TMA is to reduce all potential failure modes to non-credible. | - | Undertake a credible failure modes assessment for the TMA. | 4 | **In Progress**<br>Before end of 2022 |
| North Dam | 2021-4 | Water levels in Piezometer 2A triggered alerts and event-driven inspections during the last two freshets that are attributable to higher snowpacks and rainfall. The event-driven inspection resulted in no dam safety concerns. | OMS Section 6.2.2 | Undertake a review of the trigger action alert levels and consider additional levels for seasonal freshet conditions.<br><br>Establish snowpack monitoring stations to investigate the impact between snowmelt and the North Dam foundation pressures. | 4 | **In Progress**<br>Before end of 2022. |
| **2022 Recommendations** | | | | | | |
| Tailings Cover | 2022-2 | An erosion gully is present in the reclamation cover north of the SRS pond that has eroded through the cover and has exposed geotextile. | OMS Section 5.2.1 | Shape the erosion gully to form a channel with a nominal amount of fill overtop of the base of the gully. Armour the gully with a layer of geotextile and riprap. | 4 | **New**<br>Before end of 2024. |
| North Dam | 2022-3 | Drainage channel blockages on the tailings cover during snowmelt results in the formation of a pond adjacent to the North Dam. In 2022, the pond overtopped the North Dam and formed an erosion gully that required repairs. | OMS Section 5.2.1 | Modify the dam to eliminate the risk of overtopping. Due to limitations in the tailings cover thickness, increasing the grade of the cover drainage channels is not possible without exposing tailings. As a result, raising the dam to increase the freeboard is recommended. | 2 | **New**<br>Before end of 2024. |

| Structure | ID No. | Deficiency or Non-Conformance | Applicable Regulation or OMS Reference | Recommended Actions | Priority (Table 7.1) | Recommended Deadline / Status |
|---|---|---|---|---|---|---|
| North Dam and Tailings Cover | 2022-4 | As above | OMS Sections 5 and 6 | Modify the TMA maintenance and surveillance programs in the OMS Manual to include monitoring for the development of a pond against the North Dam and maintenance to clear drainage pathways on the tailings cover during the snowmelt period. The modifications should include use of satellite monitoring to track pond development, an additional site inspection in early-May to establish site access and clear a drainage path to the south. As a contingency, a plan should be developed for the mobilization of a pump and associated equipment to pump the ponded water downstream of the North Dam.<br><br>The OMS Manual should also be updated to include the as-built information from the North Dam erosion gully repairs as outlined in Section 6.4. | 2 | **New**<br>Before end of Q1 2023. |

# Closure

This report, 2022 Annual Facility Performance Report, was prepared by

PROFESSIONAL
Nov 14, 2022
YUKON
PETER H. MIKES
TERRITORY
ENGINEER

Peter Mikes, PEng
Principal Consultant

and reviewed by

PROFESSIONAL
2022/11/14
YUKON
J.B. KURYLO
TERRITORY
ENGINEER

John Kurylo, PEng
Principal Consultant

PERMIT TO PRACTICE
Signature
Date Nov 14, 2022
PERMIT NUMBER: PP019
Association of Professional Engineers of Yukon

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

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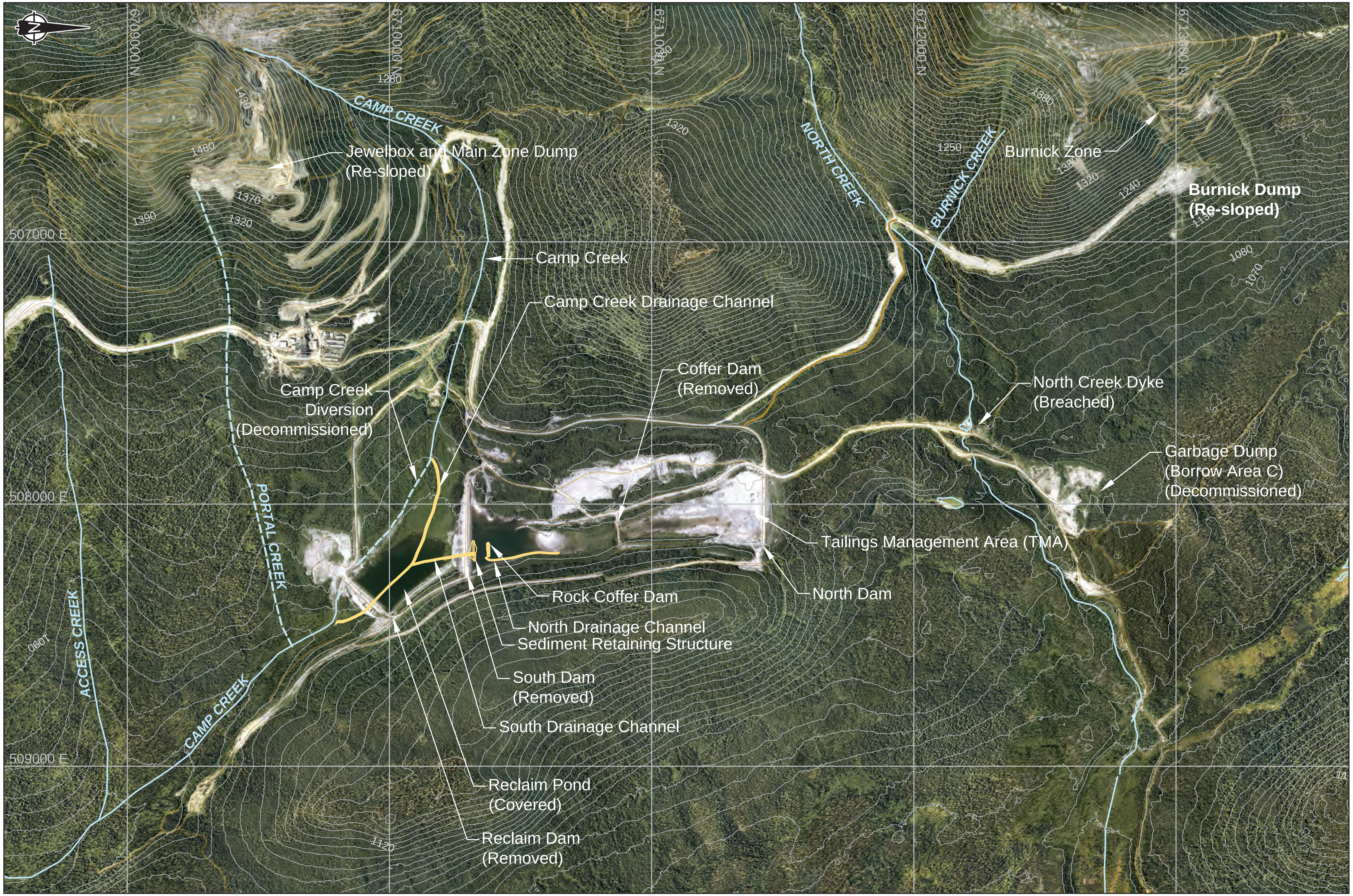
# Figures




**LEGEND**

Creeks

**NOTES**

1. Contours are shown at 10.0m intervals.
2. All units are in meters unless otherwise specified.

**REFERENCES**

1. Coordinate system is UTM NAD 83CSRS zone 9V.
2. Topographic contour data and aerial photos were obtained from McElhanney and are based on August 15, 2012 LiDAR survey.
3. Orthographic photo depicts pre-decommissioned surface.

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2022 Annual Facility Performance Review

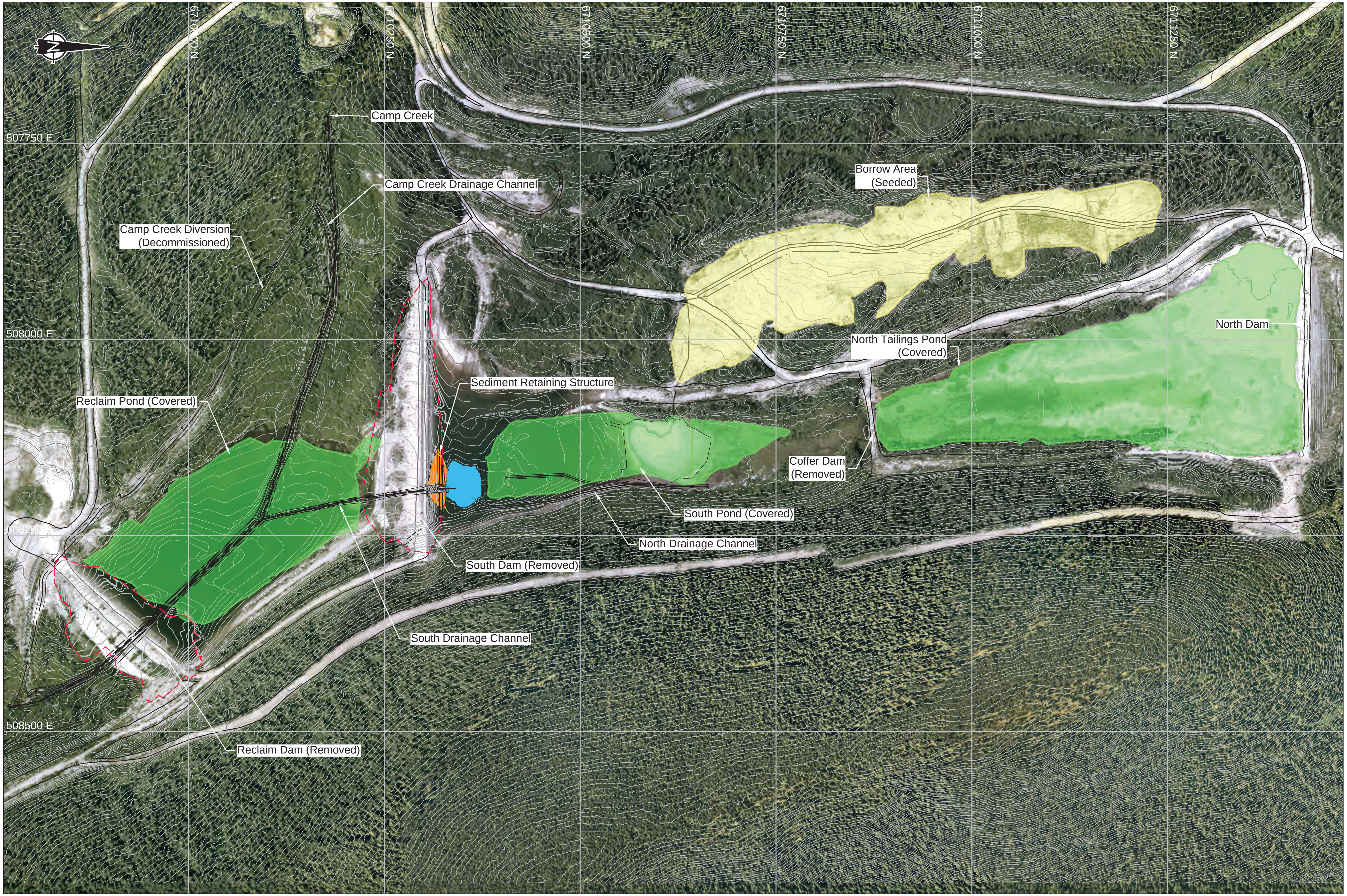
DRAWING TITLE: Vicinity Map

SRK JOB NO.: CAPR001928 | REG. NO.:

FILE NAME: Sheet 1-12-13 and 14.dwg

Sä Dena Hes

DATE: October 2022 | APPROVED: PM | FIGURE: 01




**LEGEND**

- Major Contour (5m interval)
- Minor Contour (1m interval)
- Edge of Road
- Design Edge of Road
- Camp Creek Drainage Channel
- Dam Excavation Extent
- Sedimentation Pond
- Capped Areas
- Seeded Area

**NOTES**

1. Contours are shown at 5.0m intervals.
2. All units are in meters unless otherwise specified.

**REFERENCES**

1. Coordinate system is UTM NAD 83CSRS zone 9V.
2. Preconstruction topographical contour data was obtained from McElhanney and is based on August 15, 2012 LiDAR Survey.
3. As-built survey data was collected by Yukon Engineering Services and Amec Foster Wheeler.
4. Tailings characterization work conducted by Golder and Associates determined the location of capping at the South Pond and Reclaim Pond areas.
3. Orthographic photo depicts pre-decommissioned surface.

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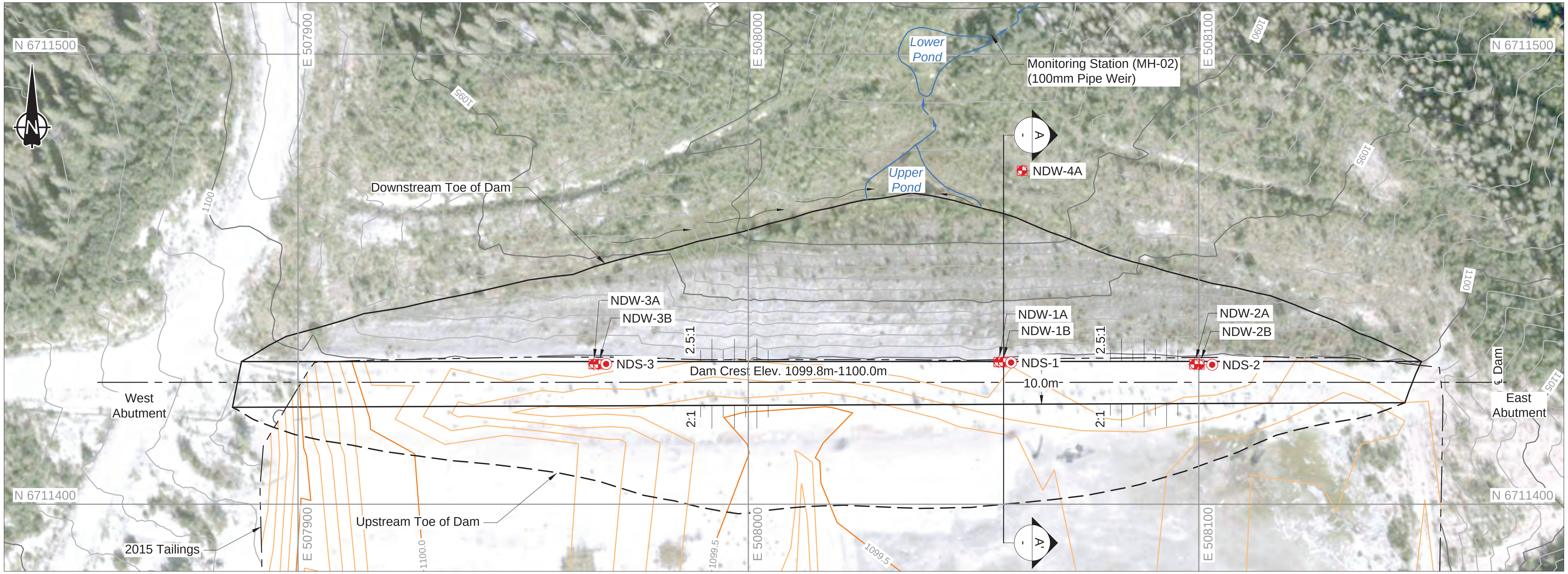
2022 Annual Facility Performance Review

DRAWING TITLE: TMA General Arrangement Map

| DATE: | APPROVED: | FIGURE: |
|---|---|---|
| October 2022 | PM | 02 |




**North Dam Site Plan**

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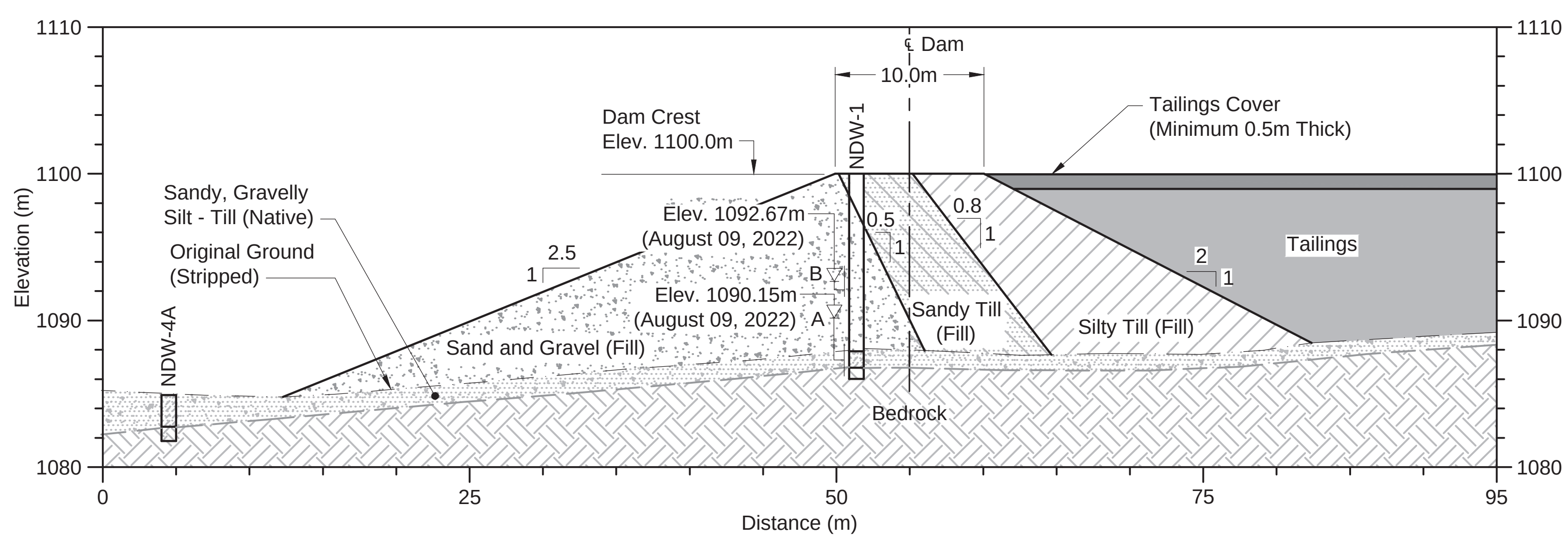


A - **Typical Section**

0m 5 10 15 20

**LEGEND**

- Piezometer head for Filter Zone Indicated
- Piezometers Installed (Nov. 1991)
- Settlement Gauge Installed (Nov. 1991)
- Bedrock
- Contours Major (Ground at 5.0m Intervals)
- Contours Minor (Ground at 1.0m Intervals)
- Contours Major (Tailings Cover at 0.5m Intervals)
- Contours Minor (Tailings Cover at 0.1m Intervals)
- Existing Ground (Stripped)
- Seepage
- Tailings Cover Limits
- Sandy Till (Fill)
- Silty Till (Fill)
- Sand & Gravel (Fill)
- Silty Sand (Till)
- Gravelly Silty Sand (Till)
- Sand & Gravel (Native)
- Bedrock
- Tailings
- Tailings Cap

**NOTES**

1. Ground Contours are shown at 1.0m intervals. Tailings cover contours are shown at 0.1m intervals.
2. All units are in meters unless otherwise specified.

**REFERENCES**

1. Coordinate system is UTM NAD 83CSRS zone 9V.
2. Topographic contour data and aerial photos were obtained from McElhanney and are based on August 15, 2012 LiDAR survey and October 2013 YES Survey.
3. 2015 tailings cover contours obtained from Yukon Engineering Surfaces.

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SRK JOB NO.: CAPR001928 | REG. NO.:

FILE NAME: CAPR001928 - Fig 3.dwg

Sä Dena Hes

DRAWING TITLE: North Dam Site Plan and Typical Section

DATE: October 2022 | APPROVED: PM | FIGURE: 03

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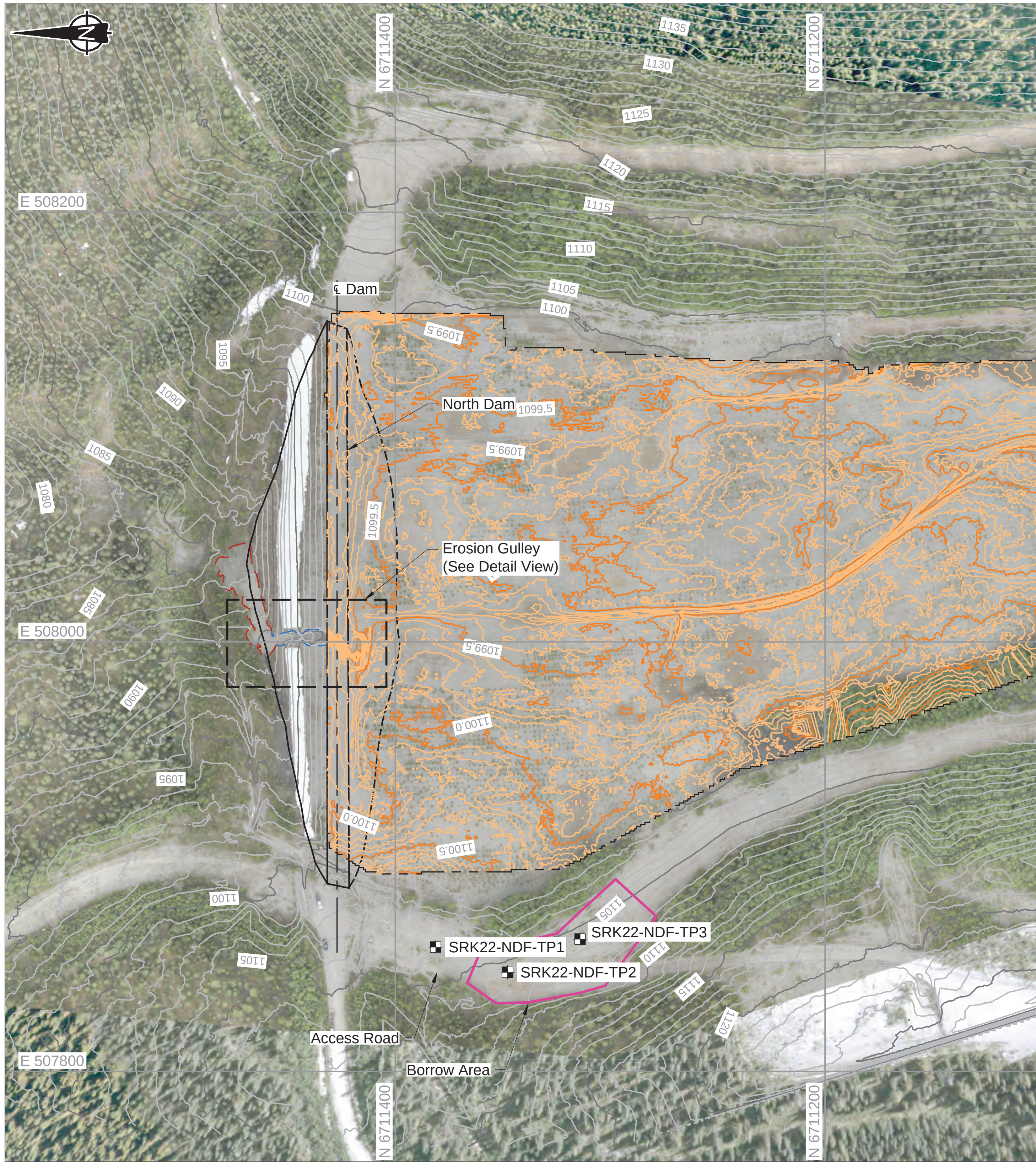
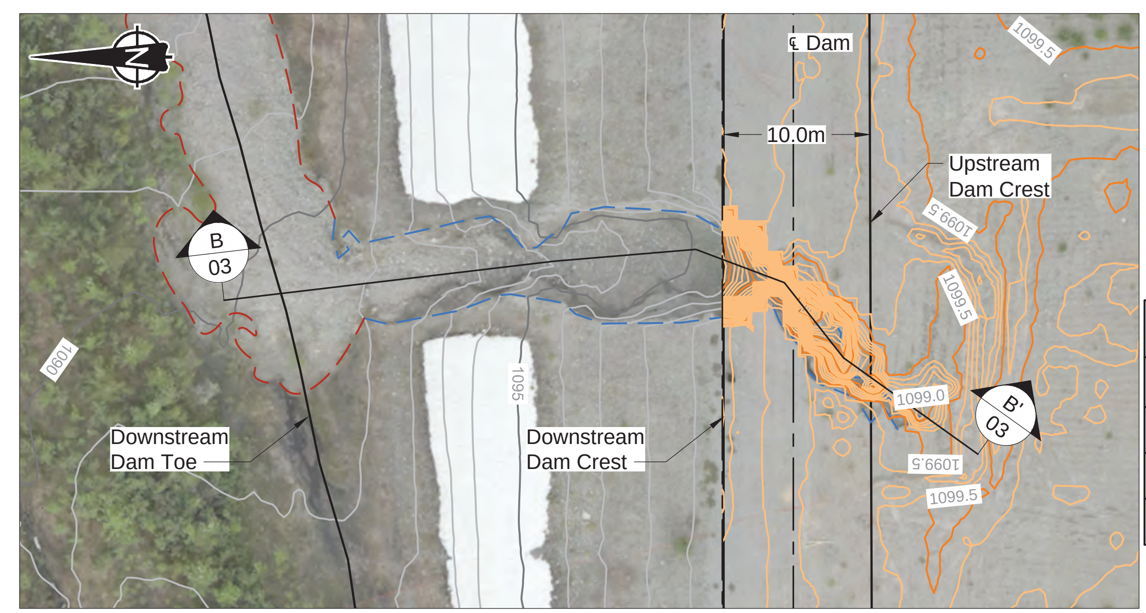



## North Dam Plan

0m 20 40 60 80 100




## Erosion Gulley Detail View

0m 5 10 15 20

## LEGEND

- Test Pits
- Borrow Area Extents
- Contours Major (Ground at 5.0m Intervals)
- Contours Minor (Ground at 1.0m Intervals)
- Contours Major (Tailings Cover at 0.5m Intervals)
- Contours Minor (Tailings Cover at 0.1m Intervals)
- Erosion Debris Extent
- Erosion Gulley Extent
- Tailings Cover Limits

## NOTES

1. Ground contours are shown at 1.0m intervals. Tailings cover contours are shown at 0.1m intervals.
2. All units are in meters unless otherwise specified.

## REFERENCES

1. Coordinates are UTM Zone 9, NAD83 (CSRS) and are derived holding values of point UGL100 fixed in 3D.
2. Cooridnates of point UGL100 were established using Natural Resources Canada CSRS-PPP Service (precise point positioning).
3. Elevations are orthometric and in meters. Elevations reference to the CGVD28 datum using the HTv2.0 Geoid Model.
4. The digital file of this plan is UTM Grid scale, not ground scale. Combined scale factor at point UGL100 is CSF 0.9941220
5. Coordinates of UGL100 are:
   UGL100
   UTM N: 6709661.884m
   UTM E: 507376.593m
   Ortho Elev: 1206.100m
6. UAV DEM and Imagery:
   Date: 2022-06-20
   UAV: M300 with P1 Camera
   UAV capture Altitude: 120m AGL
   GSD: 1.4cm/pix
   Orthophoto Resolution: 10cm/pix

### Test Pit Points

| Northing | Easting | Description |
|---|---|---|
| 6711381.20 | 507857.93 | SRK22-NDF-TP1 |
| 6711347.74 | 507846.18 | SRK22-NDF-TP2 |
| 6711314.00 | 507861.62 | SRK22-NDF-TP3 |

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Sä Dena Hes

SRK JOB NO.: CAPR001928
REG. NO.:
FILE NAME: Sheet 4 and 5.dwg

2022 Annual Facility Performance Review

DRAWING TITLE:
North Dam Erosion Gulley and Tailings Cover Site Plan - June 20, 2022

DATE: October 2022
APPROVED: PM
FIGURE: 04

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## LEGEND

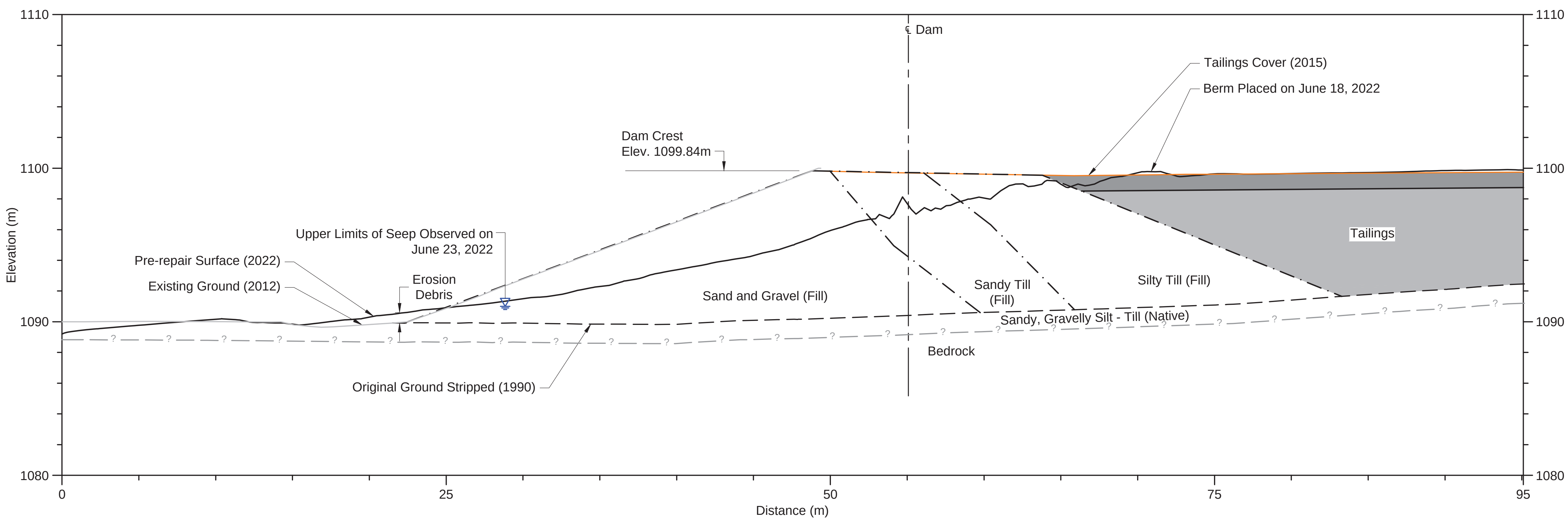
- Upper Limit Of Seepage Observed on June 23, 2022.Bedrock
- Bedrock Surface (2012)
- Pre-repair Surface (2022)
- Original Dam
- Original Ground Stripped (1990)
- Tailings Cover (2015)
- Tailings Cover
- Tailings

## NOTES

1. All units are in meters unless otherwise specified.

## REFERENCES

1. Coordinates are UTM Zone 9, NAD83 (CSRS) and are derived holding values of point UGL100 fixed in 3D.
2. Cooridnates of point UGL100 were established using Natural Resources Canada CSRS-PPP Service (precise point positioning).
3. Elevations are orthometric and in meters. Elevations reference to the CGVD28 datum using the HTv2.0 Geoid Model.
4. The digital file of this plan is UTM Grid scale, not ground scale. Combined scale factor at point UGL100 is CSF 0.9941220
5. Coordinates of UGL100 are:
   UGL100
   UTM N: 6709661.884m
   UTM E: 507376.593m
   Ortho Elev: 1206.100m
6. UAV DEM and Imagery:
   Date: 2022-06-20
   UAV: M300 with P1 Camera
   UAV capture Altitude: 120m AGL
   GSD: 1.4cm/pix
   Orthophoto Resolution: 10cm/pix
7. Topographic contour data was obtained from McElhanney and is based on August 15, 2012 LiDAR survey and October 2013 YES Survey.
8. 2015 tailings cover contours obtained from Yukon Engineering Surfaces.




B
02
**Erosion Gulley Cross Section**

0m 3 6 9 12

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SRK JOB NO.: CAPR001928
REG. NO.:
FILE NAME: Sheet 4 and 5.dwg

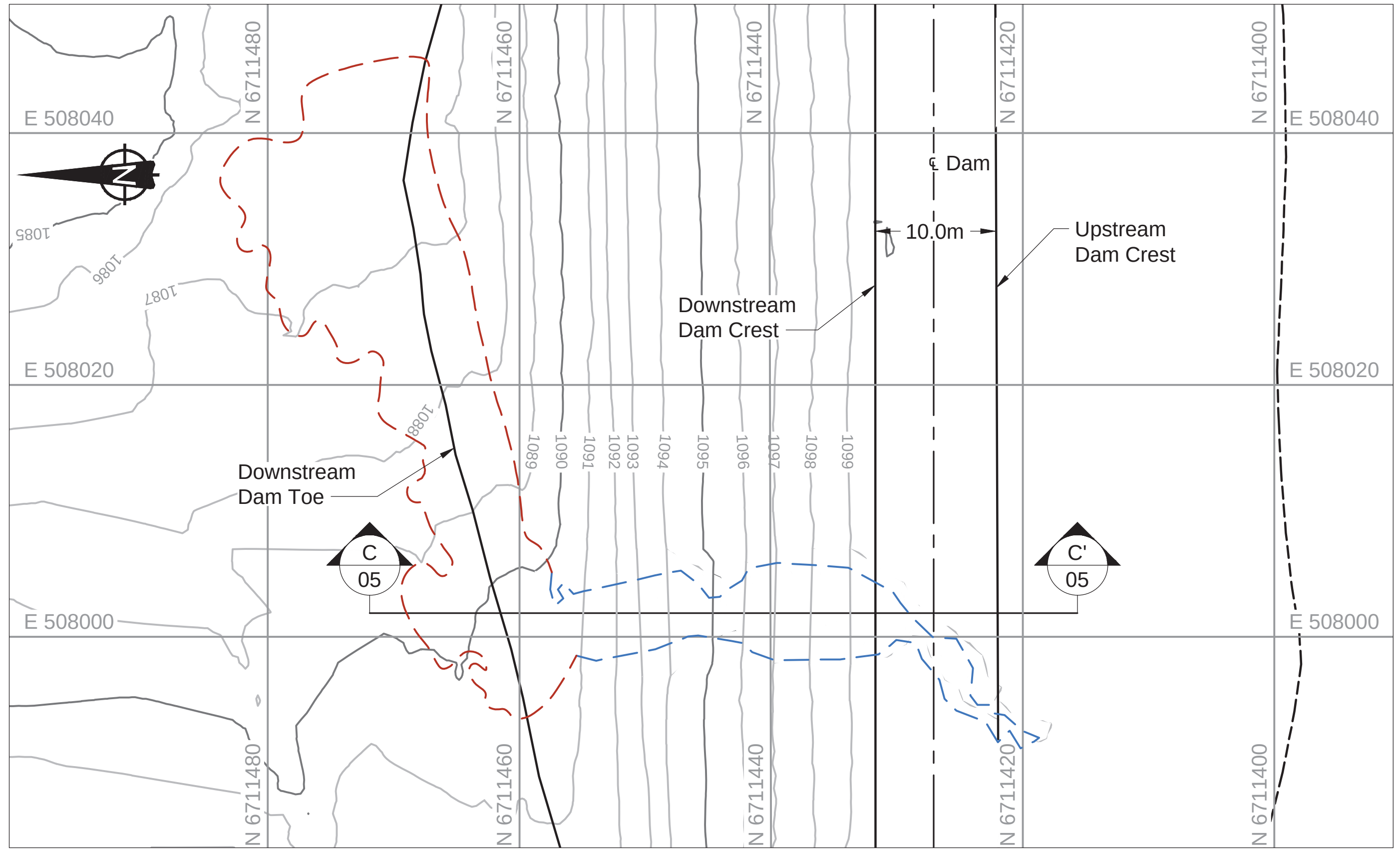
Teck

Sä Dena Hes

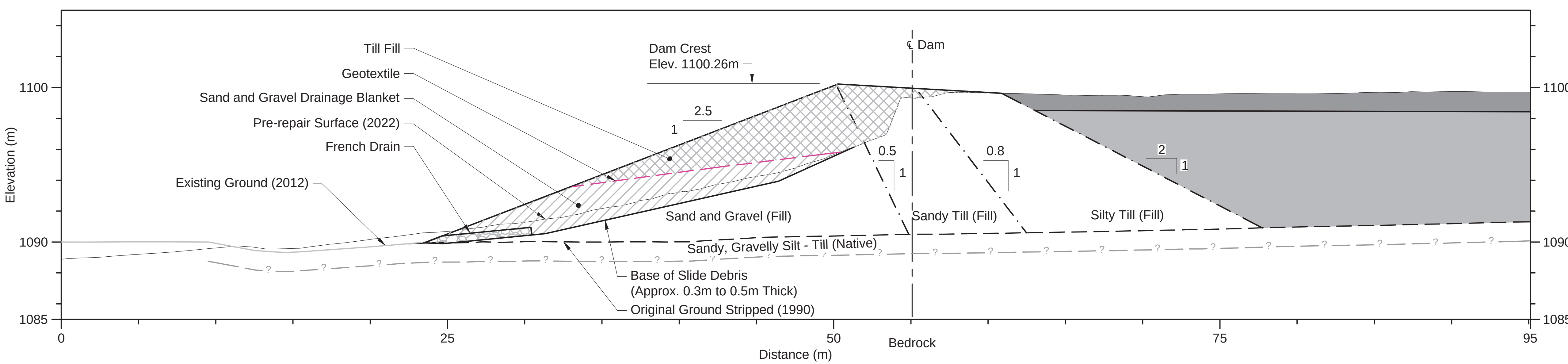
2022 Annual Facility Performance Review

DRAWING TITLE:
North Dam Erosion
Gulley Cross Section

DATE: October 2022
APPROVED: PM
FIGURE: 05




**Plan View of Completed Repairs**




**Erosion Gulley Cross Section**

**LEGEND**

- Bedrock
- Erosion Debris Extent
- Erosion Gulley Extent
- Existing Ground 2012
- Geotextile
- Pre-repair Surface 2022
- Original Dam
- Original Ground Stripped (Pre-Construction) 1990
- French Drain
- Sand and Gravel Drainage Blacket
- Till Fill
- Tailings
- Tailings Cover

**NOTES**

1. Contours are shown at 1.0m intervals.
2. Contours in the plan view are interpolated and are approximate.
3. All units are in meters unless otherwise specified.
4. The repaired downstream slope surface is estimated based on field observations.

**REFERENCES**

1. Coordinates are UTM Zone 9, NAD83 (CSRS) and are derived holding values of point UGL100 fixed in 3D.
2. Cooridnates of point UGL100 were established using Natural Resources Canada CSRS-PPP Service (precise point positioning).
3. Elevations are orthometric and in meters. Elevations reference to the CGVD28 datum using the HTv2.0 Geoid Model.
4. The digital file of this plan is UTM Grid scale, not ground scale. Combined scale factor at point UGL100 is CSF 0.9941220
5. Coordinates of UGL100 are:
   UGL100
   UTM N: 6709661.884m
   UTM E: 507376.593m
   Ortho Elev: 1206.100m
6. UAV DEM and Imagery:
   Date: 2022-06-20
   UAV: M300 with P1 Camera
   UAV capture Altitude: 120m AGL
   GSD: 1.4cm/pix
   Orthophoto Resolution: 10cm/pix
7. Topographic contour data was obtained from McElhanney and is based on August 15, 2012 LiDAR survey and October 2013 YES Survey.

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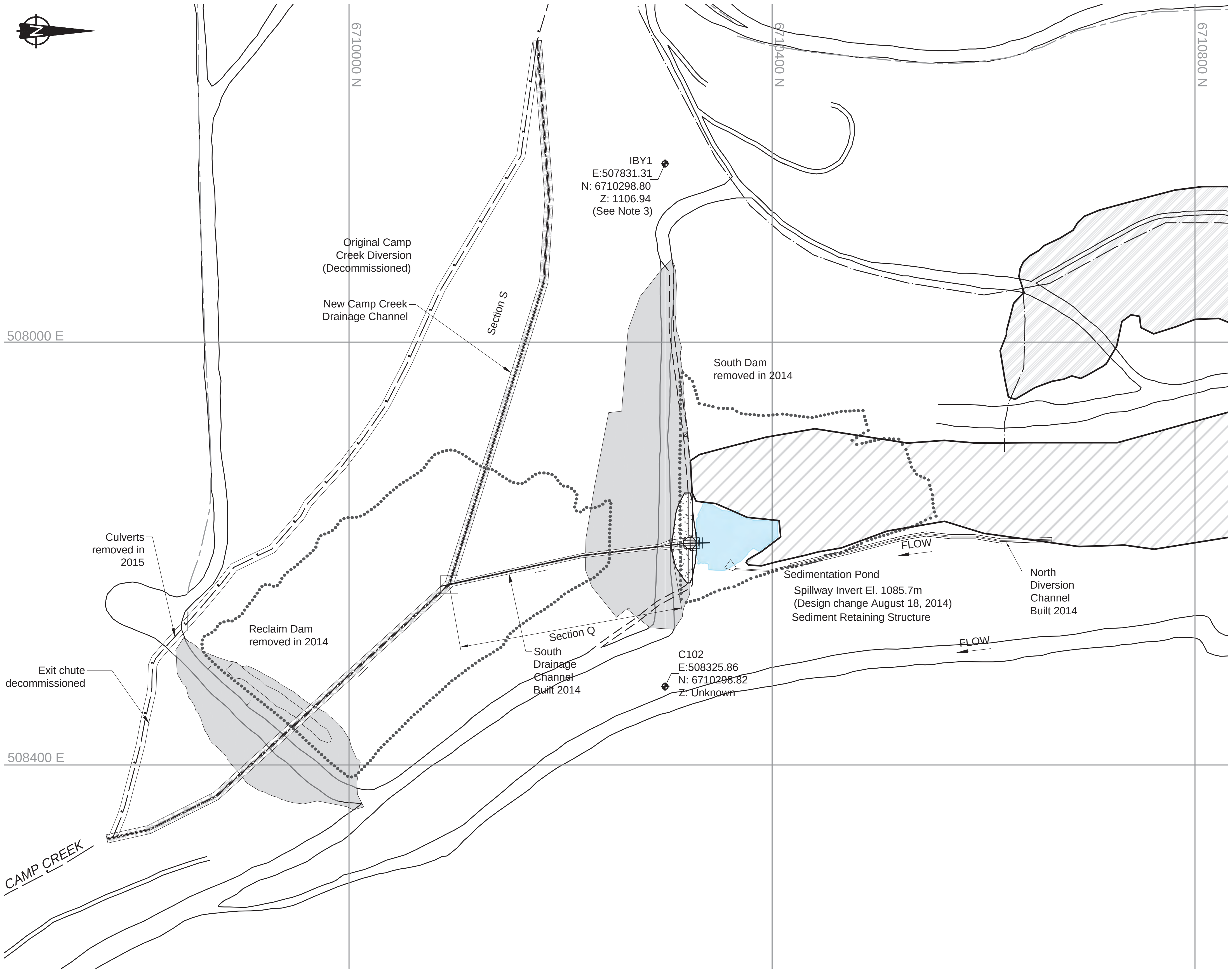
|---|---|---|
| SRK JOB NO.: CAPR001928 / REG. NO.: | Sä Dena Hes | DRAWING TITLE: North Dam Repaired Cross Section |
| FILE NAME: Sheet 6.dwg | | DATE: October 2022 / APPROVED: PM / FIGURE: 06 |




## LEGEND

- Covered Tailings
- Removed Dams
- Sedimentation Pond
- Minor Contours (1m interval)
- Major Contours (5m interval)
- Camp Creek
- Drainage Channel

## NOTES

1. Contours are shown at 10.0m intervals.
2. All units are in meters unless otherwise specified.
3. This Benchmark datum is currently used to monitor settlement gauges on the dam and was used as the benchmark in construction of the dam. The elevation has been adjusted from 1103.54m to the current LiDAR Survey elevation.

## REFERENCES

1. Coordinate system is UTM NAD 83CSRS zone 9V.
2. Topographic contour data and aerial photos were obtained from McElhanney and are based on August 15, 2012 LiDAR survey.

| srk consulting | Teck | 2022 Annual Facility Performance Review |
|---|---|---|
| SRK JOB NO.: CAPR001928 / REG. NO.: | | DRAWING TITLE: Sediment Retaining Structure Location Map |
| FILE NAME: Sheet 7.dwg | Sä Dena Hes | DATE: October 2022 / APPROVED: PM / FIGURE: 07 |


## Plan

0m 10 20 30 40

**LEGEND**

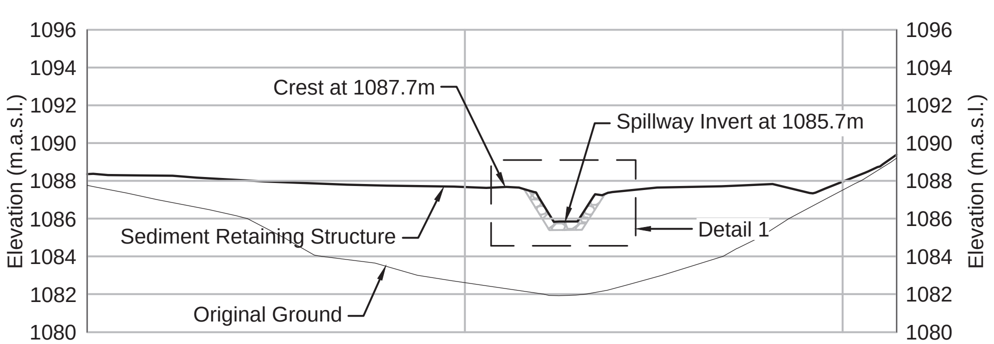
- Major Contour (5m)
- Minor Contour (1m)
- Dam Crest
- Dam Toe
- Edge of Road
- Original Ground
- Non-woven Geotextile
- Riprap
- Sediment Pond

**NOTES**

1. Contours are shown at 1.0m intervals.
2. All units are in meters unless otherwise specified.
3. Excavated dam fill material was used to cap tailings. The final excavated surface was graded to promote drainage and blended topography into adjacent natural topography.
4. Rip rap from downstream toe buttress was salvaged and reused during channel construction.
5. The decant tower was demolished down to the foundation. Steel reinforced concrete was deposited in the onsite landfill located in Borrow Area C. The remaining concrete foundation was covered with dam fill material and graded to blend into topography.
6. Design extents of rip rap and geotextile, as no as-built survey.

**REFERENCES**

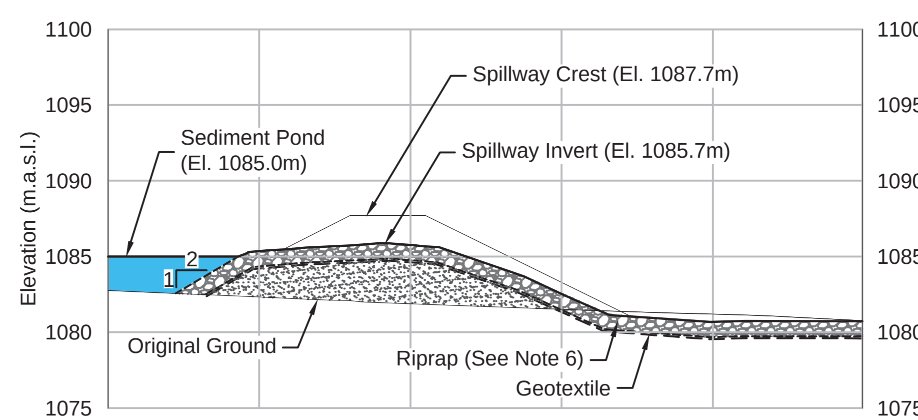
1. Coordinate system is UTM NAD 83CSRS zone 9V.
2. Topographic contour data and aerial photos were obtained from McElhanney and are based on August 15, 2012 LiDAR survey.




## A - Profile A-A'

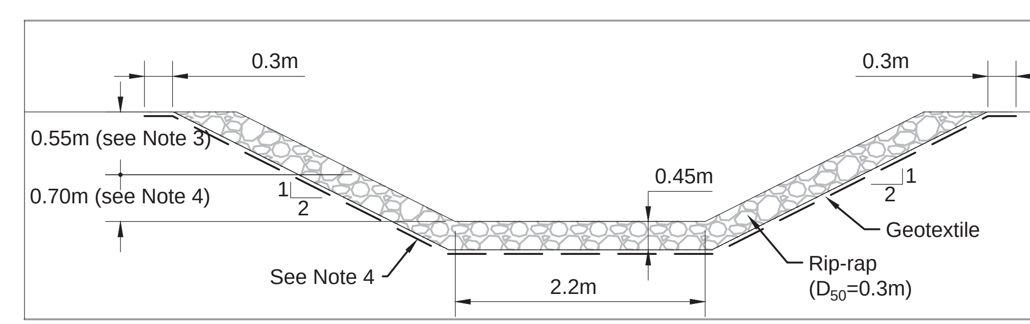
0m 10 20 30 40 Horizontal

0m 4 8 12 16 Vertical




## G - Section G-G'

0m 5 10 15 20

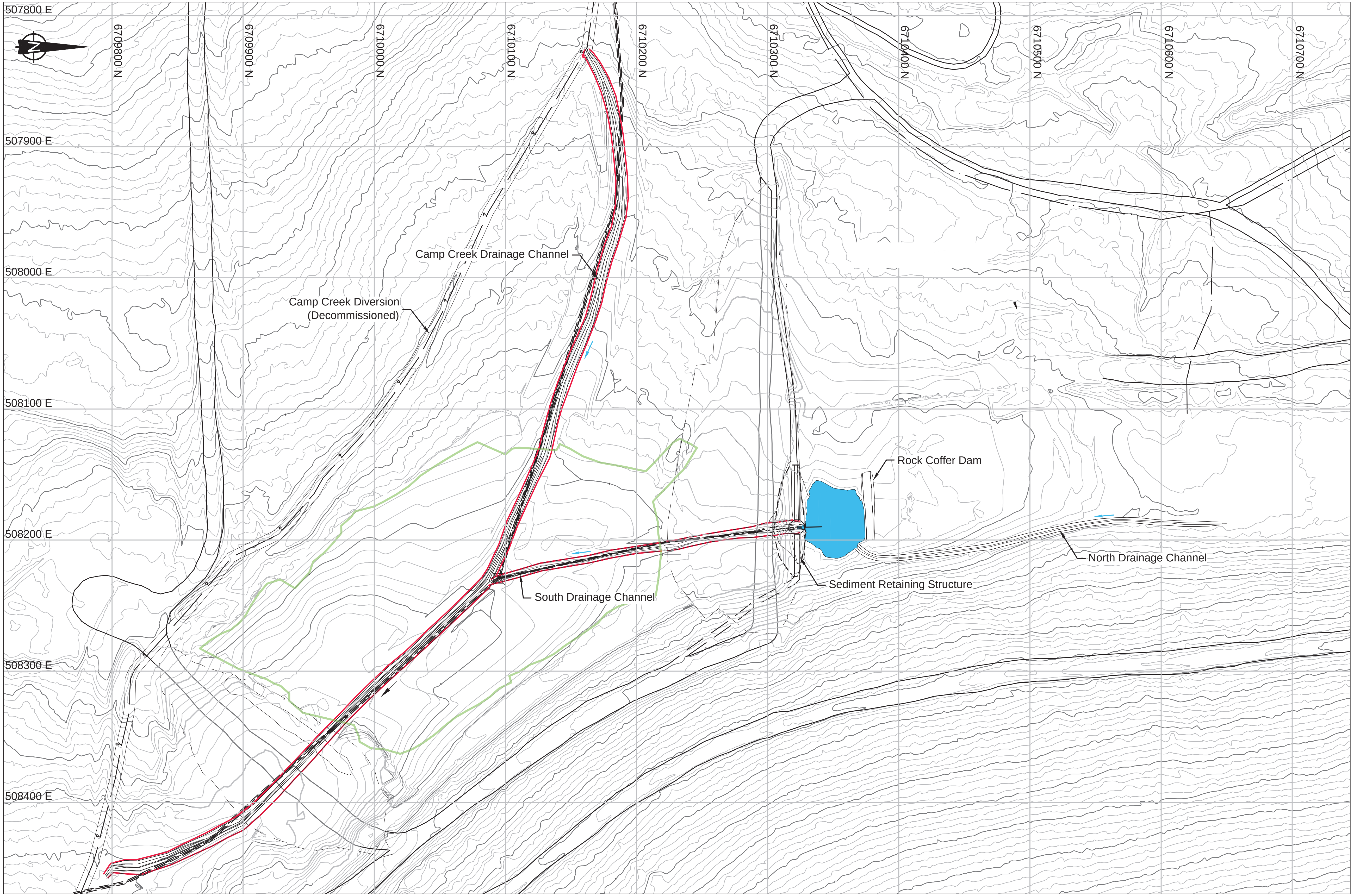



## 1 - Detail 1 - Design Spillway Typical Section

N.T.S.

0m 10 20 30 40

| srk consulting | Teck | 2022 Annual Facility Performance Review |
|---|---|---|
| SRK JOB NO.: CAPR001928 REG. NO.: | | DRAWING TITLE: Sediment Retaining Structure Plan and Profile |
| FILE NAME: Sheet 8.dwg | Sä Dena Hes | DATE: October 2022 APPROVED: PM FIGURE: 08 |




## LEGEND

- Major Contour (5m)
- Minor Contour (1m)
- Dam Crest
- Dam Toe
- Edge of Road
- Direction of Flow
- Sediment Pond

## NOTES

1. Contours are shown at 1.0m intervals.
2. All units are in meters unless otherwise specified.
3. As-built Camp Creek Drainage Channel upstream and downstream tie-in locations and North Drainage Channel alignments were modified from the design by Amec foster wheeler, with consultation from SRK and Teck, based on field conditions.

## REFERENCES

1. Coordinate system is UTM NAD 83CSRS zone 9V.
2. Topographic contour data and aerial photos were obtained from McElhanney and are based on August 15, 2012 LiDAR survey.

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2022 Annual Facility Performance Review

DRAWING TITLE:

Drainage Channel Plan

SRK JOB NO.: CAPR001928

REG. NO.:

FILE NAME: Sheet 9.dwg

Sä Dena Hes

DATE: October 2022

APPROVED: PM

FIGURE: 09

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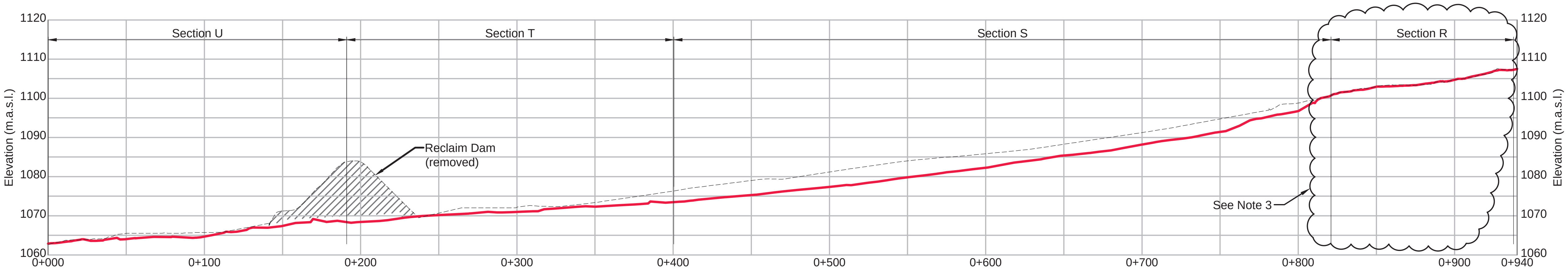



**W 09 Profile W - W'**
**Camp Creek Channel**

Horizontal: 0 10 20 30 40 50 Scale in Metres
Vertical: 0 5 10 15 20 25 Scale in Metres

## LEGEND

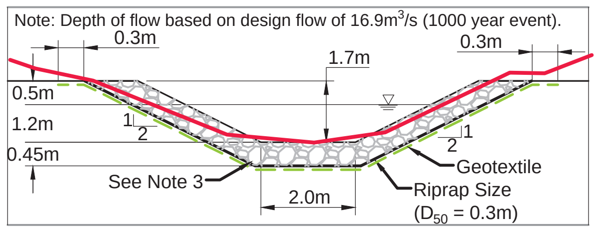
- Top of Drainage Channel Profile
- Pre-existing Ground
- Pre-Construction Ground
- Sediment Retaining Structure
- Non-woven Geotextile
- Material to be removed
- Rip Rap
- Till (left in place from Original Dam)
- As-built Surface (2015)

## NOTES

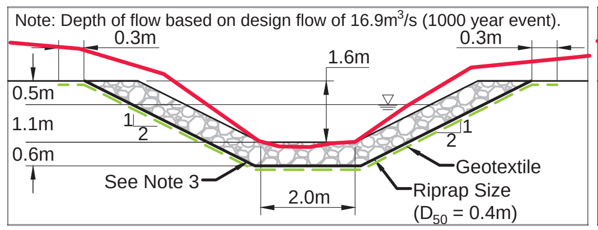
1. All units are in meters unless otherwise specified.
2. Based on field conditions Section R was removed from the design and the upstream tie-in location was modified.
3. Design extents of rip rap and geotextile, as no as-built survey.

## REFERENCES

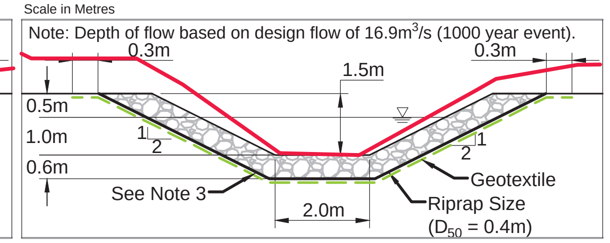
1. Coordinate system is UTM NAD 83CSRS zone 9V.
2. Topographic contour data and aerial photos were obtained from McElhanney and are based on August 15, 2012 LiDAR survey.



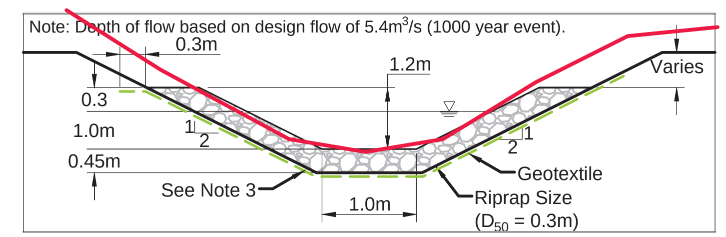

**U 09 DESIGN SECTION U- U'**
**Camp Creek Drainage Channel**
N.T.S.




**T 09 DESIGN SECTION T- T'**
**Camp Creek Drainage Channel**
N.T.S.



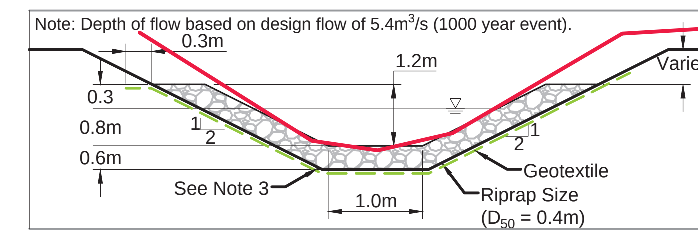

**S 09 DESIGN SECTION S - S'**
**Camp Creek Drainage Channel**
N.T.S.




**Q 09 DESIGN SECTION Q - Q'**
**South Drainage Channel**
N.T.S.


**V 09 Profile V - V'**
**South Drainage Channel**

Horizontal: 0 5 10 15 20 25 Scale in Metres
Vertical: 0 2 4 6 8 10 Scale in Metres




**P 09 DESIGN SECTION P - P'**
**South Dam Drainage Channel**
N.T.S.

**Design Drainage Channel**
**Riprap Volume Summary Table**

| Location | $D_{50}$ (m) | Armoring Depth (m) | Volume ($m^3$) |
|---|---|---|---|
| Section U | 0.3 | 0.45 | 993 |
| Section T | 0.4 | 0.6 | 1409 |
| Section S | 0.4 | 0.6 | 2875 |
| Section P | 0.4 | 0.6 | 52 |

**AS-BUILT EXCAVATED RIPRAP QUANTITIES USED FOR CHANNEL CONSTRUCTION**

| Material | Units | Quantity | Notes |
|---|---|---|---|
| Riprap developed from the Quarry | $m^3$ | 5,492 | Volume tracked by Amec Foster Wheeler |
| Riprap salvaged from Toe Buttresses | $m^3$ | 3,592 | Volume tracked by Amec Foster Wheeler |

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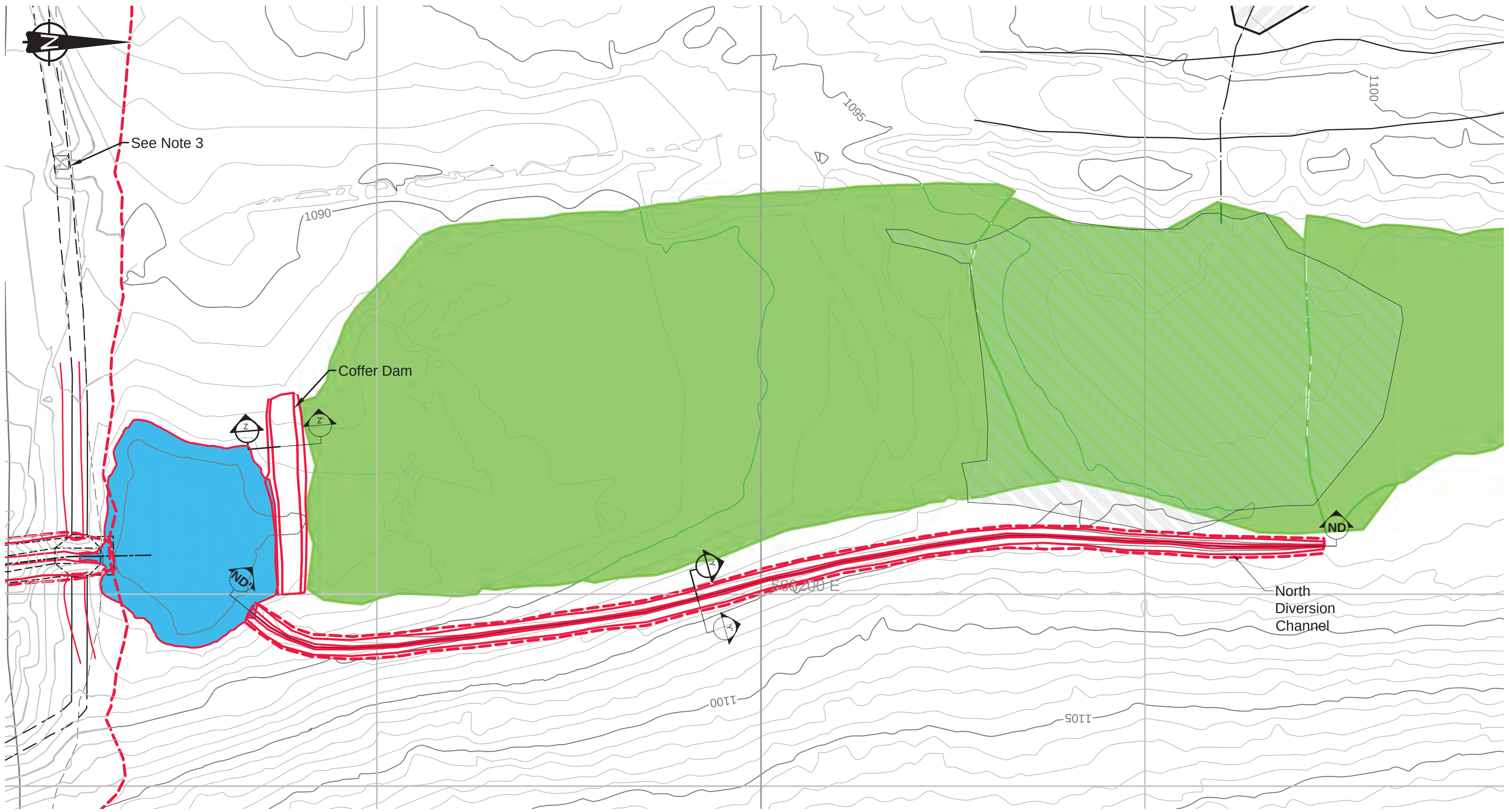
2022 Annual Facility Performance Review

DRAWING TITLE: Drainage Channel Sections

| SRK JOB NO.: CAPR001928 | REG. NO.: |
|---|---|
| FILE NAME: Sheet 10 and 11.dwg | |

| DATE: | APPROVED: | FIGURE: |
|---|---|---|
| October 2022 | PM | 10 |




**PLAN**

0 5 10 15 20 25
Scale in Metres

**LEGEND**

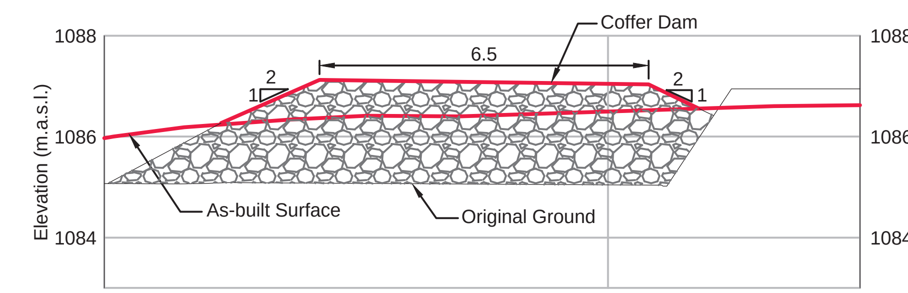
- Major Contours (5m)
- Minor Contours (1m)
- Edge of Road
- Tailings Pipeline
- Existing Ground (Profile)
- Non-woven Geotextile
- Covered Tailings (Proposed in Design)
- Rip Rap
- Sediment Pond (As-built)
- As-built Toe (2015)
- As-built Crest (2015)
- As-built Extent of Excavation / Fill (2015)

**NOTES**

1. Contours are shown at 1.0m intervals.
2. All units are in meters unless otherwise specified.
3. Based on field conditions the North Drainage Channel was realigned to avoid constructing the channel through deposited tailings.
4. Based on field conditions a Rock Cofferdam was constructed to retain soft tailings from sliding into the sediment retention pond during cover construction.
5. The decant tower was demolished down to the foundation. Steel reinforced concrete was deposited in the onsite landfill located in Borrow Area C. The remaining concrete foundation was covered with dam fill material and graded to blend into topography.
6. Design extents of rip rap and geotextile, as no as-built survey.

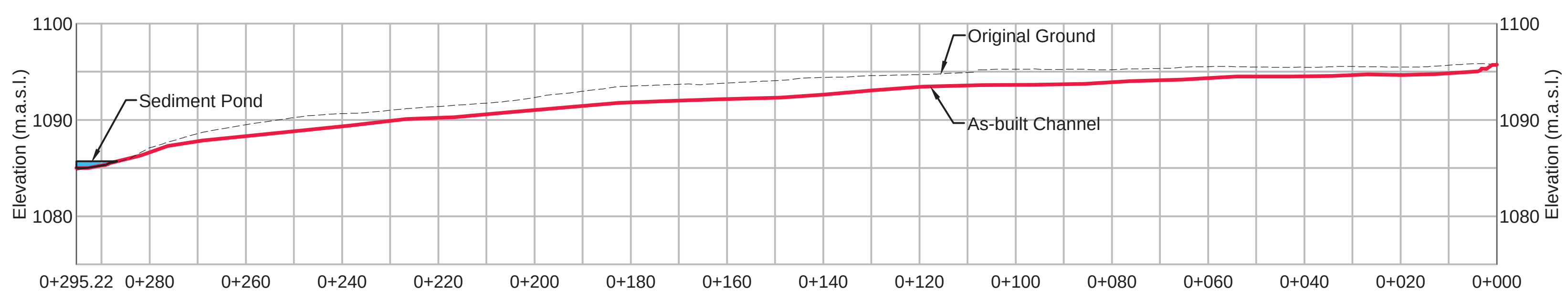
**Design North Tailings Drainage Channel Riprap Volume Summary Table:**

| Location | $D_{50}$ (m) | Armoring Depth (m) | Volume ($m^3$) |
|---|---|---|---|
| Y | 0.3 | 0.45 | 638 |
| Discharge Area | 0.3 | 0.45 | 25 |



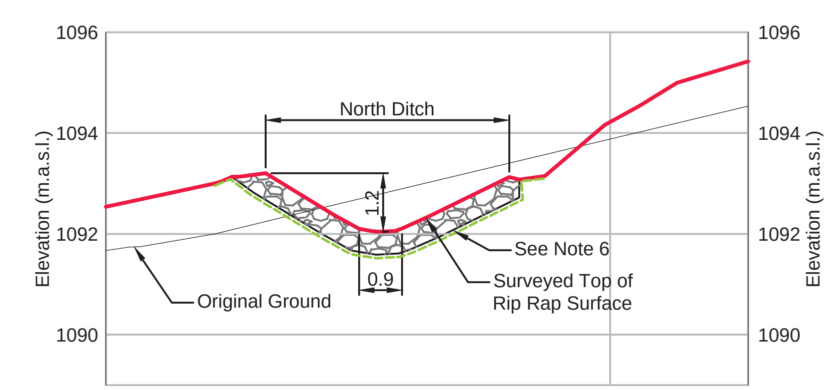

**Section Z - Z'**

0 1 2 3 4 5
Scale in Metres




**Profile ND - ND'**
**2x Vertical Exaggeration**

Horizontal: 0 5 10 15 20 25
Scale in Metres
Vertical: 0 2.5 5 7.5 10 12.5
Scale in Metres




**Section Y - Y'**

0 1 2 3 4 5
Scale in Metres

**REFERENCES**

1. Coordinate system is UTM NAD 83CSRS zone 9V.
2. Topographic contour data and aerial photos were obtained from McElhanney and are based on August 15, 2012 LiDAR survey.

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SRK JOB NO.: CAPR001928
REG. NO.:
FILE NAME: Sheet 10 and 11.dwg

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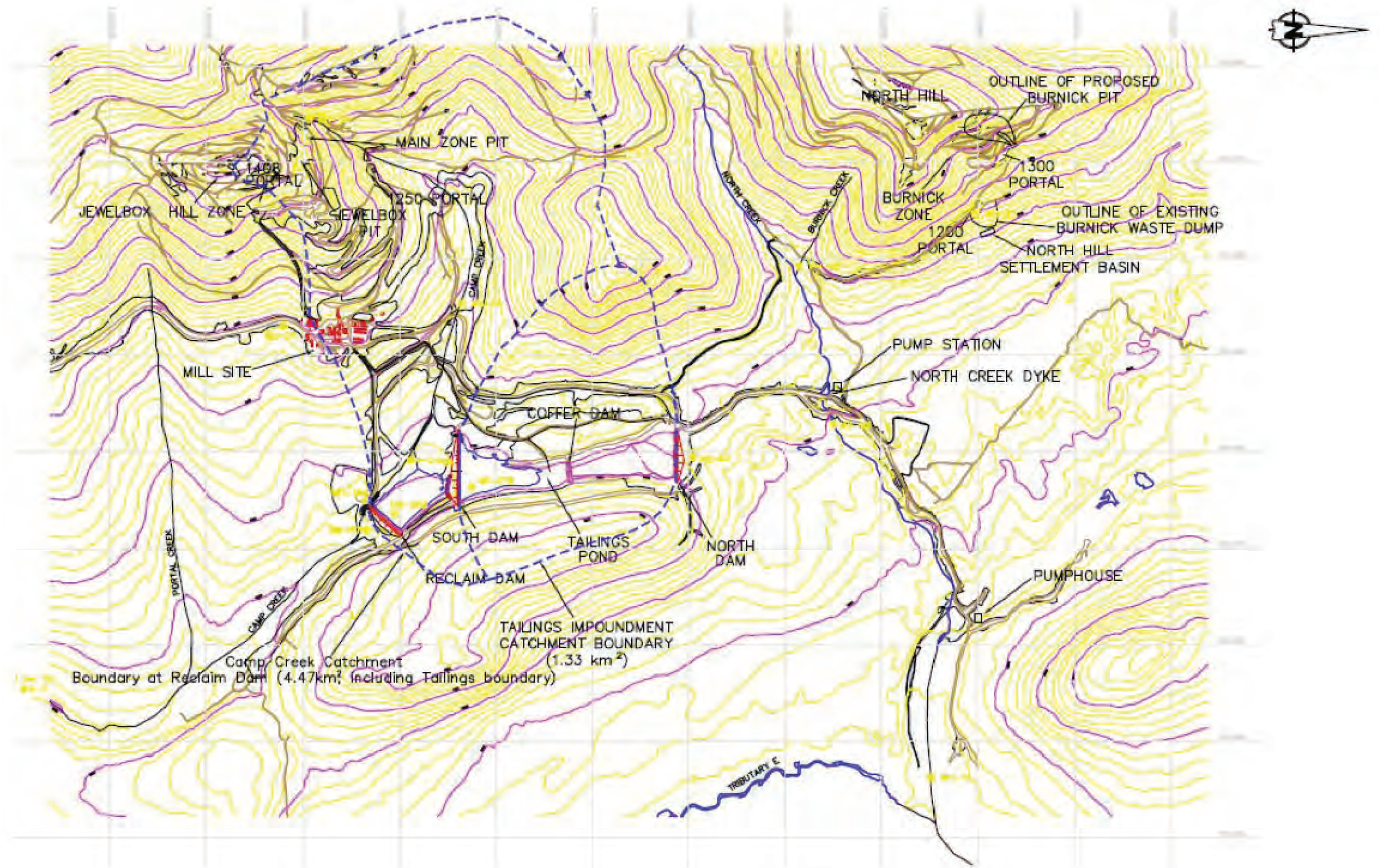
Sä Dena Hes

2022 Annual Facility Performance Review

DRAWING TITLE:
North Drainage Channel Plan, Profile and Sections

DATE: October 2022
APPROVED: PM
FIGURE: 11




| | | |
|---|---|---|
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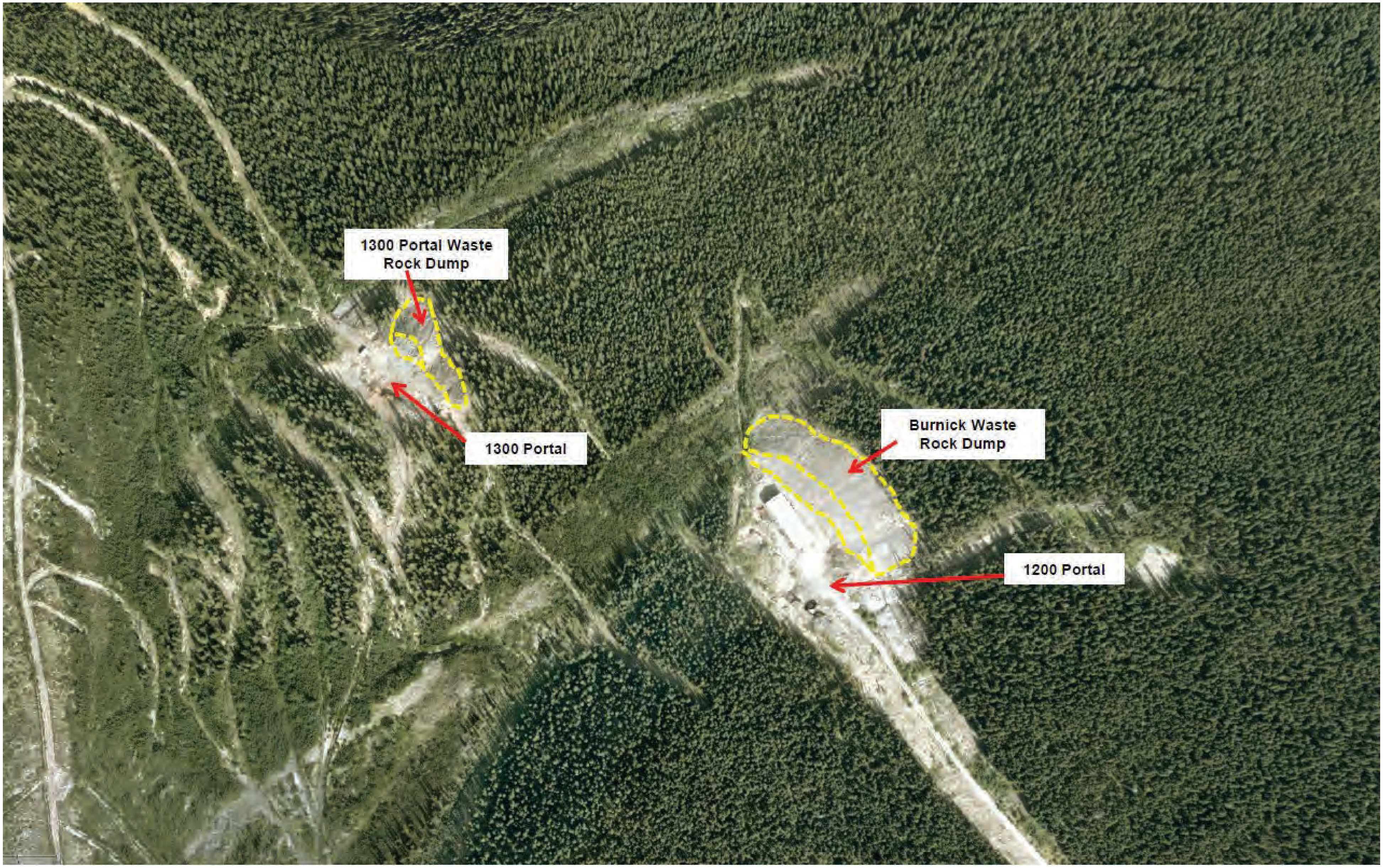
| | | **Catchment Areas** |
| Job No: CAPR001928<br>Filename: SDH_AFPR_Figures-Catchment_WRDumps.pptx | Sa Dena Hes | Date: Sept. 2022 · Approved: PHM · Figure: **12** |

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2022 Annual Facility Performance Review

**Burnick Zone Plan View**

Job No: CAPR001928

Filename: SDH_AFPR_Figures-Catchment_WRDumps.pptx

Sa Dena Hes

Date: Sept. 2022

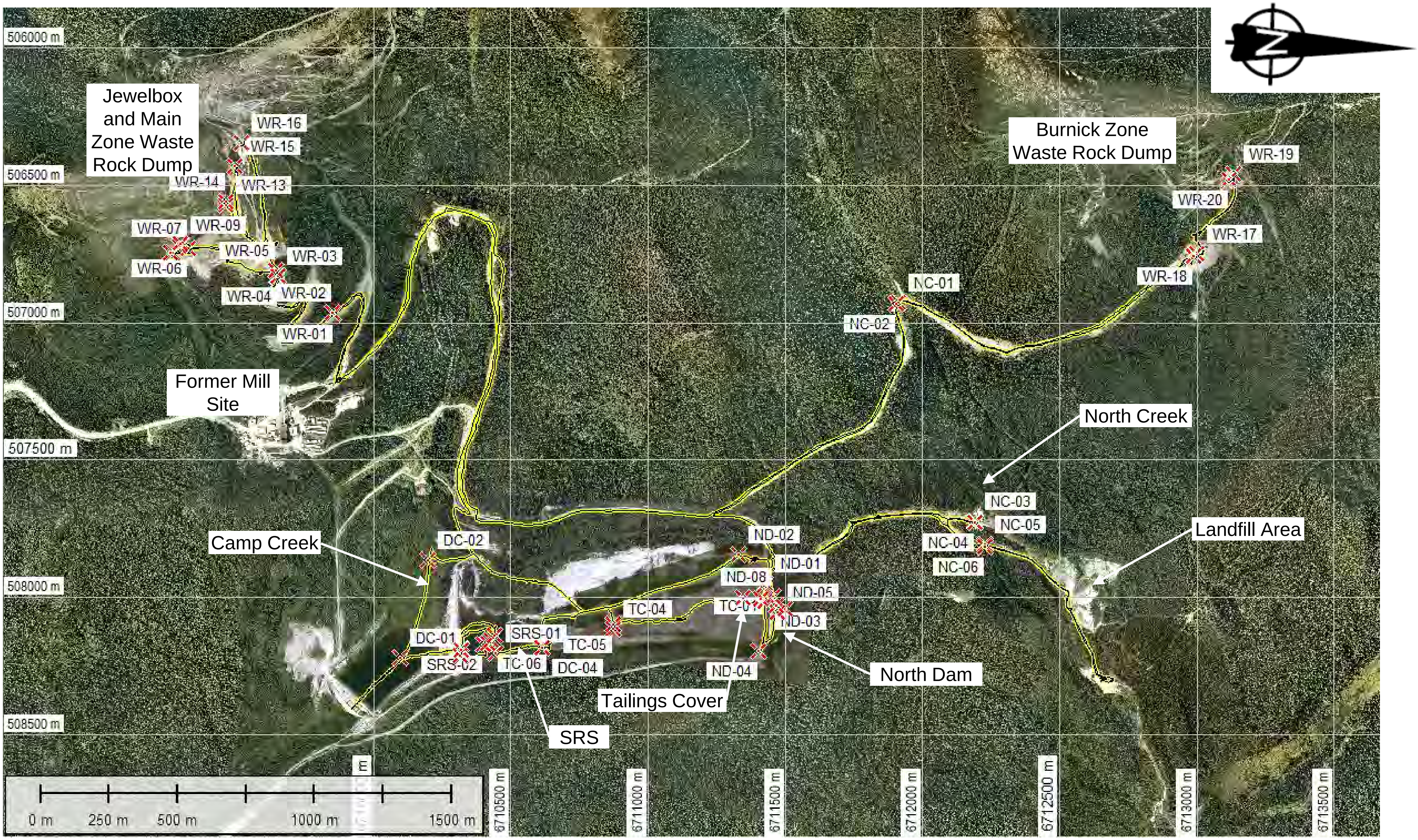
Approved: PHM

Figure: 13




| | | |
|---|---|---|
| srk consulting | Teck | 2022 Annual Facility Performance Review<br>**Main Zone and Jewelbox Zone Plan View** |
| Job No: CAPR001928<br>Filename: SDH_AFPR_Figures-Catchment_WRDumps.pptx | Sa Dena Hes | Date: Sept. 2022 / Approved: PHM / Figure: **14** |

# Appendix A. Site Photographs




Notes:
1. Orthographic photo depicts the pre-decommissioned surface on August 15, 2012.
2. Coordinate system is UTM NAD83 Zone 9.

2022 Inspection GPS track log

Photo location and direction

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2022 Annual Facility Performance Report

**Inspection Areas and Photo Logs**

| | | | |
|---|---|---|---|
| Job No: | CAPR001928 | | |
| Filename: | SDH_2022-SiteInspection-PhotoLocations.pptx | | |
| Sa Dena Hes | Date: Sept. 28, 2022 | Approved: PHM | Figure: **A-1** |


Notes:

1. Orthographic photo depicts the pre-decommissioned surface on August 15, 2012.
2. Coordinate system is UTM NAD83 Zone 9.

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|---|---|---|
| | | **Main and Jewelbox Zone Waste Rock Dump Photo Locations** |
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection-PhotoLocations.pptx | Sa Dena Hes | Date: Sept. 28, 2022 — Approved: PHM — Figure: **A-1** |


Notes:
1. Orthographic photo depicts the pre-decommissioned surface on August 15, 2012.
2. Coordinate system is UTM NAD83 Zone 9.

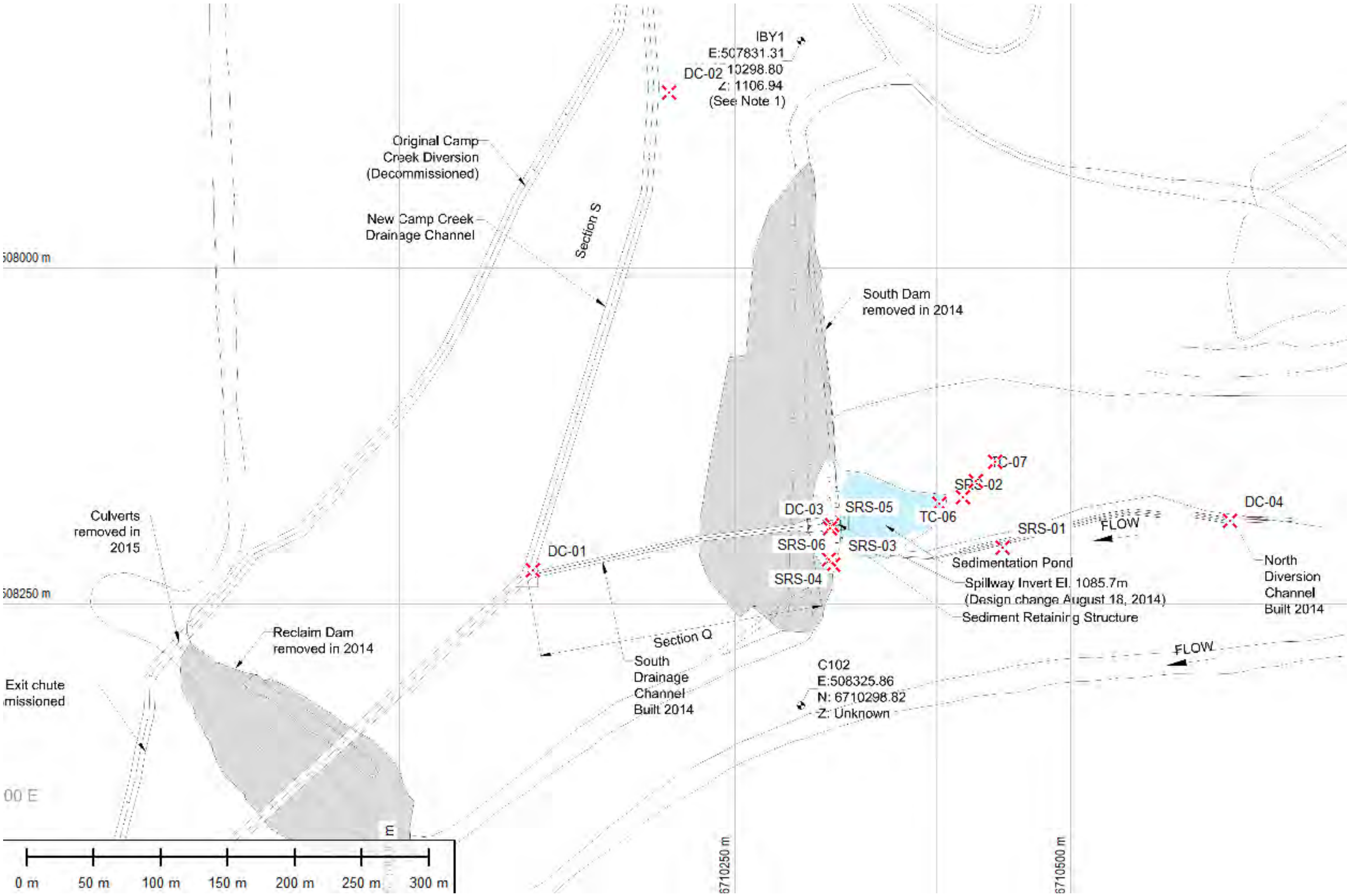
| srk consulting | Teck | 2022 Annual Facility Performance Report |
|---|---|---|
| | | **Burnick Zone Waste Rock Dump Photo Locations** |
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection-PhotoLocations.pptx | Sa Dena Hes | Date: Sept. 28, 2022 · Approved: PHM · Figure: **A-3** |


Notes:
1. Orthographic photo depicts the pre-decommissioned surface on August 15, 2012.
2. Coordinate system is UTM NAD83 Zone 9.

| | | |
|---|---|---|
| srk consulting | Teck | 2022 Annual Facility Performance Report<br>**North Creek Photo Locations** |
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection-PhotoLocations.pptx | Sa Dena Hes | Date: Sept. 28, 2022 / Approved: PHM / Figure: **A-4** |


Notes:
1. Orthographic photo of the North Dam and Tailings Cover taken on June 20, 2022. The photo is overlain on top of the August 12 orthophoto shown on the previous figures.
2. Coordinate system is UTM NAD83 Zone 9.

| srk consulting | Teck | 2022 Annual Facility Performance Report |
|---|---|---|
| | | **North Dam and Tailings Cover Photo Locations** |
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection-PhotoLocations.pptx | Sa Dena Hes | Date: Sept. 28, 2022 · Approved: PHM · Figure: **A-5** |




Notes:

1. See Figure 5 in this report for further details on the base plan shown.

srk consulting

Teck

| | | |
|---|---|---|
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection-PhotoLocations.pptx | Sa Dena Hes | 2022 Annual Facility Performance Report<br>**SRS, South Tailings Cover and Drainage Channel Photo Locations** |
| | | Date: Sept. 28, 2022 / Approved: PHM / Figure: **A-6** |

Photo DC-01: Camp Creek looking downstream at the confluence with the South Drainage Channel..

Photo DC-02: Camp Creek looking upstream.

| srk consulting | Teck | 2022 Annual Facility Performance Review<br>**South Diversion Channel and Camp Creek** | | |
|---|---|---|---|---|
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 | Approved: PHM | Figure: **A-7** |

Photo DC-03: Upper end of the South Drainage Channel taken from the SRS Spillway.

Photo DC-04: North Diversion Channel looking upstream.

Photo NC-01: Channel Erosion at North Creek across the decommissioned access road to Burnick Zone.

Photo NC-02: Channel Erosion at North Creek across the decommissioned access road to Burnick Zone. Seepage observed entering channel leaving a rusty-reddish coloured stain on the soils.

| | | |
|---|---|---|
| srk consulting | Teck | 2022 Annual Facility Performance Review |
| | | **North Creek** |
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 · Approved: PHM · Figure: **A-9** |

Photo NC-03: Beaver dam at the upstream end of the decommissioned North Creek Dike structure.

Photo NC-04: Channel erosion at the downstream end of the decommissioned North Creek Dike structure with exposed geotextile. The condition appears unchanged compared to 2021 inspection photos.

Photo NC-05: On-going channel and bank erosion at the downstream end of the lower decommissioned access road crossing of North Creek to the landfill area.

Photo NC-06: On-going channel and bank erosion at the upstream end of the lower decommissioned access road crossing of North Creek to the landfill area.

Photo ND-01:North Dam looking east towards the erosion gully repair area.

Photo ND-02: Till borrow area used for the North Dam repairs.  The borrow slopes have been partially regraded and landformed.

| srk consulting | Teck | 2022 Annual Facility Performance Review<br>**North Dam** | | |
|---|---|---|---|---|
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 | Approved: PHM | Figure: **A-12** |

Photo ND-03: Erosion debris downstream of the dam. The silt fence is placed across the erosion gulley repair area approximately midway down the slope. Historical wind-blown tailings visible to the right of the silt fence, further upslope.

Photo ND-04: North Dam looking west.


Photo ND-05: Piezometer NDW-4A downstream of the dam toe. The PVC pipe extends above the protective casing.

Photo ND-06: MH-02 flow monitoring pipe.

Photo ND-07: Downstream slope of the North Dam looking southeast from the base of the erosion gully repair area.

Photo ND-08: Downstream toe of the North Dam looking west at the base of the erosion gully repair area.

Photo SRS-01: SRS and pond looking south. The North Drainage Channel is located at the left side of the photo.

Photo SRS-02: SRS in distance, with the coffer dam in the foreground of the photo.

| | | |
|---|---|---|
| srk consulting | Teck | 2022 Annual Facility Performance Review<br>**Sediment Retaining Structure (SRS) Area** |
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 \| Approved: PHM \| Figure: **A-16** |

Photo SRS-03: Crest and downstream slope of the SRS looking west from the spillway.

Photo SRS-04: SRS crest looking west from the east abutment.

Photo SRS-05: Downstream face of the SRS on the east side of the spillway looking southwest.

Photo SRS-06: Downstream face of the SRS on the east side of the spillway looking southeast.

| srk consulting | Teck | 2022 Annual Facility Performance Review<br>**Sediment Retaining Structure (SRS) Area** |
|---|---|---|
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 / Approved: PHM / Figure: **A-18** |

Photo TC-01: North Dam crest and tailings cover south of the erosion gully repair area.

Photo TC-02: Upstream end of the Main drainage swale taken from the North Dam looking south.

Photo TC-03: Main drainage swale that flows south through the middle of the tailings cover.

Photo TC-04: Sediment accumulation at the south end of the Northern Tailings Area at the location of the former Coffer Dam (removed).

Photo TC-05: Tailings cover looking north.

Photo TC-06: Erosion gully in tailings cover immediately to the south of the SRS Pond. Areas of exposed geotextile observed. No visible tailings observed.

Photo TC-07: Upstream end of the erosion gully in the tailings cover south of the SRS Pond.


Photo TC-08: Reclamation cover looking south towards the SRS and the start of the erosion gully.

Photo WR-01: Rill and gulley erosion across the decommissioned access road to the Jewelbox Waste Rock Dump.

Photo WR-02: Erosion gulley across the decommissioned access road to the Jewelbox Waste Rock Dump.

Photo WR-03: Jewelbox Waste Rock Dump looking upstream from the erosion gully (Photo WR-04).

Photo WR-04: Erosion gully at the base of the Jewelbox Waste Rock Dump looking downslope. The gully has eroded down to bedrock.


Photo WR-05: Erosion gully at the base of the Jewelbox Waste Dump looking upstream.

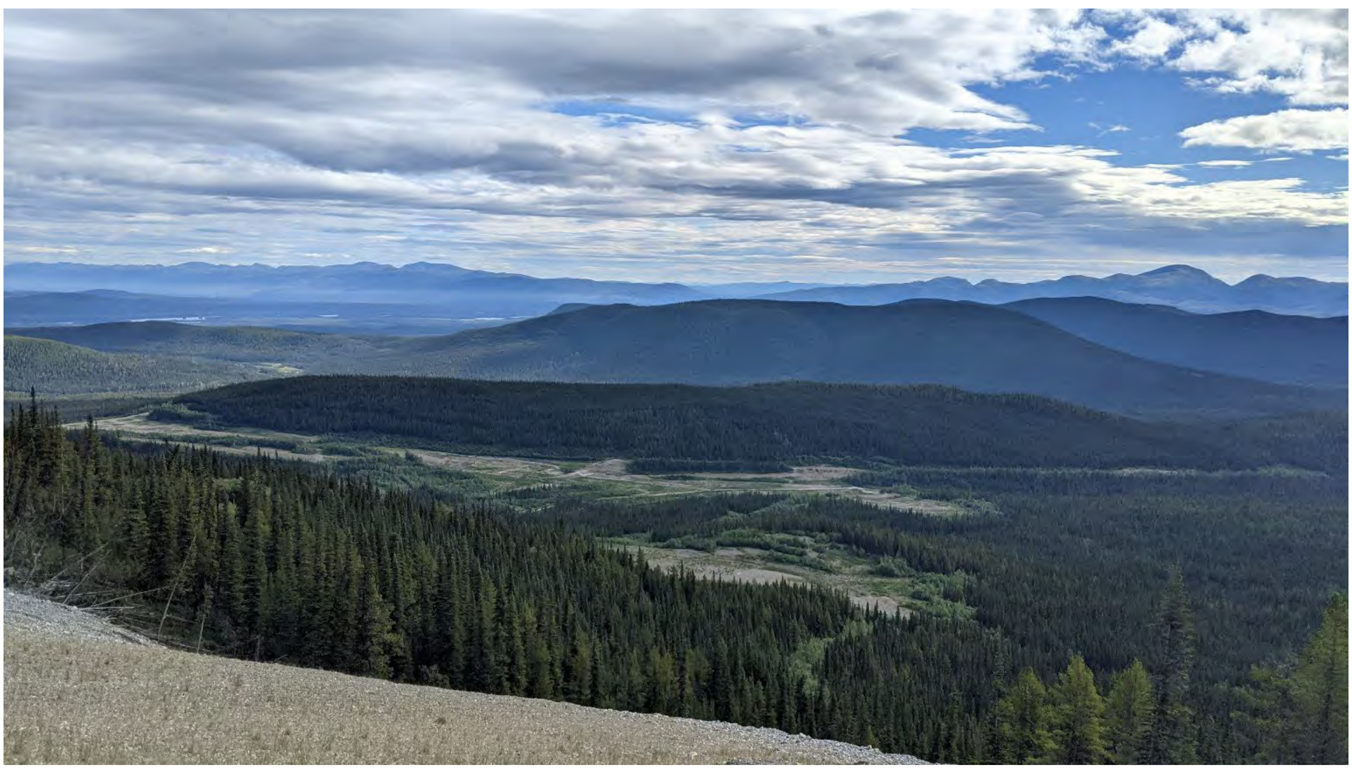


Photo WR-06: Overview of the TMA taken from the 1408 Portal Waste Rock Dump.

Photo WR-07: 1408 Portal Waste Rock Dump looking north.

Photo WR-08: Surficial slumping near the south end of the 1408 Portal Waste Rock Dump

Photo WR-09: Vent pipe from the 1408 portal.

Photo WR-10: Drainpipes from the 1408 Portal.

| srk consulting | Teck | 2022 Annual Facility Performance Review<br>**Main Zone and Jewelbox Zone Waste Rock Dump Areas** | | |
|---|---|---|---|---|
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 | Approved: PHM | Figure: **A-27** |

Photo WR-11: Fill placement above the 1408 Portal looking north.

Photo WR-12: Rill erosion at the south end of the 1408 Portal Waste Rock Dump looking southeast.

| | | |
|---|---|---|
| srk consulting | Teck | 2022 Annual Facility Performance Review<br>**Main Zone and Jewelbox Zone Waste Rock Dump Areas** |
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 / Approved: PHM / Figure: **A-28** |


Photo WR-13: Openings in the Jewelbox Pit wall above the Main Zone Waste Rock Dump

Photo WR-14: Jewelbox Pit wall looking west.

Photo WR-15: Erosion gully down the Main Zone Waste Rock Dump above the 1380 Portal.

Photo WR-16: Backfill at the 1380 Portal below Main Zone Waste Rock Dump.

| srk consulting | Teck | 2022 Annual Facility Performance Review<br>**Main Zone and Jewelbox Zone Waste Rock Dump Areas** | | |
|---|---|---|---|---|
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 | Approved: PHM | Figure: **A-30** |

Photo WR-17: Regraded Burnick Waste Rock Dump at the 1200 Portal.

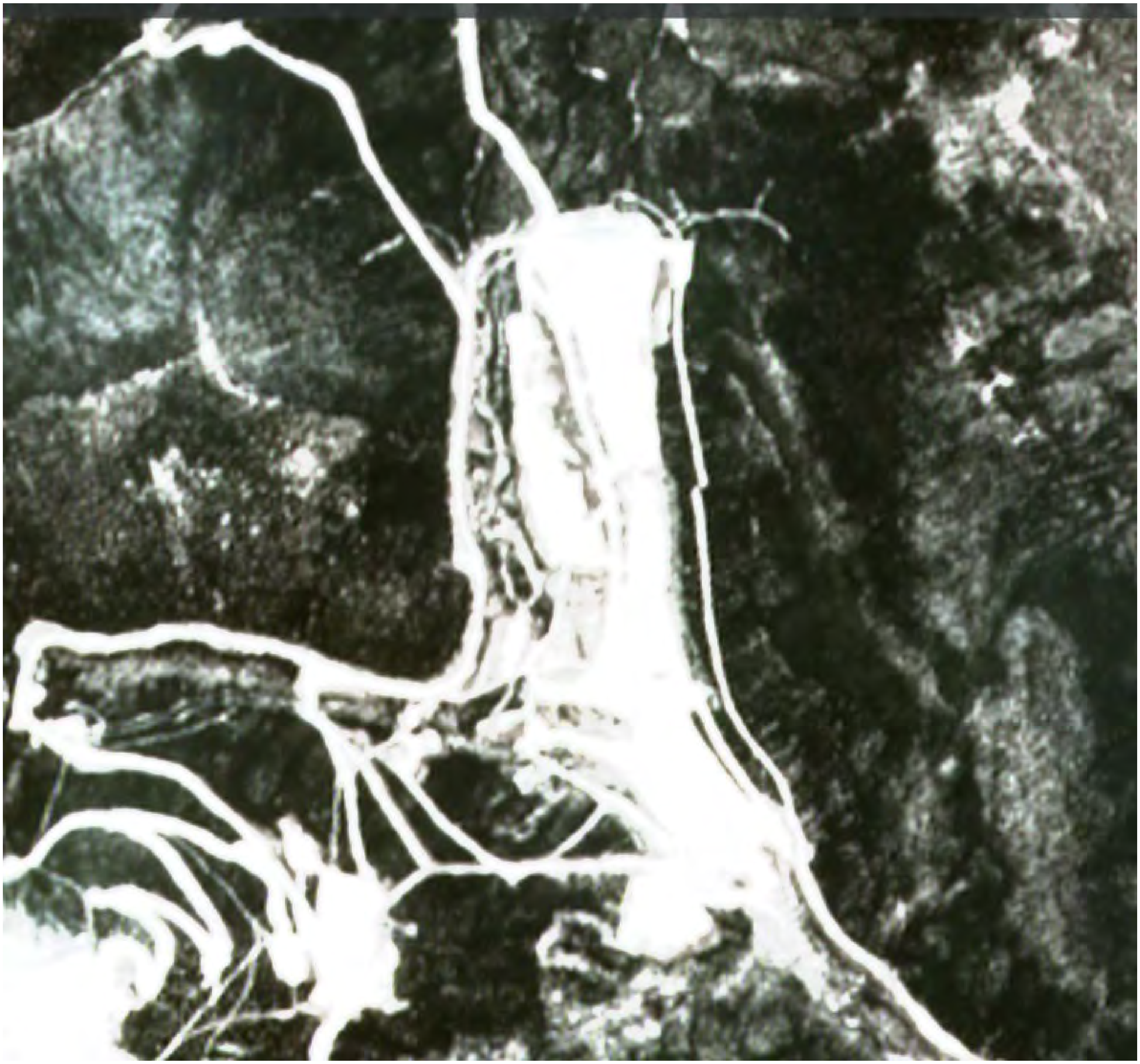
Photo WR-18: 1200 Portal drainpipe.

Photo WR-19: Regraded 1300 Portal Waste Rock Dump and 1300 Portal area

Photo WR-20: 1300 Portal drainpipe.

| srk consulting | Teck | 2022 Annual Facility Performance Review |
|---|---|---|
| | | **Burnick Waste Rock Dump Area** |
| Job No: CAPR001928<br>Filename: SDH_2022-SiteInspection_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 / Approved: PHM / Figure: **A-32** |

# Appendix B. Satellite Imagery

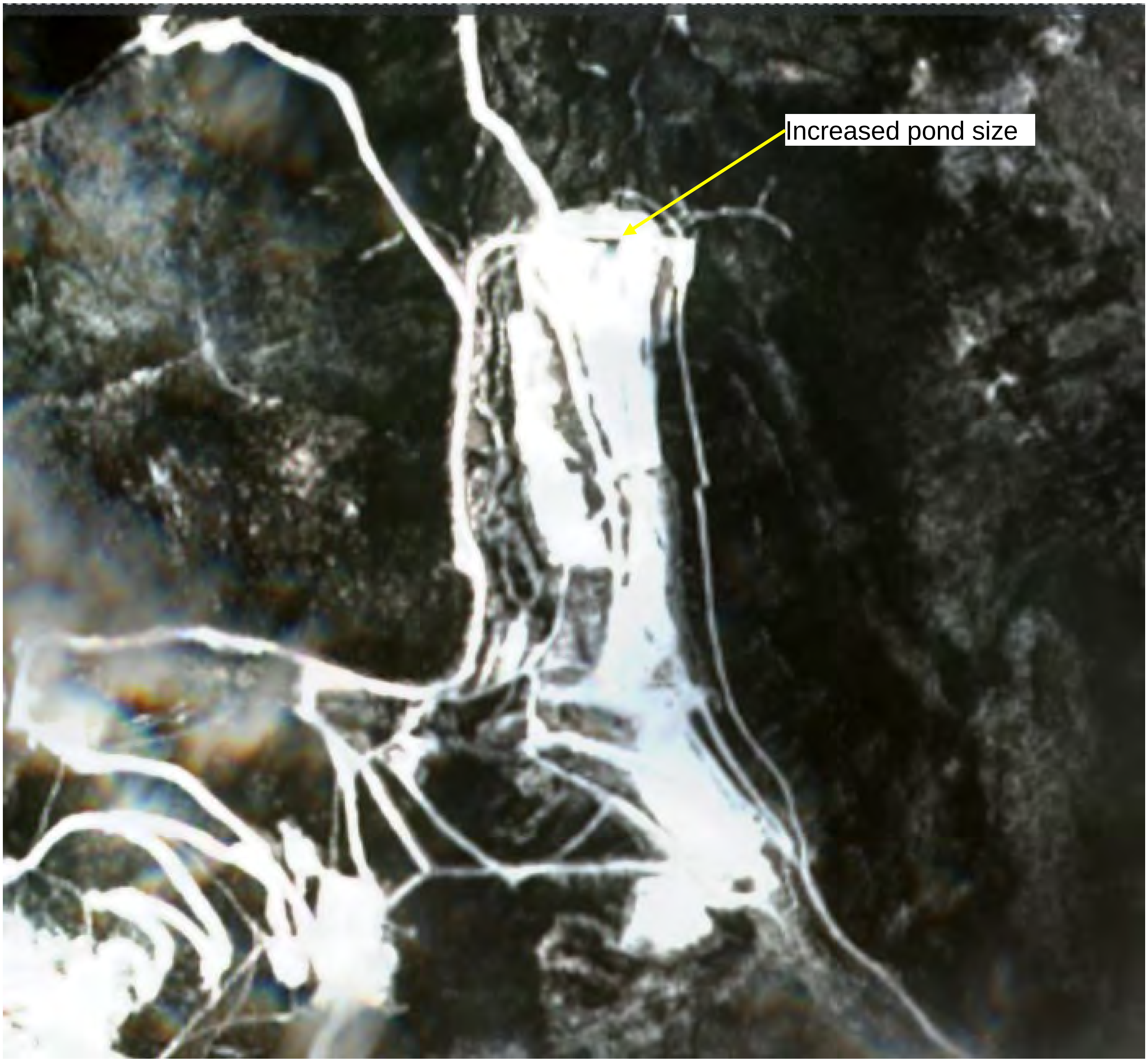


Notes:
1. Sentinal-2 L2A, true colour.
2. Imagery obtained from Copernicus Open Access Hub.

| srk consulting | Teck | Satellite Imagery |
|---|---|---|
| | | **May 22, 2022** |
| Job No: CAPR001928<br>Filename: Figures_SDH-NorthDam_Satellite.pptx | Sa Dena Hes | Date: August 2022 \| Approved: P. Mikes \| Figure: **B-1** |

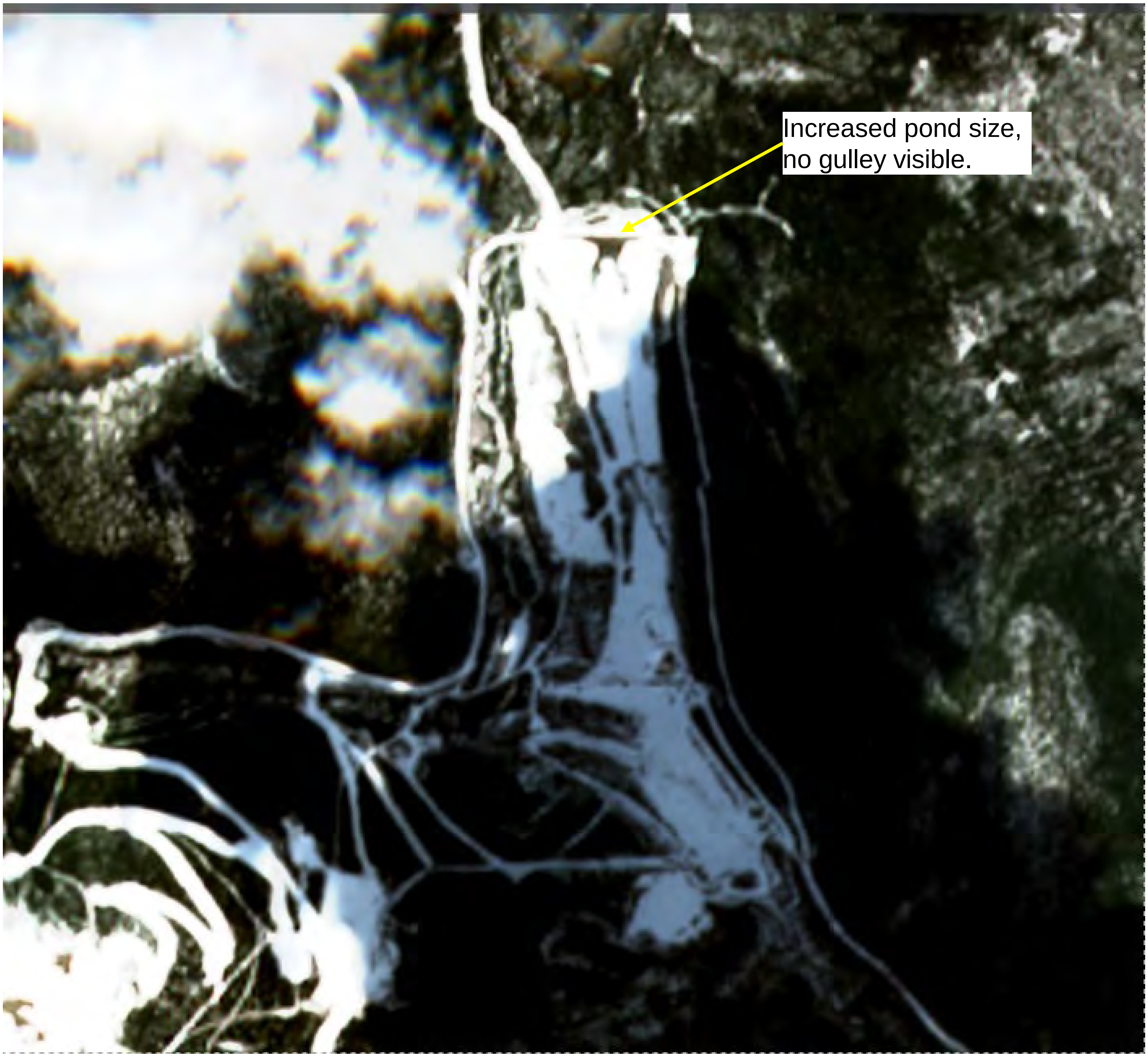

Notes:
1. Sentinal-2 L2A, true colour.
2. Imagery obtained from Copernicus Open Access Hub.

| srk consulting | Teck | Satellite Imagery<br>May 27, 2022 | | |
|---|---|---|---|---|
| Job No: CAPR001928<br>Filename: Figures_SDH-NorthDam_Satellite.pptx | Sa Dena Hes | Date: August 2022 | Approved: P. Mikes | Figure: B-2 |




Notes:
1. Sentinal-2 L2A, true colour.
2. Imagery obtained from Copernicus Open Access Hub.

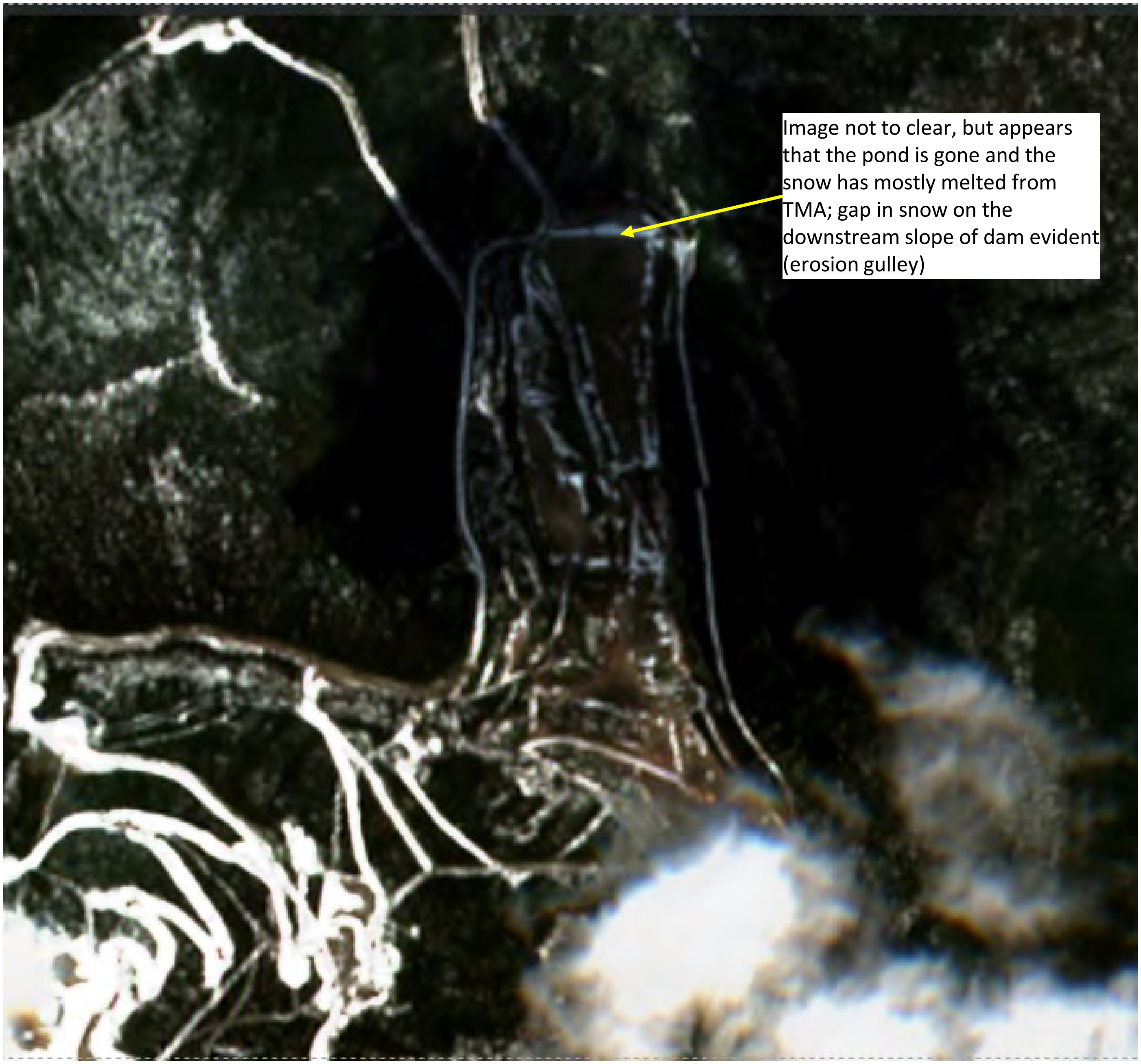
| | | |
|---|---|---|
| srk consulting | Teck | Satellite Imagery<br>**May 28, 2022** |
| Job No: CAPR001928<br>Filename: Figures_SDH-NorthDam_Satellite.pptx | Sa Dena Hes | Date: August 2022 / Approved: P. Mikes / Figure: **B-3** |




Notes:

1. Sentinal-2 L2A, true colour.
2. Imagery obtained from Copernicus Open Access Hub.

| | | |
|---|---|---|
| srk consulting | Teck | Satellite Imagery<br>**June 1, 2022** |
| Job No: CAPR001928<br>Filename: Figures_SDH-NorthDam_Satellite.pptx | Sa Dena Hes | Date: August 2022 / Approved: P. Mikes / Figure: **B-4** |




Notes:
1. Sentinal-2 L2A, true colour.
2. Imagery obtained from Copernicus Open Access Hub.

| | | |
|---|---|---|
| srk consulting | Teck | Satellite Imagery<br>**June 7, 2022** |
| Job No: CAPR001928<br>Filename: Figures_SDH-NorthDam_Satellite.pptx | Sa Dena Hes | Date: August 2022 / Approved: P. Mikes / Figure: **B-5** |


Notes:
1. Sentinal-2 L2A, true colour.
2. Imagery obtained from Copernicus Open Access Hub.

| | | |
|---|---|---|
| srk consulting | Teck | Satellite Imagery<br>**June 11, 2022** |
| Job No: CAPR001928<br>Filename: Figures_SDH-NorthDam_Satellite.pptx | Sa Dena Hes | Date: August 2022 / Approved: P. Mikes / Figure: **B-6** |


May 10, 2020, satellite imagery showing a large pond on the cover surface..

| srk consulting | Teck | Satellite Imagery<br>May 10, 2022 | | |
|---|---|---|---|---|
| Job No: CAPR001928<br>Filename: Figures_SDH-NorthDam_Satellite.pptx | Sa Dena Hes | Date: August 2022 | Approved: P. Mikes | Figure: B-7 |

# Appendix C. North Dam Erosion Gully Repair Photographs

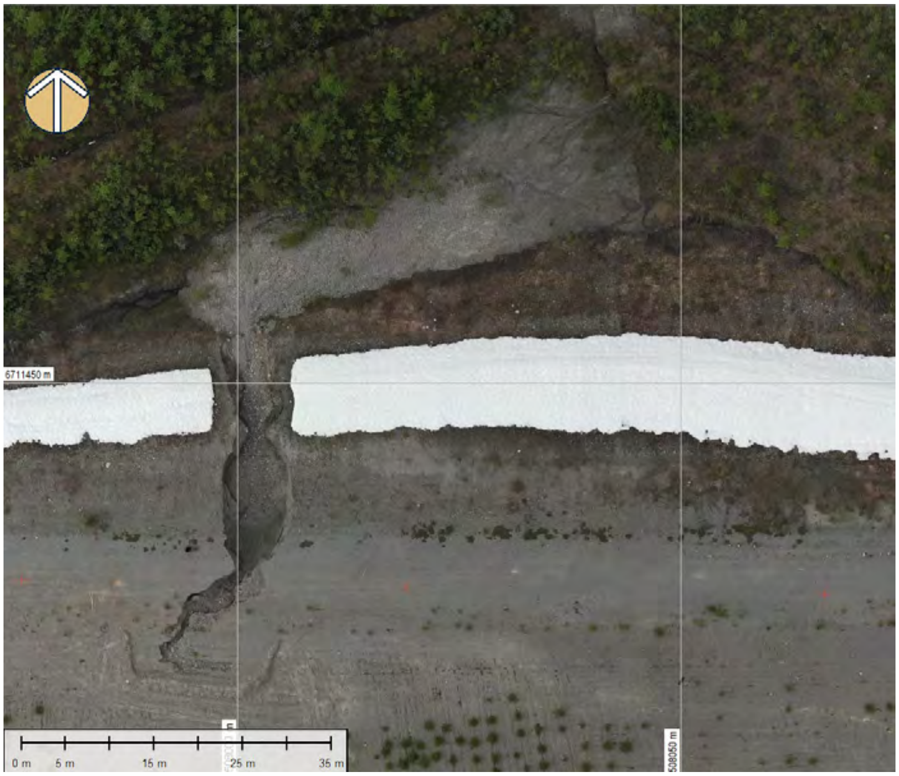



Photo 1: Drone Orthophoto - June 20, 2022

Photo 2: Erosion Gully looking upslope (June 21, 2022).

| srk consulting | Teck | 2022 AFPR |
|---|---|---|
| | | **North Dam Gully Repair Photographs** |
| Job No: CAPR001928<br>Filename: SDH_NorthDamGullyRepair_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 · Approved: PHM · Figure: **C-1** |

Photo 3: Erosion of the dam crest and tailings cover at the upstream end of the erosion gully (June 21, 2022).

Photo 4a/b: West and east sides of the erosion gully (June 21, 2022).

| | | | | |
|---|---|---|---|---|
| srk consulting | Teck | 2022 AFPR | | |
| | | **North Dam Gully Repair Photographs** | | |
| Job No: CAPR001928<br>Filename: SDH_NorthDamGullyRepair_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 | Approved: PHM | Figure: **C-2** |

Photo 5: Excavator constructing working platforms down the west side of the gully (June 23, 2022).

Photo 6: French Drain installation at the base of the gully (June 24, 2022).

| srk consulting | Teck | 2022 AFPR<br>**North Dam Gully Repair Photographs** | | |
|---|---|---|---|---|
| Job No: CAPR001928<br>Filename: SDH_NorthDamGullyRepair_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 | Approved: PHM | Figure: **C-3** |


Photo 7: Sand and Gravel gully side slopes were scaled back and placed at the base of the gully (June 24, 2022).


Photo 8: Compaction of Sand and Gravel in 0.3 m lifts (June 24, 2022).

| srk consulting | Teck | 2022 AFPR<br>**North Dam Gully Repair Photographs** | | |
|---|---|---|---|---|
| Job No: CAPR001928<br>Filename: SDH_NorthDamGullyRepair_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 | Approved: PHM | Figure: **C-4** |

Photo 9: Placement of sand and gravel and trimming of the dam slope (June 25, 2022).

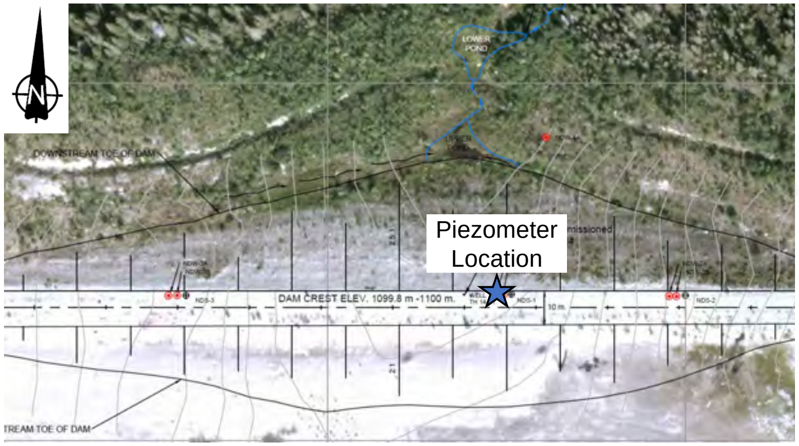
Photo 10: Geotextile installation to delineate between the Sand and Gravel and Repair Till embankment zones (June 25, 2022).

| | | |
|---|---|---|
| srk consulting | Teck | 2022 AFPR<br>**North Dam Gully Repair Photographs** |
| Job No: CAPR001928<br>Filename: SDH_NorthDamGullyRepair_Photolog.pptx | Sa Dena Hes | Date: Sept. 28, 2022 · Approved: PHM · Figure: **C-5** |

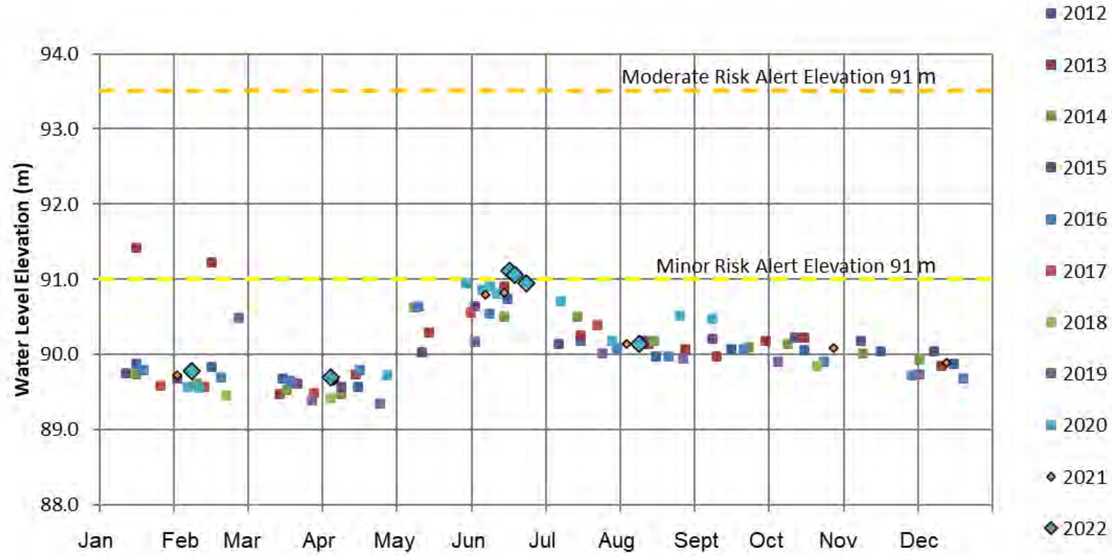

Photo 9: Till placement (June 26, 2022).

Photo 10: Completed repairs looking west (June 28, 2022).

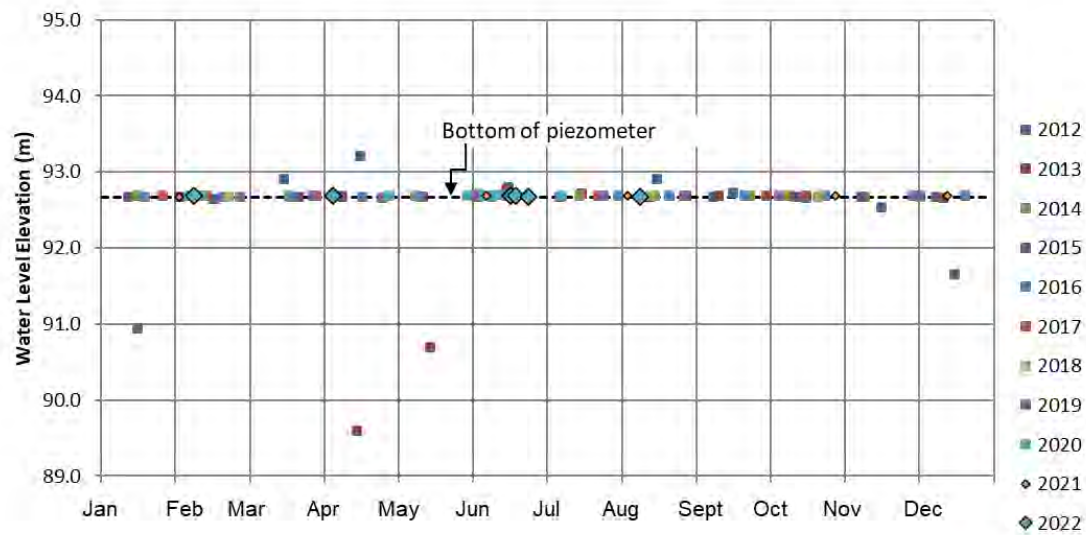
# Appendix D. Instrumentation Data




Notes:
1. Orthographic photo depicts the pre-decommissioned surface on August 15, 2012.
2. Co-ordinate system is UTM NAD 83 CSRS Zone 9V.



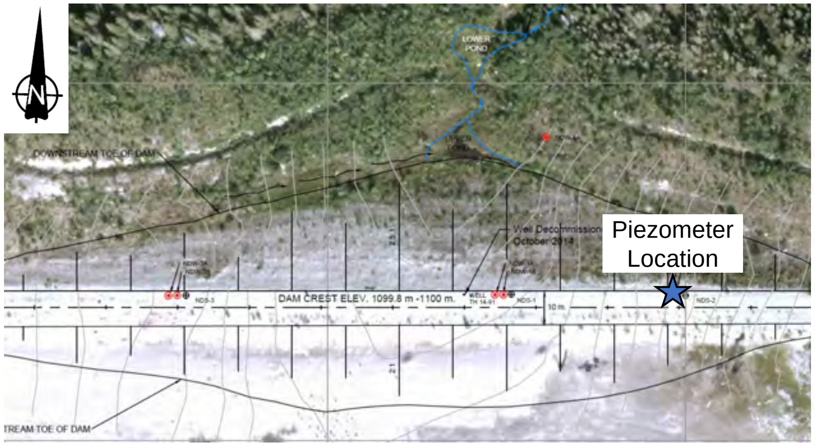

**NDW-1A – Screened in dam foundation (bedrock)**



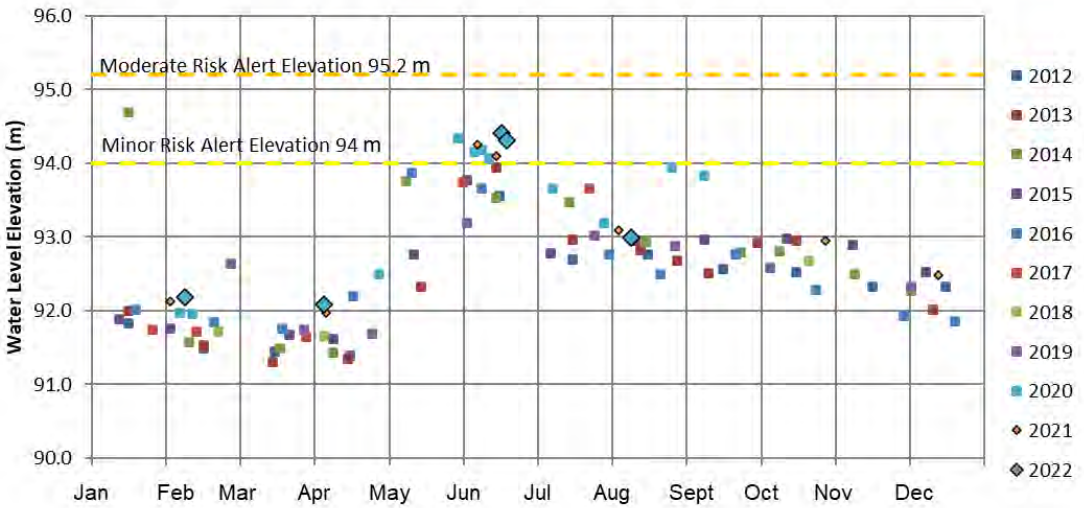

**NDW-1B – Screened in dam fill (Sandy Till)**

Source file:
https://srk.sharepoint.com/sites/FS261/Internal/Monitoring%20 Data/NDMPiezolevels_2022Edition.xlsx?web=1

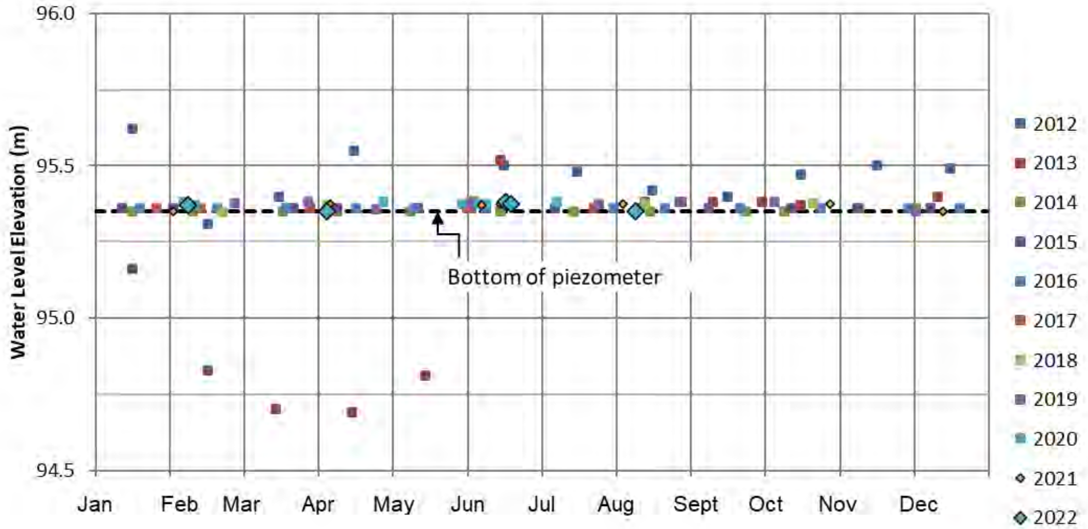
| srk consulting | Teck | North Dam Instrumentation |
|---|---|---|
| | | **North Dam Piezometers NDW-1A and 1B** |
| Job No: CAPR001928<br>Filename: Figures_ND_Piezometers_CAPR001928.pptx | Sa Dena Hes | Date: August 2022 / Approved: P. Mikes / Figure: **D-1** |




Notes:
1. Orthographic photo depicts the pre-decommissioned surface on August 15, 2012.
2. Co-ordinate system is UTM NAD 83 CSRS Zone 9V.



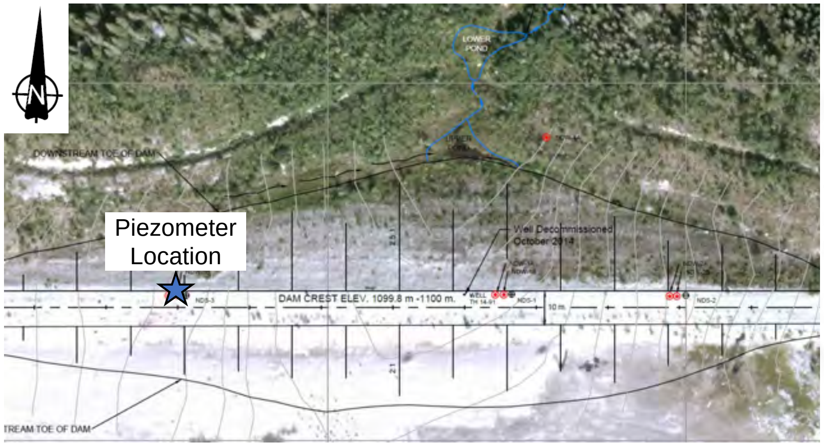

**NDW-2A – Screened in dam foundation (bedrock)**



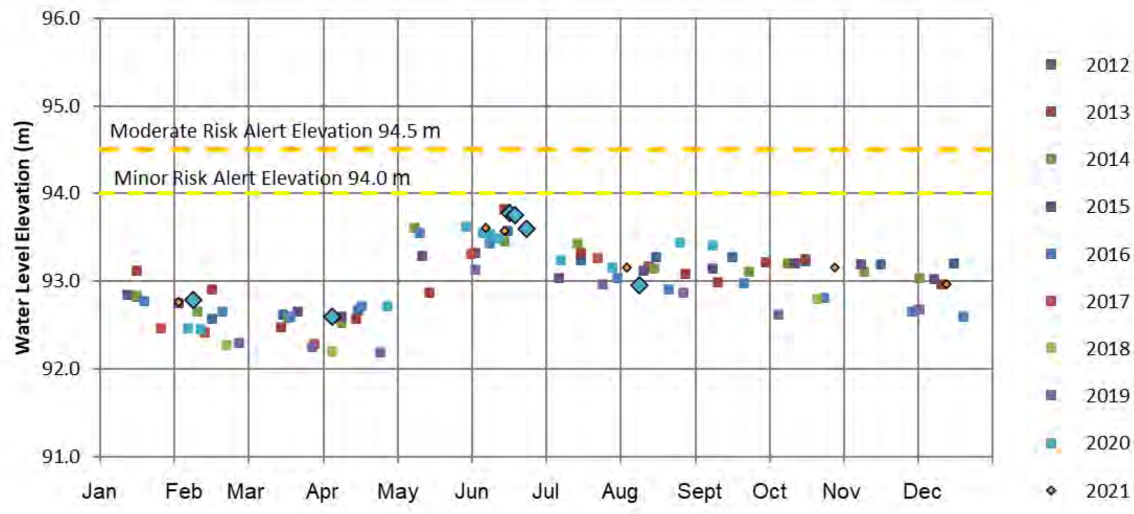

**NDW-2B – Screened in dam fill (Sandy Till)**

Source file:
https://srk.sharepoint.com/sites/FS261/Internal/Monitoring%20 Data/NDMPiezolevels_2022Edition.xlsx?web=1

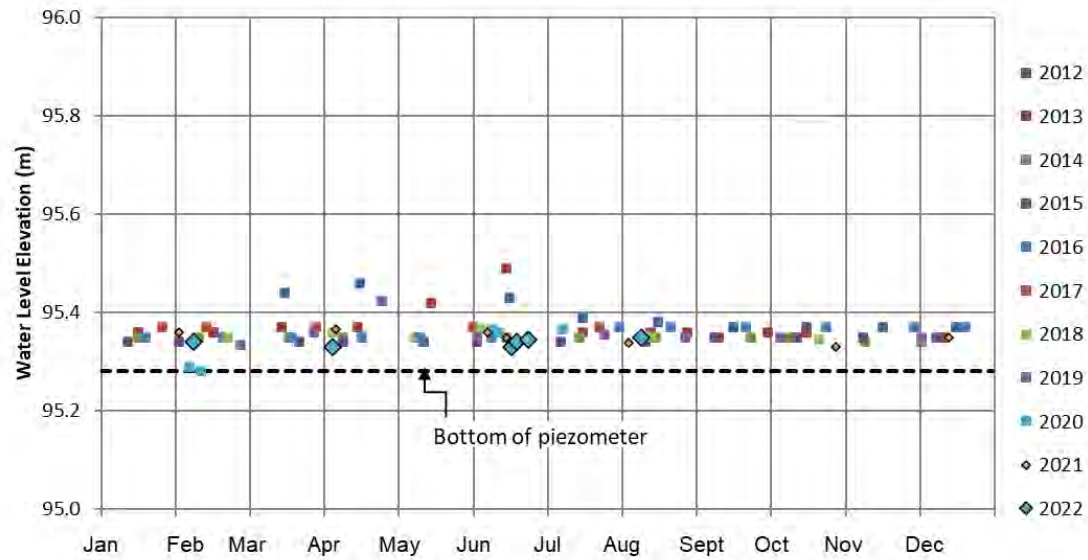
| srk consulting | Teck | North Dam Instrumentation |
|---|---|---|
| | | **North Dam Piezometers NDW-2A and 2B** |
| Job No: CAPR001928<br>Filename: Figures_ND_Piezometers_CAPR001928.pptx | Sa Dena Hes | Date: August 2022 \| Approved: P. Mikes \| Figure: **D-2** |




Notes:
1. Orthographic photo depicts the pre-decommissioned surface on August 15, 2012.
2. Co-ordinate system is UTM NAD 83 CSRS Zone 9V.




**NDW-3A – Screened in dam foundation (bedrock)**




**NDW-3B – Screened in dam fill (Sandy Till)**

Source file:
https://srk.sharepoint.com/sites/FS261/Internal/Monitoring%20 Data/NDMPiezolevels_2022Edition.xlsx?web=1

srk consulting

Job No: CAPR001928
Filename: Figures_ND_Piezometers_CAPR001928.pptx

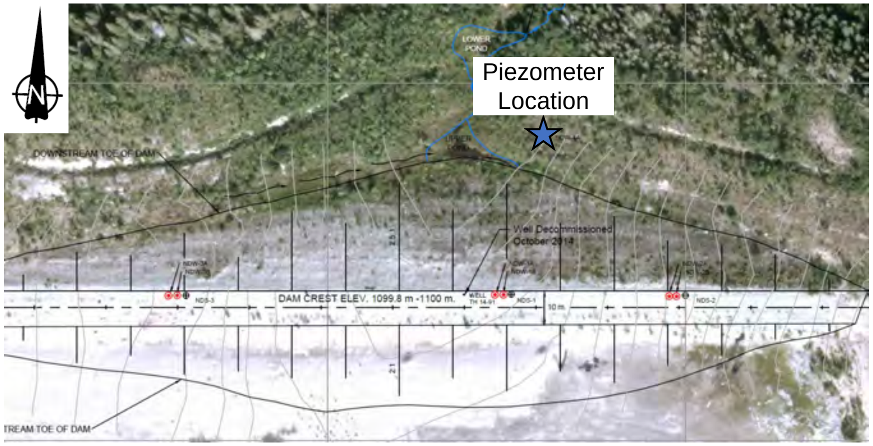
Teck

Sa Dena Hes

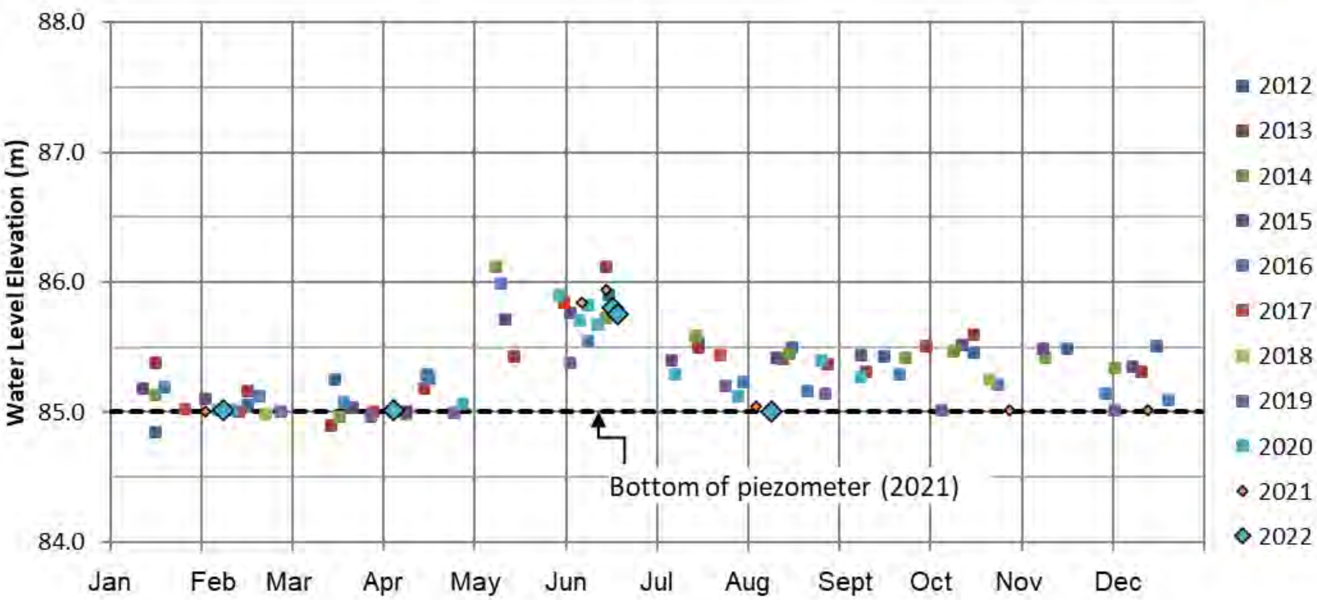
North Dam Instrumentation

**North Dam Piezometers NDW-3A and 3B**

| Date: | Approved: | Figure: |
|---|---|---|
| August 2022 | P. Mikes | **D-3** |



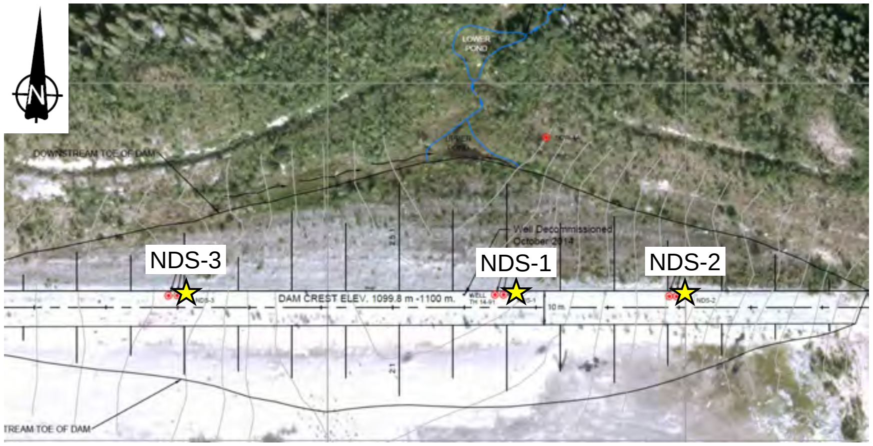

Notes:
1. Orthographic photo depicts the pre-decommissioned surface on August 15, 2012.
2. Co-ordinate system is UTM NAD 83 CSRS Zone 9V.



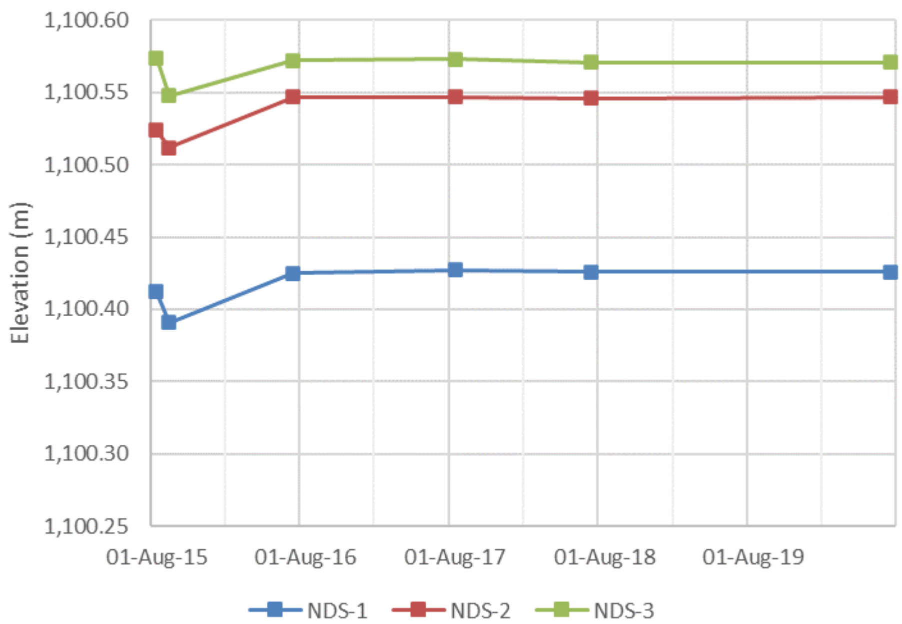

**NDW-4A – Screened in bedrock**

| srk consulting | Teck | North Dam Instrumentation |
|---|---|---|
| Job No: CAPR001928 | | **North Dam Piezometers NDW-4A** |
| Filename: Figures_ND_Piezometers_CAPR001928.pptx | Sa Dena Hes | Date: August 2022 / Approved: P. Mikes / Figure: D-4 |

Source file:
https://srk.sharepoint.com/sites/FS261/Internal/Monitoring%20 Data/NDMPiezolevels_2022Edition.xlsx?web=1




Notes:
1. Orthographic photo depicts the pre-decommissioned surface on August 15, 2012.
2. Co-ordinate system is UTM NAD 83 CSRS Zone 9V.




| | THRESHOLD CRITERIA (masl) | | |
|---|---|---|---|
| | Acceptable | Warning | Alarm |
| NDS-1 | 1,100.425 | 1,100.375 | 1,100.325 |
| NDS-2 | 1,100.545 | 1,100.495 | 1,100.445 |
| NDS-3 | 1,100.570 | 1,100.520 | 1,100.470 |

**Elevation Readings**

| | Settlement Pins | | | |
|---|---|---|---|---|
| **Date** | **NDS-1** | **NDS-2** | **NDS-3** | **Notes** |
| 06-Aug-15 | 1,100.412 | 1,100.524 | 1,100.574 | |
| 10-Sep-15 | 1,100.391 | 1,100.512 | 1,100.548 | |
| 01-Jul-16 | 1,100.425 | 1,100.547 | 1,100.572 | 2016 and onward readings are relative to BM 103 |
| 01-Aug-17 | 1,100.427 | 1,100.547 | 1,100.573 | |
| 25-Jul-18 | 1,100.426 | 1,100.546 | 1,100.571 | |
| 24-Jul-20 | 1,100.426 | 1,100.547 | 1,100.571 | |

Source file:
https://srk.sharepoint.com/sites/FS261/Internal/Monitoring%20 Data/NDMPiezolevels_2022Edition.xlsx?web=1

srk consulting

Teck

North Dam Instrumentation

**North Dam Settlement Pins**

Job No: CAPR001928

Filename: Figures_ND_Piezometers_CAPR001928.pptx

Sa Dena Hes

Date: August 2022

Approved: P. Mikes

Figure: **D-5**

# Appendix E. Routine Inspection Forms

# Sa Dena Hes Mine Site Geotechnical Inspection

**No.**
00006

## General Information

**Inspected By:**
Jeff Basarich

## Jewel Box

Jewelbox Soil Caps

**Date:**
29/06/2022

**General Appearance**
Few deepening rills and slumping on hillside below old capped portal

**Erosion**
Deepening of erosion at top end of road onto cap.

**Settlement/Depressions**
Slumping below portal area

**Standing Water**
No Issues

**Vegetation**
No Issues

Waste Rock Dumps

**Cracks/Scarps**
No Issues

**Susidence**
No Issues

**Erosion**
None out of the ordinary

**Seeps**
No Issues

**Jewel Box Photo's**

No.
00006

# Sa Dena Hes Mine Site Geotechnical Inspection

| Photo Discription | Photo | Photo Location |
|---|---|---|
| Hole in the wall still snow covered |  | |

## Burnick

**Inspection Date:**
29/06/2022
**Weather:**
15 sunny
Burnick 1200 Waste Rock Dump
**Cracks/Scarps**
No Issues

**Subsidence**
No Issues
**Erosion**
No Issues
**Seeps**
Appears to have had heavy runoff but no excessive erosion or rills.
Water coming from middle portal drain.
Burnick 1300 Waste Rock Dump

**Cracks**
No Issues
**Subsidence**
No Issues
**Erosion**
No Issues
**Seeps**
No Issues

**Burnick Photo's**

# Sa Dena Hes Mine Site Geotechnical Inspection

| Photo Discription | Photo | Photo Location |
| --- | --- | --- |
| Water from portal drain |  | |

## North Creek Dike Breach

**Date**
25/06/2022

**Settlement/Depressions**
No Issues Found

**Vegetation**
No Issues Found

**Sideslopes**
No Issues Found

**Debris at Inlet**
Some beaver debris , clean out with mini excavator

# Sa Dena Hes Mine Site Geotechnical Inspection

**Riprap**
Further erosion of rip rap

**Discharge**
Discharge end eroding further as rip rap washes away

## North Creek Second Crossing

**Date:**
25/06/2022

**Sideslopes**
Substantial erosion unable to safely cross, pull back some rip rap with mini excavator to re-establish a passable road across

**Riprap**
No Issues Found

**Settlement/Depressions**
No Issues Found

**Debris at Inlet**
No Issues Found

**Discharge**
Discharge erosion is substantially more than last fall, large round crater.

**Vegetation**
No Issues Found

## North Dam

**Date:**
17/06/2022

**Ponded Water**
No Issues

**Erosion**
Major erosion issue , west of center of N. Dam. Large erosion gulley washed from tailings cap to almost the toe of downstream face. Contacted appropriate supervisor and repairs were performed.

**Settlement/Depressions**
No Issues

**Cracks/Movement**
No Issues

**Vegetation**
No Issues

**Downstream Toe Seepage**
No Issues

**North Dam Photo's**

# Sa Dena Hes Mine Site Geotechnical Inspection

**No.**
00006

| Photo Discription | Photo | Photo Location |
|---|---|---|
| North Dam erosion |  | |

## North Pond Cap

**Date:**
26/06/2022

**Settlement/Depressions**
No Issues

**Vegetation**
No Issues

**General Appearance**
Willow growth doing ok, a bit patchy.

**Standing Water**
Minimal ponding of shallow water.

**Drainage Swale**
Very slight slope but draining as good as possible

**Erosion**
No Issues

**Evaporite Salts**
No Issues

### North Pond Photo's

No.
00006

# Sa Dena Hes Mine Site Geotechnical Inspection

| Photo Discription | Photo | Photo Location |
|---|---|---|
| North pond cap |  | |

No.
00006

# Sa Dena Hes Mine Site Geotechnical Inspection

| Photo Discription | Photo | Photo Location |
|---|---|---|
| After repairs completed |  | |

## South Pond Cap

**Date:**
27/06/2022

**General Appearance**
No Issues

**Settlement/Depressions**
No Issues

**Standing Water**
No Issues

**Vegetation**
No Issues

**Drainage Swale**
No Issues

# Sa Dena Hes Mine Site Geotechnical Inspection

**No.**
00006

**Erosion**
No Issues

**Evaporite Salts**
No Issues

**South Pond Photo's**

| Photo Discription | Photo | Photo Location |
| --- | --- | --- |
| South pond soil cap |  | |

## North Diversion Channel

**Date:**
28/06/2022

**Riprap**
No Issues

**Slideslopes**
No Issues

**Debris**
No Issues

**North Diversion Photo's**

No.
00006

# Sa Dena Hes Mine Site Geotechnical Inspection

| Photo Discription | Photo | Photo Location |
|---|---|---|
| North channel |  | |

## Sediment Retaining Structure (SRS)

**Date:**
29/06/2022

**Erosion**
No Issues

**Vegetation**
No Issues

**Depth of water at spillway**
Level with bottom of rip rap

**Settlement/Depressions**
No Issues

**Downstream Toe Seepage**
Historic spring at toe seems less than normal

# Sa Dena Hes Mine Site Geotechnical Inspection

**No.**
00006

**Sloughing of spillway slopes**
No Issues

**Spillway riprap**
No Issues

**Debris at spillway inlet**
No Issues

**Sinkholes**
No Issues

**Cracks/Movement**
Vertical cracking on downstream face about 30cm from edge of riprap

**Debris**
No Issues

**East Hillside Seepage**
No Issues

### SRS Photo's

| Photo Discription | Photo | Photo Location |
|---|---|---|
| SRS pond |  | |

## South Drainage Channel

**Date:**
29/06/2022

**Slideslopes**
No Issues

**Riprap**
No Issues

**Debris**
No Issues

### South Drainage Photo's

No.
00006

# Sa Dena Hes Mine Site Geotechnical Inspection

| Photo Discription | Photo | Photo Location |
|---|---|---|
| South channel |  | |

## Camp Creek Drainage Channel

**Date:**
30/06/2022

**Slideslopes**
No Issues

**Riprap**
No Issues

**Debris**
No Issues

## Reclaim Pond Soil Cap

**Date:**
30/06/2022

**General Appearance**
Osprey’s appear to be nesting again on power pole

**Erosion**
No Issues

**Settlement/Depressions**
No Issues

**Standing Water**
No Issues

**Vegetation**
No Issues

**Drainage Swale**
No Issues

Teck

# Sa Dena Hes Mine Site Geotechnical Inspection

**No.**
00006

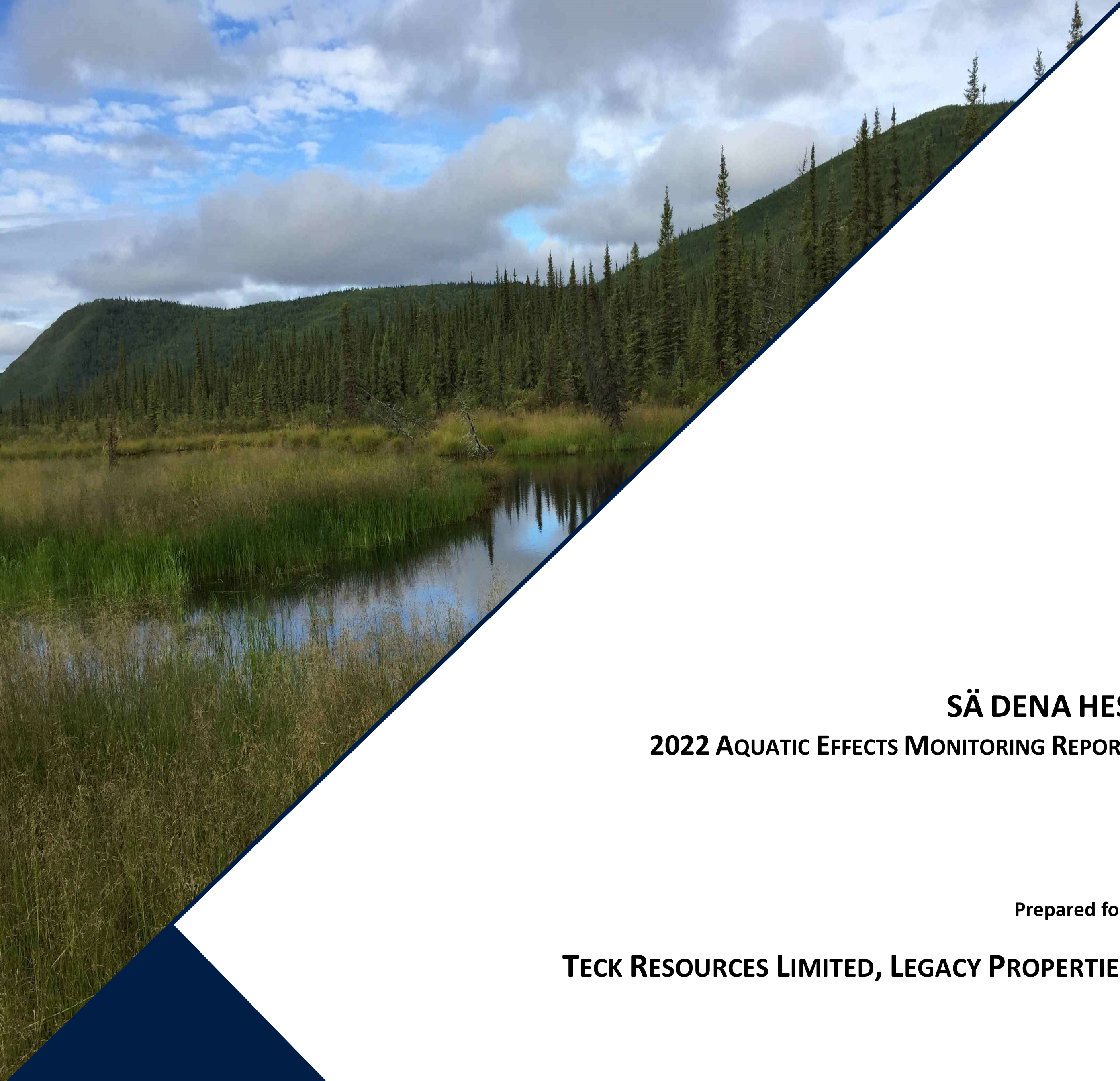
**Reclaim Pond Photo's**

| Photo Discription | Photo | Photo Location |
|---|---|---|
| Reclain area |  | |

**Sign:**

# APPENDIX H:

# 2022 AQUATIC EFFECTS MONITORING REPORT



# SÄ DENA HES

## 2022 Aquatic Effects Monitoring Report

**Prepared for:**

## Teck Resources Limited, Legacy Properties

**Date:**

**March 20, 2023**

ENSERO solutions

## DISTRIBUTION LIST

| # of copies | Company/Agency name |
|---|---|
| | |
| | |

## REVISION HISTORY

| Revision Date: | Issued By: | Revision Status: | Description: |
|---|---|---|---|
| | | | |
| | | | |

## ENSERO SOLUTIONS CANADA, INC. SIGNATURES

Report prepared by: Alex Zheng — 3/20/2023

Alex Zheng
Junior Scientist

Report prepared by: — 3/20/2023

Wes Moir
Junior Scientist

Report reviewed by: Emilie Bouchard — 3/20/2023

Emilie Bouchard
Environmental Manager

Report reviewed by: KGardner — 3/20/2023

Kristina Gardner
Senior Project Manager

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# LIST OF ACRONYMS

| Acronym | Description |
|---|---|
| ALS | ALS Environmental |
| CABIN | Canadian Aquatic Biomonitoring Network |
| CCME | Canadian Council of Ministers of the Environment |
| CEQG | Canadian Environmental Quality Guidelines |
| CPUE | Catch per unit effort |
| DO | dissolved oxygen |
| DOC | dissolved organic carbon |
| EPT | Ephemeroptera-Plecoptera-Trichoptera |
| HBI | Hilsenhoff Biotic Index |
| ISQG | interim sediment quality guidelines |
| K | Condition factor |
| LOI | loss on ignition |
| MDL | Method Detection Limit |
| ORP | oxidation-reduction potential |
| PEL | probable effect levels |
| PQL | practical quantitation limit |
| QA/QC | quality assurance and quality control |
| RPD | relative percent difference |
| SDH | Sa Dena Hes |
| SDI | Simpson's Diversity Index |
| SPC | specific conductance |
| TOC | Total Organic Carbon |

# 1 INTRODUCTION

The Sä Dena Hes (SDH) property is the site of a former lead-zinc mine that operated from 1991 to 1992. The property is located 45 km north of Watson Lake (Figure 2-1) in the Yukon Territory and is owned by the Sä Dena Hes Operating Corporation which is a joint venture between Teck Resources Limited (Teck) and Pan-Pacific Metal Mining Corp., a wholly owned subsidiary of Korea Zinc. Teck is the operator under the joint venture agreement for the site.

The Yukon Water Board regulates water management of mine sites within Yukon Territory with site-specific Water Use Licences. Water Use Licence QZ16-051 (Appendix A) addressing permanent closure came into effect on April 1, 2017. A requirement of QZ16-051 is that annual reports addressing the terms of the licence be submitted to the Water Board. Ensero Solutions (Ensero) was retained by Teck to prepare the 2022 report.

Monitoring of aquatic biological resources and stream sediments has been ongoing in the SDH study area in various forms since the initial baseline biophysical resource characterization work prior to development of the mine. Teck is continuing to monitor these conditions in the post-reclamation period to provide context to the ongoing water quality results and to provide additional comparison points for the ongoing evaluation of the potential for effects to aquatic resources. The monitoring programs for these resources have been modified to focus on the potential for effects nearer to the mine, as opposed to the very far downstream stations that have been monitored historically.

Sampling for the monitoring of benthic invertebrate communities, stream sediment sampling, and fisheries is conducted every two years during low flow conditions (August or September). The stream sediment quality is conducted in low flow conditions with benthic invertebrate monitoring. Monitoring of benthic invertebrate communities is conducted in low flow conditions to ensure that organisms are developed sufficiently to effectively identify to appropriate taxonomic levels. Harmonized monitoring of these programs allows for more meaningful interpretation of results, and sediment quality is a key link between water column contaminant concentrations and benthic community health. The sample locations include the compliance locations (MH-11 and MH-12) stations MH-04 and MH-13 (downstream of mine sources) and reference stations (MH-29 and MH-30) and are further described in Section 2.

Monitoring of fisheries resources is also conducted in the fall, which is when fish have historically been observed the highest up in the receiving environment watercourses, and individuals are developed to a size which allows for monitoring on the same frequency and timing as the benthic and sediment monitoring programs. The fisheries monitoring is conducted at MH-13 and reference location MH-30.

Aquatic resources monitoring was conducted in 2022, in accordance with Schedule A – Part 3 of the WUL QZ16-051. Sediment, benthic invertebrate, and fisheries sampling was conducted concurrently with the August 2022 surface water and groundwater monitoring between August 8 - 10, 2022. Table 2-1 presents the stations monitored and sample types collected at each station. Station MH-30 was not sampled during the 2022 monitoring event because the site was inaccessible due to flooding by beaver activity. MH-30 was chosen as a reference location, as such it doesn't have an impact on measuring potential downstream effects from the mine site.

## 2 STUDY AREA

The study area is located in the upper part of the Liard River basin, 40 air kilometers, and 70 road kilometers north of Watson Lake.

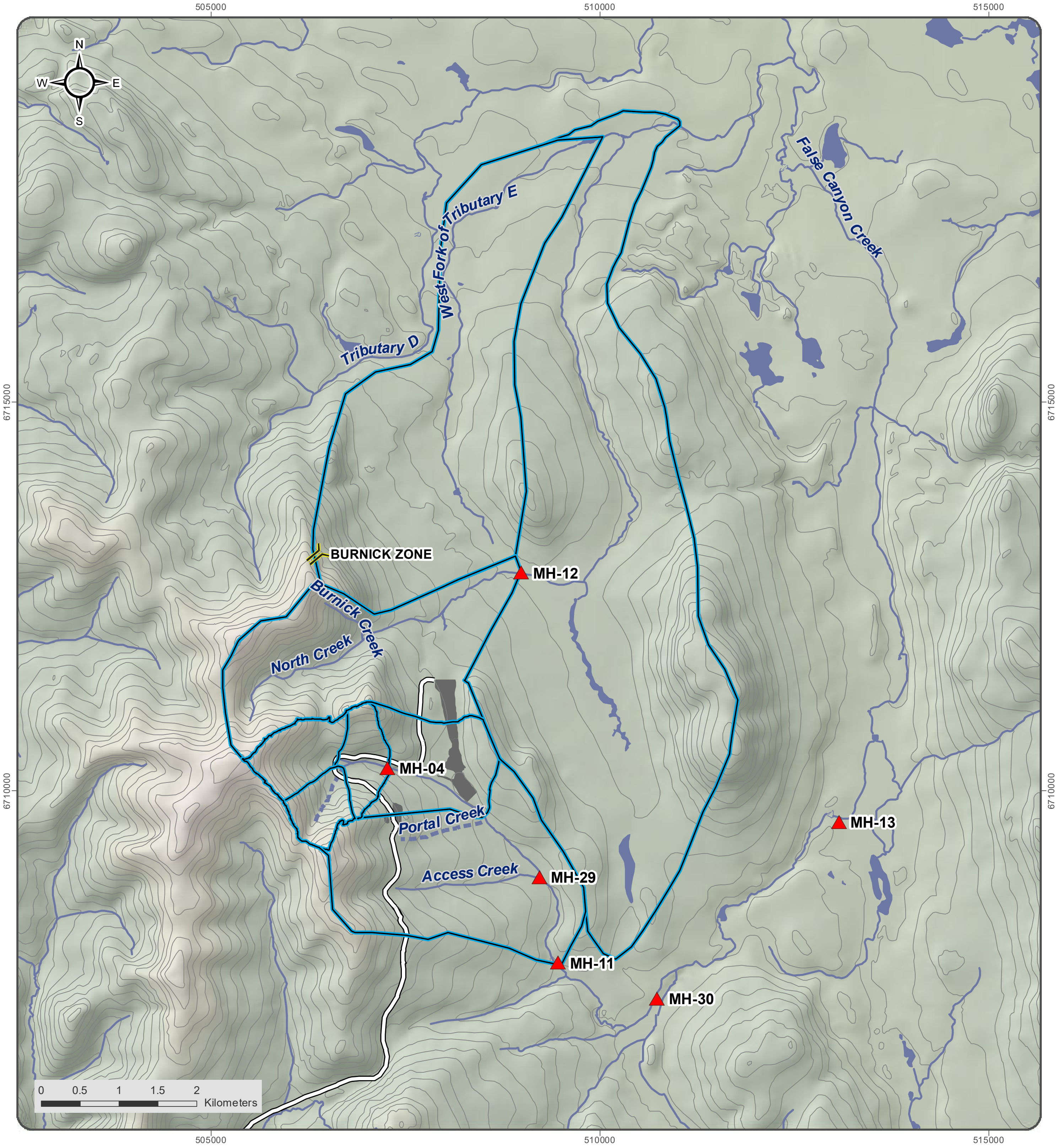
The SDH property lies within the ecoregion known as the Liard Basin. This ecoregion is characterized by low hills separated by broad plains and surrounded by mountains and plateaus. The low elevation, moderate precipitation and relatively long, warm summers results in vigorous forest growth, most notable in the flood plains of the major rivers of the area (Yukon Ecoregions Working Group, 2004).

The tailings management area was dewatered, contoured, covered and revegetated. The mill site and waste dumps were also re-contoured and revegetated. All revegetated areas were revegetated with local native shrubs and grasses. Receiving water sites will be monitored over time. The applicable sites pertinent to this study are described in Table 2-1 and depicted in Figure 2-1.

**Table 2-1: Sample Site Descriptions and Locations**

| Site # | NAD 83, Zone 9V | | Site Description | Sample Type | Site Type |
|---|---|---|---|---|---|
| | Easting | Northing | | | |
| MH-04 | 507374 | 6710097 | Camp Creek headwaters above former reclaim pond | WQ, BI, SS | Exposed |
| MH-11 | 509241 | 6708863 | Camp Creek | WQ, BI, SS | Exposed |
| MH-12 | 508988 | 6712814 | East Fork of Tributary E | WQ, BI, SS | Exposed |
| MH-13 | 513030 | 6709693 | False Canyon Creek 10 km downstream of the former reclaim pond | F, WQ, BI, SS | Exposed |
| MH-29 | 509213 | 6708888 | Access Creek upstream of Camp Creek | WQ, BI, SS | Reference |
| MH-30 | 510985 | 6707568 | unnamed tributary upstream of False Creek Canyon | F, WQ, BI, SS | Reference |

F = fish, WQ = water quality, BI = benthic invertebrates, SS = stream sediments




Surface Water Quality Station

Portal

Sub-Catchment Boundaries

Mine Feature Area

Access Road

Watercourse

Seasonal Surface Flow

Contour

Datum: NAD 83; Projection: UTM Zone 9N



Teck

ENSERO solutions

SÄ DENA HES

**FIGURE 2-1**

Aquatic Resource Monitoring Locations

MARCH 2023

D:\Project\AllProjects\Sa_Dena_Hess\GIS\Maps\01-Overview_Maps\WQ_Stations\SWQ\02-Specific\SWQ_Aquatic_MonitoringProgram_20230315.mxd (*Last edited by: amatlashevska; 2023-03-15/10:35 AM*)

# 3 METHODS

## 3.1 WATER QUALITY AND HYDROLOGY

At each of the surface water monitoring stations, *in situ* field measurements were made prior to sampling at each surface water station. Field parameters (pH, specific conductance (SPC), oxidation-reduction potential (ORP), dissolved oxygen (DO) and temperature) were measured and recorded at each station using a calibrated YSI Professional Plus multimeter to assess *in situ* water chemistry.

Water quality samples were collected in accordance with Canadian Council of Ministers of the Environment (CCME) *Protocols Manual for Water Quality Sampling in Canada* (CCME, 2011). Clean nitrile gloves and sample bottles provided by the analytical laboratory specific to the analytes being tested were used. Dissolved metals, dissolved mercury and dissolved organic carbon (DOC) water samples were filtered using a 0.45 µm syringe filter in the field at the time of sample collection. During the winters, sub-zero temperatures made it impossible to field filter the dissolved samples, due to the water freezing in the syringe. During these months, an additional sterile lab bottle is provided to collect additional water to filter in a warm environment at the day's end. Preservatives were added to the sample bottles for the analysis of total and dissolved metals, total and dissolved mercury, Total Organic Carbon (TOC), DOC, and nutrients, as directed by the analytical laboratory (ALS Environmental [ALS]). Samples were kept in coolers with ice packs and sent to ALS in Burnaby, BC for analysis with an accompanying chain of custody form specifying the analyte(s) to be tested.

When possible, surface water hydrology was also collected at each of the water quality stations. Discharge measurements, during open water, were measured using a Hach FH950 velocity meter and the United States Geological Survey mid-section method. During the winter months, flows were measured using the salt dilution gauging method. The dilution gauging procedure method deposits a known amount of salt into the stream and measures the concentration downstream over time. The measurement period covers the time it takes for the conductivity to respond to the tracer and return to background.

### 3.1.1 QUALITY ASSURANCE

The water quality monitoring program included a comprehensive quality assurance and quality control (QA/QC) program to verify validity of the data collected, including data quality objectives and documentation of sample variability due to natural variability and analytical variability. The QA/QC program included the following:

- All field staff followed work methods for surface water sample collection that are based on generally accepted best industry practices (CCME, 2011). The sampling procedures included measures to avoid sample contamination in the field during sample collection, as well as during sample handling and shipping;

- Blind field duplicates collected at a rate of at least one duplicate per 10 samples (10% of overall samples) during the surface water event. The field duplicates were linked to one of samples and recorded in field notes but were not indicated on the chain of custody forms. Field duplicates were subsequently evaluated for variability by evaluating the relative percent difference (RPD);

- Field blanks and trip blanks were collected during the surface water sampling event;

- Following the sampling event, all analytical and QA/QC results received from the laboratory were reviewed to verify data quality and to flag any potential issues (e.g., data quality issues from the information provided by the lab, high ion balance percent difference).

The above QA/QC procedures were followed during the August 2022 water quality monitoring event and data quality objectives were established to evaluate sample variability resulting from natural conditions or as a function of sampling or analytical procedures.

### 3.1.2 ANALYTICAL VARIABILITY

Laboratory duplicates were used to measure laboratory analytical variability. Results of quality assurance analysis are included in Appendix B within the laboratory reports. All laboratory duplicates met the lab quality control limit of 20% RPD for all parameters tested. ALS also ran analyses on matrix spikes, spiked blanks, and method blanks with internal Data Quality Objectives achieved for all samples ensuring data precision and accuracy.

### 3.1.3 FIELD VARIABILITY

During the monitoring program, field duplicates were collected to measure field variability between simultaneous grab samples. One field duplicate was collected from the 10 samples in August 2022. The RPD is used to determine variability. RPD was calculated for every analyte of each sample-duplicate couple according to the following formula:

$$RPD\ (\%) = \left| \frac{\left(Result_{Sample} - Result_{Replicate}\right)}{\left(\frac{Result_{Sample} + Result_{Replicate}}{2}\right)} \right| x\ 100$$

RPD is not considered further where one or both results being compared are less than the practical quantitation limit (PQL). The PQL is five times the Method Detection Limit (MDL) and is defined as the minimum concentration that can be measured within specified limits of precision and accuracy. A constituent with results below the PQL means that the constituent being analyzed is not present in a sufficient amount to be reliably quantified. Typically, as parameters approach their detection limit, high variability is more likely to occur. Where applicable, the RPD of <25% can be used as a benchmark whereby an RPD greater than 25% warrants further comment or consideration.

During the August 2022 surface water event, none of the parameters from the duplicate had an RPD greater than 25%, which met the PQL.

### 3.1.4 FIELD AND TRAVEL BLANKS

Additional field quality control samples include field blanks and trip blanks, where de-ionized water is handled, processed, and analyzed in the same manner as the site water samples. Blanks can provide an indication of sample contamination occurring in the field (field blank) or laboratory (method blanks) and at any point in between (trip blanks). Concentrations of parameters should not be detectable, though a use of a blank reporting threshold of two-times the MDL allows for slight "noise" around the detection limit.

A field blank is processed by taking de-ionized water (analyte free media) to the sample station, opening it, and exposing it to ambient air and 'collecting' it in the sample bottles. These samples are treated the same as the actual water samples, preserved and filtered as necessary, and their analysis can provide an indication of contamination that may be affecting the actual samples. One field blank was collected during the August 2022 surface water event. None of the parameters in the field blank were detected above 2x the MDL.

Trip blanks (sample of de-ionized water) are supplied and prepared by the lab and are intended to accompany the sample bottles provided by the lab for the monitoring program. The trip blank travels with the sample bottles to the sample stations and is returned unopened back to the lab with the collected samples. The purpose of the trip blank is to identify any potential contamination (e.g., cross contamination from other samples or ambient air conditions) to which the samples may be exposed. One trip blank was collected during the August 2022 surface water event. Two parameters, total suspended solids and ammonia were detected above 2x the MDL in the August 2022 trip blank. Overall, the replicate and blank data indicate the data collected during the August 2022 are suitable for use. Trip blank results greater than 2x the MDL are presented in Table 3-1.

All water quality and QA/QC results are presented in Appendix B.

**Table 3-1: Trip Blank Detected Parameters**

| Site | Date | Analyte | Units | Result | MDL | PQL |
|---|---|---|---|---|---|---|
| Trip Blank | 11-Aug-22 | Total Suspended Solids | mg/L | 0.0163 | 0.0050 | 3.26 |
| | | Ammonia | mg/L | 0.0486 | 0.0050 | 9.72 |

## 3.2 SEDIMENT

Stream sediment is used as a monitoring tool to support assessments of water quality and benthic invertebrate communities. Many contaminants which are toxic to aquatic biota (i.e., heavy metals) enter aquatic systems and bind to stream sediments. Some contaminants can persist in sediment for years, long after they are no longer detectable in water quality samples. Sediment associated contaminants alter benthic community structure and indirectly affect organisms at higher trophic levels such as fish.

Sediments were collected from the locations listed in Table 2-1, concurrently with the surface water quality and benthic invertebrate sample collection. Fine-grained sediment samples were collected following the “guzzler” method where a hand-operated bilge pump was used to “vacuum” fine sediment from three 1 $m^2$ areas within the sample reach. This method is further described in the BC Ministry of Environment Field Sampling Manual (BCMOE, 2021). Three sediment samples were collected at each station. Following collection, samples were refrigerated then shipped to ALS for analysis. At the laboratory, were dried and sieved to determine particle size fractions. The 100µm fraction was analyzed for metals, as well as organics content using loss on ignition (LOI) at 600˚C. For QA/QC purposes, duplicate samples were collected at a rate of 10% of the total collected sediment samples, with sample duplicate pairs being compared through relative percent difference. Data was screened against the Canadian Environmental Quality Guidelines (CEQGs) interim sediment quality guidelines (ISQG) and the probable effect levels (PEL) established by the Canadian Council of Ministers of the Environment (CCME, 1999) and evaluated for trends. In addition, trends in metal concentrations were evaluated over time using applicable statistical approaches (i.e., regression).

## 3.3 BENTHIC INVERTEBRATES

The benthic invertebrate community surveys were conducted on August 8, 9, and 10, 2022. Samples were collected using the “traveling kick net sampling method”. This is the recommended approach for samples being collected as part of the Canadian Aquatic Biomonitoring Network (CABIN), an aquatic monitoring program maintained by Environment Canada (Environment Canada, 2022). Under this approach, sampling is conducted while zigzagging across/along a riffle stream section to provide a standardized time rather than density estimate of organism abundance. To minimize natural influences on data variability, habitat conditions (sampling depth and substrate properties) were considered when visiting sampling stations.

Following the three-minute collection period, all material and organisms retained in the collection net were transferred into wide-mouth plastic jars containing both internal and external identification labels. The benthic samples were preserved on site with 10% buffered formalin. Samples were sent to Cordillera Consulting (BC). Taxonomy was conducted by a taxonomist certified from the Society of Freshwater Science Taxonomic Certification Program, consistent with CABIN requirements. Quality assurance and quality control methods for benthic invertebrate analyses by Cordillera Consulting are outlined in Appendix C.

Benthic invertebrate community data will be summarized to produce community metrics including total abundance, taxonomic richness, Simpson's Diversity Index (SDI), % of Ephemeroptera-Plecoptera-Trichoptera (EPT), % of Diptera, and the Hilsenhoff Biotic Index (HBI).

## 3.4 FISH MONITORING

Fisheries monitoring was conducted at MH-13 and MH-30 following methods detailed in the BC Reconnaissance (1:20,000) Fish and Fish Habitat Inventory protocols under the Fisheries and Oceans Canada Licence number XR 230 2022 (Appendix D).

Fisheries monitoring was primarily conducted using a Smith-Root LR-24 backpack unit, operated by a certified electrofishing crew leader, supported by a netter. Electrofishing was conducted in an upstream direction at each station while continually moving the anode in a zigzag pattern from bank to bank to ensure good coverage of the stream sections. Each station was assessed using a single pass with the electrofisher. Block nets were not used to isolate each station. Following electrofishing, the shocking time, distance fished, voltage, frequency, and duty cycle were noted for each sampling event.

Fish were also monitored using six Gee-style minnow traps baited with dry cat food both MH-13 and MH-30. Minnow traps were flagged with the licence number and placed in appropriate fish habitat (pools, eddies, side tributaries, slow runs) for up to 48 hours. After a maximum of 48 hours, traps were removed, and bait was discarded in wildlife-proof bins.

All captured fish were identified to species. Other fish metrics including length (± 0.1mm), weight (± 0.1g), condition, and age class were also recorded before releasing the live fish at the site of capture.

# 4 RESULTS AND DISCUSSION

CABIN field sampling sheets for site monitoring are included in Appendix E. Photos of each sampled site are included in Appendix F.

## 4.1 WATER QUALITY

Water quality samples collected at the aquatic resource monitoring stations (Table 2-1), were collected concurrently with the routine WUL surface water monitoring event in August 2022. Water quality stations MH-11 and MH-12 are monitored under the Water Licence and are regulated under the Receiving Water Quality Standards (QZ16-051 Clause 40). For stations with no standards prescribed by the WUL, water quality was compared to the most recent CCME guidelines, where applicable. August 2022 water quality results are summarised in Table 4-1 and Table 4-2. Full results are compiled in Appendix G.

**Table 4-1: August 2022 Water Quality Results at Receiving Environment Stations MH-11 and MH-12**

| Parameter | Units | MH-11 10-Aug-22 | MH-11 WUL standards [1] | MH-12 09-Aug-22 | MH-12 WUL standards [1] |
|---|---|---|---|---|---|
| pH | pH units | 8.2 | | 8.3 | |
| Hard-T | mg/L | 187 | | 160 | |
| TSS | mg/L | <1.0 | | 1.0 | |
| SO4 | mg/L | 12.0 | 429 | 7.93 | 309 |
| Al-D [2] | mg/L | 0.0069 | 0.05 | 0.0025 | 0.05 |
| Ag-T | mg/L | <0.000010 | 0.00025 | <0.000010 | 0.00025 |
| As-T | mg/L | 0.00062 | 0.005 | 0.00087 | 0.005 |
| Be-T | mg/L | <0.000020 | 0.00013 | <0.000020 | 0.00013 |
| Cd-D [1] | mg/L | 0.0000576 | 0.000308 | 0.0000416 | 0.000268 |
| Co-T | mg/L | <0.00010 | 0.004 | <0.00010 | 0.004 |
| Cr-T | mg/L | <0.00050 | 0.001 | <0.00050 | 0.001 |
| Cu-T [1] | mg/L | <0.00050 | 0.0067 | <0.00050 | 0.0055 |
| Fe-T | mg/L | 0.054 | 1.0 | 0.012 | 1.0 |
| Mo-T | mg/L | 0.000851 | 0.073 | 0.00120 | 0.073 |
| Ni-T [1] | mg/L | <0.00050 | 0.14 | <0.00050 | 0.12 |
| Pb-T [1] | mg/L | 0.000265 | 0.0182 | 0.000281 | 0.00811 |
| Sb-T | mg/L | 0.00015 | 0.009 | 0.00022 | 0.009 |
| Se-T | mg/L | 0.000532 | 0.002 | 0.000579 | 0.002 |
| Tl-T | mg/L | <0.000010 | 0.0008 | <0.000010 | 0.0008 |
| Zn-T [1] | mg/L | 0.0058 | 0.163 | <0.0030 | 0.044 |

Values in bold indicate an exceedance of the WUL standards.

[1] *Guideline is hardness dependent.*

[2] *Guideline is pH dependent.*

**Table 4-2: August 2022 Water Quality Results for MH-04, MH-13 and MH-29**

| Parameter | Units | CCME Guideline | MH-04 | MH-13 | MH-29 |
|---|---|---|---|---|---|
| Date | | | 08-Aug-22 | 09-Aug-22 | 10-Aug-22 |
| **Insitu** | | | | | |
| Temperature | C | – | 4.2 | 9.7 | 6.4 |
| pH | pH Units | 6.5-9 | 8.22 | 8.26 | 8.26 |
| Specific Conductance | µS/cm | – | 290.4 | 348.2 | 333.9 |
| Dissolved Oxygen | % | | 83.3 | 86.9 | 80.2 |
| Dissolved Oxygen | mg/L | | 10.9 | 8.15 | 8.64 |
| ORP | mV | | 206.2 | 155.2 | 183.9 |
| **Analytical Data** | | | | | |
| Hardness, total | mg/L | – | 144 | 185 | 180 |
| Total Suspended Solids | mg/L | – | <1.0 | 1.7 | <1.0 |
| Alkalinity | mg/L | – | 142 | 190 | 182 |
| Ammonia | mg/L | * | <0.0050 | <0.0050 | <0.0050 |
| Nitrate | mg/L | 13 | 0.134 | 0.127 | 0.0398 |
| Nitrite | mg/L | 0.06 | <0.0010 | <0.0010 | <0.0010 |
| Sulphate | mg/L | – | 14.7 | 6.23 | 2.79 |
| Aluminum, total | mg/L | 0.1 | 0.0048 | 0.0128 | 0.0066 |
| Arsenic, total | mg/L | 0.005 | 0.00042 | 0.00054 | 0.00082 |
| Cadmium, total | mg/L | * | **0.000261** | 0.0000250 | 0.0000609 |
| Chromium, total | mg/L | 0.001 | <0.00050 | <0.00050 | <0.00050 |
| Copper, total | mg/L | * | <0.00050 | 0.00290 | 0.00062 |
| Iron, total | mg/L | 0.3 | <0.010 | 0.247 | 0.014 |
| Lead, total | mg/L | * | 0.000239 | 0.000132 | <0.000050 |
| Manganese, dissolved | mg/L | * | 0.00046 | 0.00727 | 0.00320 |
| Mercury, total | mg/L | 0.000026 | <0.0000050 | <0.0000050 | <0.0000050 |
| Molybdenum, total | mg/L | 0.073 | 0.000665 | 0.00106 | 0.000655 |
| Nickel, total | mg/L | * | <0.00050 | <0.00050 | <0.00050 |
| Selenium, total | mg/L | 0.001 | 0.000734 | 0.000512 | 0.000497 |
| Silver, total | mg/L | 0.00025 | <0.000010 | <0.000010 | <0.000010 |
| Uranium, total | mg/L | 0.015 | 0.000745 | 0.00116 | 0.000557 |
| Zinc, dissolved | mg/L | * | 0.0045 | <0.0010 | <0.0010 |

Values that exceed the CCME are presented in bold and red.
'*' indicates that the CCME guideline is a calculated value

The waters of the study area were cool, slightly alkaline and well aerated. Conductivity is generally a measure of dissolved ions in water, and the conductivity at all sites was relatively high, predominantly due to the concentrations of calcium and magnesium ions (Appendix G).

Alkalinity is a measure of water's ability to neutralize acid. The creeks sampled in this study had high alkalinity values and the waters ranged from hard to very hard, providing this region with good buffering capacity. Hardness is an important modifying factor in water quality as it can significantly influence the form and hence toxicity of numerous heavy metals, making the toxicity of certain metals increased at lowered hardness levels.

Ammonia and nitrite were not detected in any samples. Nitrate concentrations ranged from 0.0398 mg/L, at MH-29, to 0.134 mg/L at MH-04. All concentrations of ammonia, nitrate and nitrite met the CCME guidelines.

Sulphate concentrations were low at all sites, ranging from 2.79 mg/L to 14.7 mg/L. Sulphate can contribute to changes in pH in water systems. The alkaline waters of the study area are a reflection of naturally high carbonate/bicarbonate and low sulphate concentrations.

Metals concentrations at the receiving environment stations MH-11 and MH-12 met the Receiving Water Quality Standards for all parameters during the August 2022 monitoring (Table 4-1). For the remaining stations, which were compared to the CCME guidelines, only one exceedance was detected for total cadmium at MH-04 (Table 4-2). Upon review of the water quality database, which covers sampling at MH-04 since 1991, the cadmium exceedance in 2022 is consistent with historical results.

Overall the characteristics of the water in the study area and the overall low concentrations of metals indicated good water quality for the support of freshwater aquatic life.

## 4.2 SEDIMENT

Sediment particle size fractions are detailed in Table 4-3. Analytical results are compiled in Appendix B. Grain size distribution at each station was consistent with data collected during the 2020 aquatic resources monitoring event. Sand was the dominant fraction, ranging from 81% (MH-29) to 67% (MH-13). The highest % Clay and % Silt were noted at MH-13 which may partially explain the slightly different benthic invertebrate community structure at this station (lowest EPT% and elevated Diptera numbers compared to other stations). Apart from MH-13, sediment composition was uniform across all stations.

**Table 4-3: Grain size distributions for each sampling site in 2022**

| Sediment Size | MH-04 | MH-11 | MH-12 | MH-13 | MH-29 |
|---|---|---|---|---|---|
| | 08-Aug-22 | 10-Aug-22 | 09-Aug-22 | 10-Aug-22 | 10-Aug-22 |
| % Gravel (>2mm) | 15.7 | 18.8 | 17 | 13.6 | 13.2 |
| % Sand (2.0mm - 0.063mm) | 72.4 | 76.0 | 74.1 | 67.0 | 81.0 |
| % Silt (0.063mm - 4µm) | 10.3 | 5.2 | 8.9 | 16.4 | 4.8 |
| % Clay (<4µm) | 1.6 | <1.0 | <1.0 | 3.0 | 1.0 |

Sediment samples were also analyzed for concentrations of total metals, pH, and Total Organic Carbon (TOC). Metal concentrations at each station were then compared to the Canadian Environmental Quality Guidelines (CEQGs) ISQG and PEL guidelines to evaluate exceedances.

The 2022 stream sediment concentrations were consistent with the historic 2018 and 2020 data. Although MH13 has many years of stream sediment data, comparisons have not been made due to the change in methodology in 2018. The 2022 stream sediment results are presented in Table 4-4. The stream sediments at all sample stations were slightly alkaline. Total organic carbon concentrations ranged from 0.400% (MH-12) to 1.67% (MH-13).

In 2022, total arsenic, cadmium, and zinc in sediment exceeded the ISQG or PEL guidelines at all stations. Lead also exceeded ISQG or PEL guidelines at all stations except MH-29. Concentrations of chromium, copper, and mercury were below the guidelines at all stations. The metal concentrations of parameters which exceeded the ISQG or PEL (i.e., arsenic, cadmium, lead and zinc) are presented in Figure 4-1 to Figure 4-4, alongside the historical 2018 and 2020 sediment results for further comparison.

The data continues to suggest that the reference site, MH-29, is within the mineralized zone of SDH and sometimes has greater concentrations of some metals than at the exposed sites (Laberge, 2021).

**Table 4-4. Total Metals Concentrations of Select Parameters for 2022 Sediment Samples.**

| Total Metal Concentration | Lab MDL | Guideline | | MH-04 | MH-11 | MH-12 | MH-13 | MH-29[1] |
|---|---|---|---|---|---|---|---|---|
| | | CCME ISQG | CCME PEL | 08-Aug-22 | 10-Aug-22 | 09-Aug-22 | 10-Aug-22 | 10-Aug-22 |
| pH (pH Units) | 0.1 | N/A | N/A | 8.25 | 8.55 | 8.83 | 8.30 | 8.50 |
| TOC (%) | 0.132 | N/A | N/A | 1.12 | 0.422 | 0.400 | 1.67 | 0.563 |
| Arsenic (mg/kg) | 0.1 | 5.9 | 17 | 18.7 | 14.8 | 14.1 | 17.1 | 18.0 |
| Cadmium (mg/kg) | 0.02 | 0.6 | 3.5 | 4.51 | 1.82 | 1.09 | 1.68 | 2.66 |
| Chromium (mg/kg) | 0.5 | 37.3 | 90 | 28.4 | 18.2 | 21.1 | 19.1 | 17.4 |
| Copper (mg/kg) | 0.5 | 35.7 | 197 | 18.8 | 13.4 | 15.8 | 18.4 | 9.39 |
| Lead (mg/kg) | 0.5 | 35 | 91.3 | 158 | 233 | 77.8 | 37.5 | 31.5 |
| Mercury (mg/kg) | 0.0050 | 0.17 | 0.486 | 0.0143 | 0.0140 | 0.0101 | 0.0549 | 0.0162 |
| Zinc (mg/kg) | 2 | 123 | 315 | 358 | 311 | 187 | 188 | 145 |

*[1]Reference Station*
*Samples in blue font indicate an exceedance of the ISQG*
*Samples in red font indicate and exceedance of the PEL*
*Samples in red font and underlined indicate an exceedance of both the ISQG and PEL*

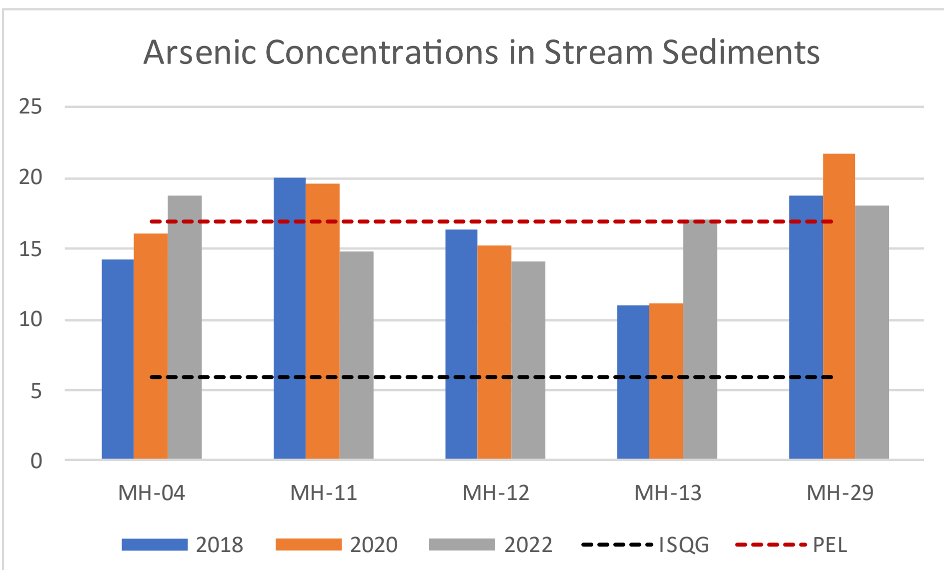



**Figure 4-1: Arsenic Concentrations in Stream Sediments**

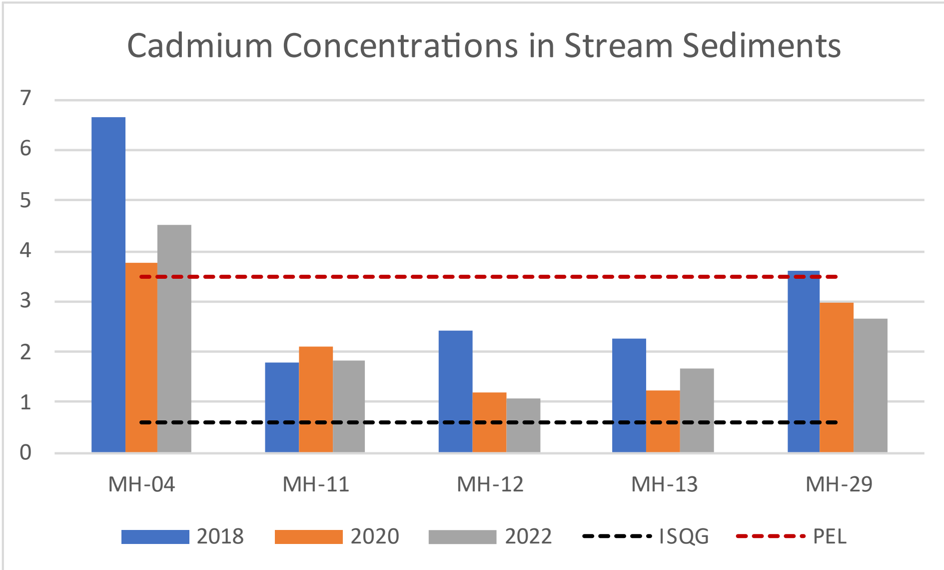



**Figure 4-2: Cadmium Concentrations in Steam Sediments**

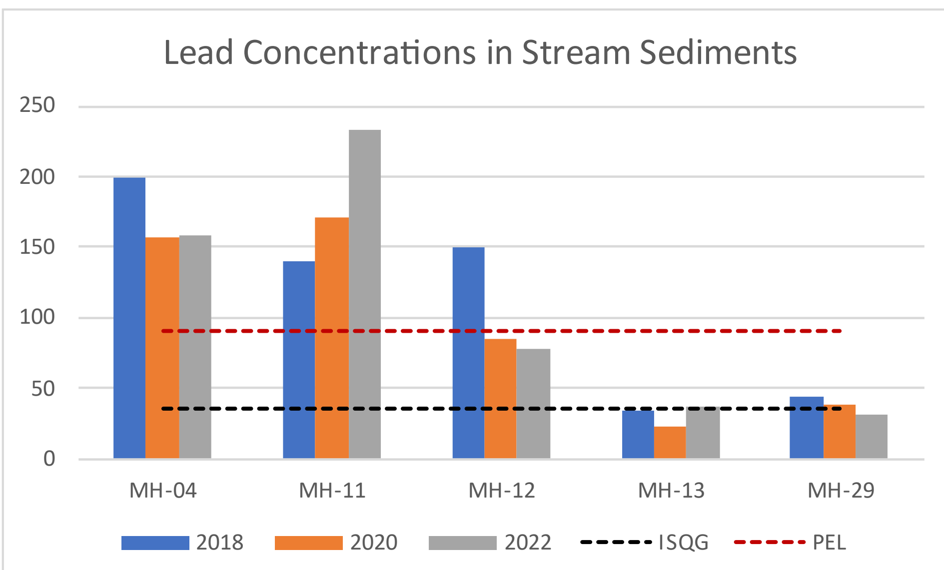



**Figure 4-3: Lead Concentrations in Stream Sediments**

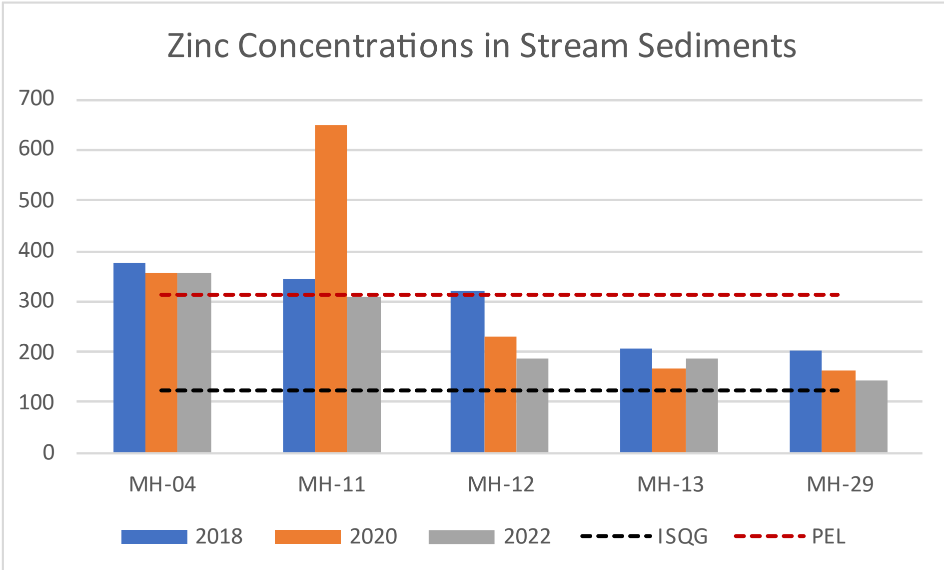



**Figure 4-4: Zinc Concentrations in Stream Sediments**

## 4.3 BENTHIC INVERTEBRATES

Benthic invertebrate samples are collected in late summer at the height of population density following winter conditions. Benthic invertebrates are evaluated on total abundance, taxonomic richness, SDI, % of EPT species, % of Diptera (true fly) species, and the HBI. Total abundance measures total numbers of benthic invertebrates. Taxonomic richness relates to how many taxa of benthic invertebrates are adapted to the conditions of the habitat. SDI is a standard measure of diversity considering number of species and relative abundance, combining the consideration of total abundance and taxonomic richness. EPT species, mayflies, stoneflies, and caddisflies require clean, well oxygenated water, clean gravels, and have low tolerance to pollution. The % of EPT at a sampling site gives a measure of these conditions at the site. Diptera can be indicators of organic or heavy metal pollution (Desrosiers et al., 2008), and the % of Diptera at a sampling site gives a measure of these conditions at the site. The HBI measures water quality categories by evaluating the presence or absence of pollution sensitive or pollution tolerant families (Hauer and Lamberti, 2006). Excellent water quality as measured by the HBI is a number between 0 and 3.75.

A summary of 2022 benthic invertebrate metrics for all sites is shown in Table 4-5. At station MH-30, increased beaver activity and associated flooding made landing at the station unsuccessful in 2022. Raw benthic data is included in Appendix H. Benthic invertebrate abundance was greatest in Camp Creek at MH-04 followed by MH-12, and lowest in Access Creek at MH-29. Species richness was greatest at MH-12, and lowest at MH-11. The proportion of EPT species was greatest at the Camp Creek (MH-11 and MH-04) and Access Creek (MH-29) sites, with the lowest concentrations of EPT measured in False Canyon Creek (MH-13) site.

**Table 4-5: 2022 Benthic Invertebrate Community Survey Results**

| Station | MH-04 | MH-11 | MH-12 | MH-13 | MH-29 |
|---|---|---|---|---|---|
| **Date** | **8-Aug-22** | **10-Aug-22** | **9-Aug-22** | **9-Aug-22** | **10-Aug-22** |
| Total Abundance | 7600 | 1315 | 6740 | 1544 | 1305 |
| Taxonomic Richness | 34 | 28 | 38 | 35 | 37 |
| Simpson's Diversity Index (1-D) | 0.83 | 0.79 | 0.89 | 0.91 | 0.81 |
| EPT (% of total) | 72.89% | 92.40% | 67.36% | 60.62% | 75.56% |
| Diptera (% of total) | 19.47% | 4.56% | 30.56% | 28.63% | 19.39% |
| Hilsenhoff Biotic Index | 3.89 | 2.00 | 3.72 | 3.18 | 2.52 |

### 4.3.1 TOTAL ABUNDANCE

Abundance represents the total number of benthic organisms present at each site. In 2022, total abundance was highest at MH-04 located on Camp Creek followed by MH-12 located on the east fork of Tributary E (Figure 4-5). Interestingly, Camp Creek abundance sharply declined downstream of MH-04 and the Reclaim Pond based on total abundance noted at MH-11. Similarly, abundance was also low at MH-13 located on False Canyon Creek. Total abundance was lowest at the reference station MH-29. Low abundance at MH-29 was also noted in the 2020 report and may be related to minor differences in habitat between stations. For example, Azimuth (Azimuth, 2015) described MH-29 as a narrow, confined stream with sampling limited to a few small sections within the creek. Furthermore, high amounts of in-stream debris and dense willow cover may also explain the difference in abundance at the reference station compared to the exposed sites.

Total abundance trends are relatively consistent at MH-13 and MH-29. Abundance between 2020 and 2022 were also comparable; however, abundance was much higher at MH-11 and MH-12 in 2018 than in 2020 and 2022. Inversely, abundance was much higher at MH-04 in 2020 and 2022 compared to 2018. Although total abundance fluctuates between years, it is a coarse indicator of benthic community health (Reynoldson and Metcalfe-Smith, 1992). For example, a station with high total abundance and low diversity is typically more impaired than a station with lower total abundance but higher diversity. Therefore, the other benthic metrics can be more representative of benthic invertebrate health.

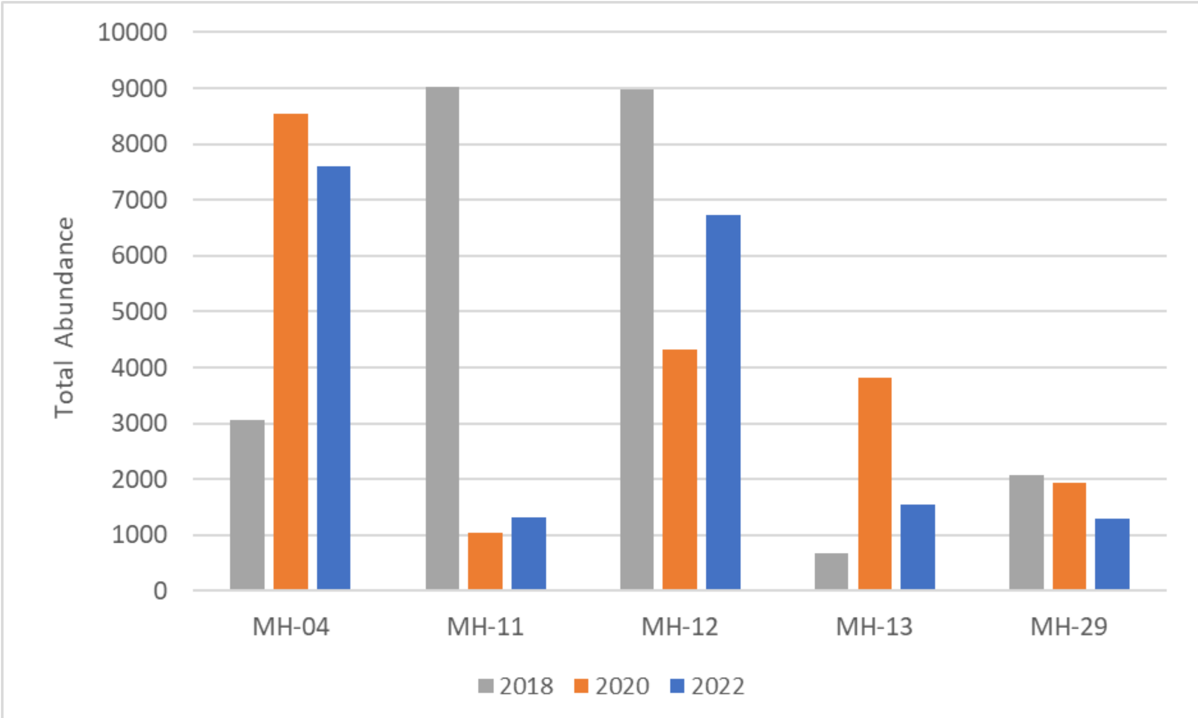



**Figure 4-5: Total Abundance at the SDH Aquatic Resources Study Sites, 2018-2022**

### 4.3.2 TAXONOMIC RICHNESS

Taxonomic richness is defined as the count of different species present in a region or ecological environment and is a useful tool to measure benthic invertebrate health. The taxonomic richness at all stations in 2022 were similar, with MH-12 having the highest richness (38 species) and MH-11 having the lowest richness (28 species) as presented in Figure 4-6. Richness also slightly improved at all stations in 2022 when compared to 2020 data, except for station MH-11; however, taxonomic richness is dependant on a variety of environmental factors like sample area, stream depth, diversity of habitats, stream flow, and sample timing.

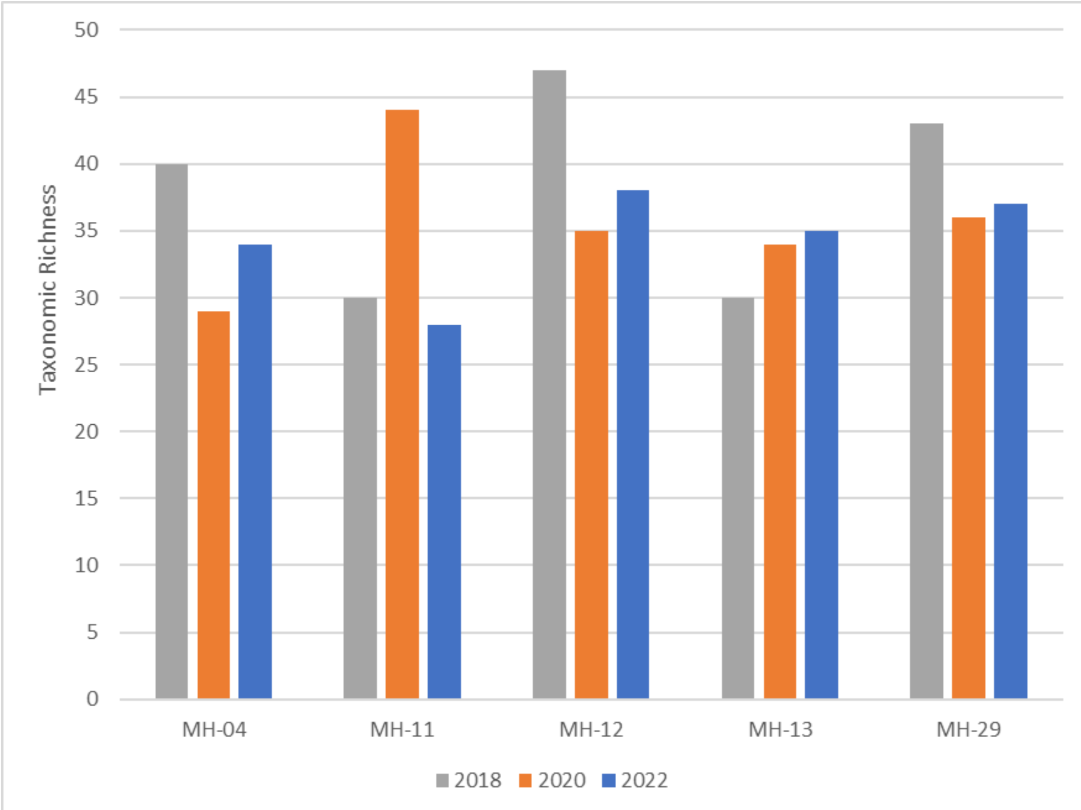



**Figure 4-6: Taxonomic Richness at the SDH Aquatic Resources Study Stations, 2018-2022**

### 4.3.3 SIMPSON'S DIVERSITY INDEX

Simpson's Diversity Index considers species richness (i.e., total number of different species in a community) and evenness (i.e., variation of abundance in individuals per species in a community). As values approach 1, benthic communities are considered more diverse whereas values approaching zero indicate less diverse communities.

In 2022, diversity was high across all stations with the highest diversity recorded at MH-13 (0.91) and lowest at MH-11 (0.79; Figure 4-7). Average diversity across all stations was slightly lower (0.77) in 2020 compared to 2022 (0.85), especially at MH-04 and MH-13. Although diversity was generally lower in 2020, elevated diversity in 2018 and 2022 may indicate natural fluctuation in benthic invertebrate diversity due to environmental conditions. It is unlikely that diversity is slightly lower due to mine activities in 2020 since diversity increased again in 2022. If low diversity was attributed to mine effluent, a steady decrease in diversity over many years would be expected.

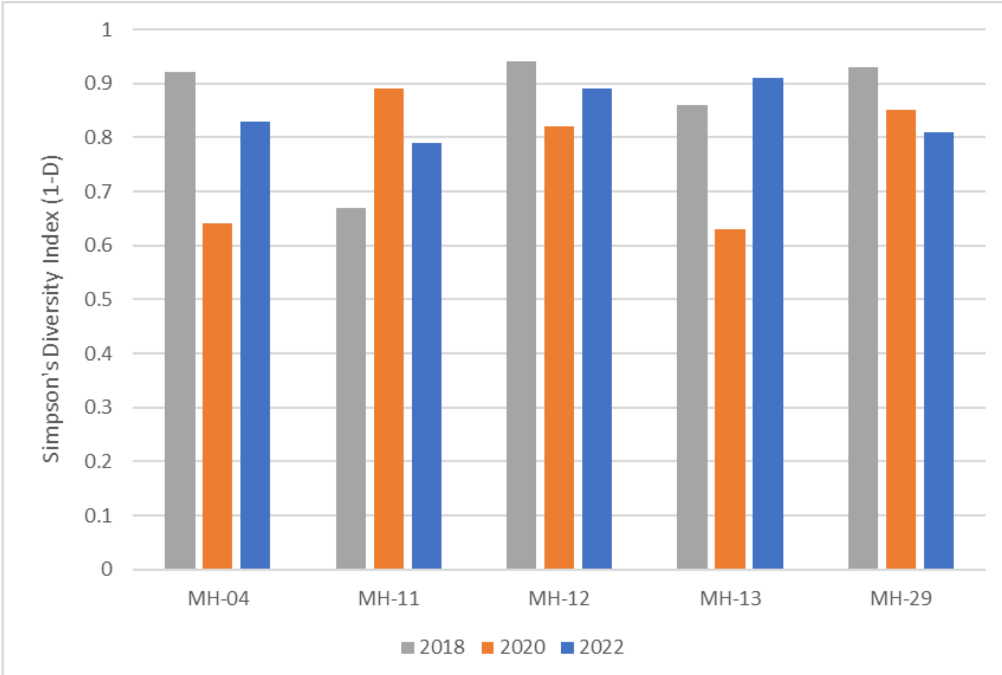



**Figure 4-7: Simpson's Diversity Index at the SDH Aquatic Resources Study Stations, 2018-2022**

### 4.3.3.1 PERCENT (%) OF EPT AND DIPTERA

The EPT index is a measure of the relative number of taxa of the Orders Ephemeroptera, Plecoptera, and Trichoptera (mayflies, stoneflies, and caddisflies) combined in each sample. EPT index is considered a reliable indicator of water quality since EPTs are sensitive to pollution or stream degradation (Clements et al., 2000). Generally, a high proportion of EPT indicate good water quality and an undisturbed, complex benthic invertebrate habitat. Conversely to EPT, Diptera (true flies) can be indicators of organic or heavy metal pollution (Desrosiers et al., 2008). Usually, samples containing high proportions of Diptera indicate impaired water quality.

In 2022, more than 50% of each benthic community was composed of Ephemeroptera, Plecoptera, and Trichoptera, indicating that habitat conditions exist to support the growth of sensitive species (Figure 4-8). The highest EPT proportion was noted at MH-11 (92%) and the lowest EPT proportion was noted at MH-13 (61%). The percent of EPT increased from 2018 to 2022 potentially indicating a slight improvement to water quality. Changes in habitat may explain the increased proportion of EPT in 2022.

For example, in 2018 the dominant substrate at MH-13 was described as fines that easily mobilized. However, in 2022 the dominant substrate at MH-13 was noted as large pebbles (the pebbles were not included in the sample; sand shows as the dominant sediment type sampled for this location in Table 4-3). The shift in substrate dominance from fine particulate, habitat preferred by Diptera, to large pebbles, habitat preferred by EPT (Cummings and Lauff, 1968) may explain the corresponding shift in benthic community dominance at MH-13.

Logically, sites with a higher proportion of EPT had a lower proportion of Diptera since EPT and Diptera prefer different microhabitats and conditions. In 2022, Diptera were lowest at MH-11 (4.5%) and highest at MH-12 (31%). Generally, Diptera comprised a small proportion of the benthic community at each station with fewer Diptera detected at all stations in 2022 compared to 2018 (Figure 4-9). The composition of the benthos communities is presented for each site in Figure 4-10, the major taxonomic groups presented are Ephemeroptera, Plecoptera, Trichoptera, Diptera, Annelida, and other encompasses invertebrates from the orders Collembola and Thysanoptera and from the classes Oligochaeta, Bivalvia and Gastropoda. MH-04 and MH-12 had higher percentages of Ephemeroptera while MH-11 and MH-29 had more than half their composition were Plecoptera, MH-13 is composed more equally of Ephemeroptera (23.8%), Plecoptera (20.8), and Diptera (28.6%)

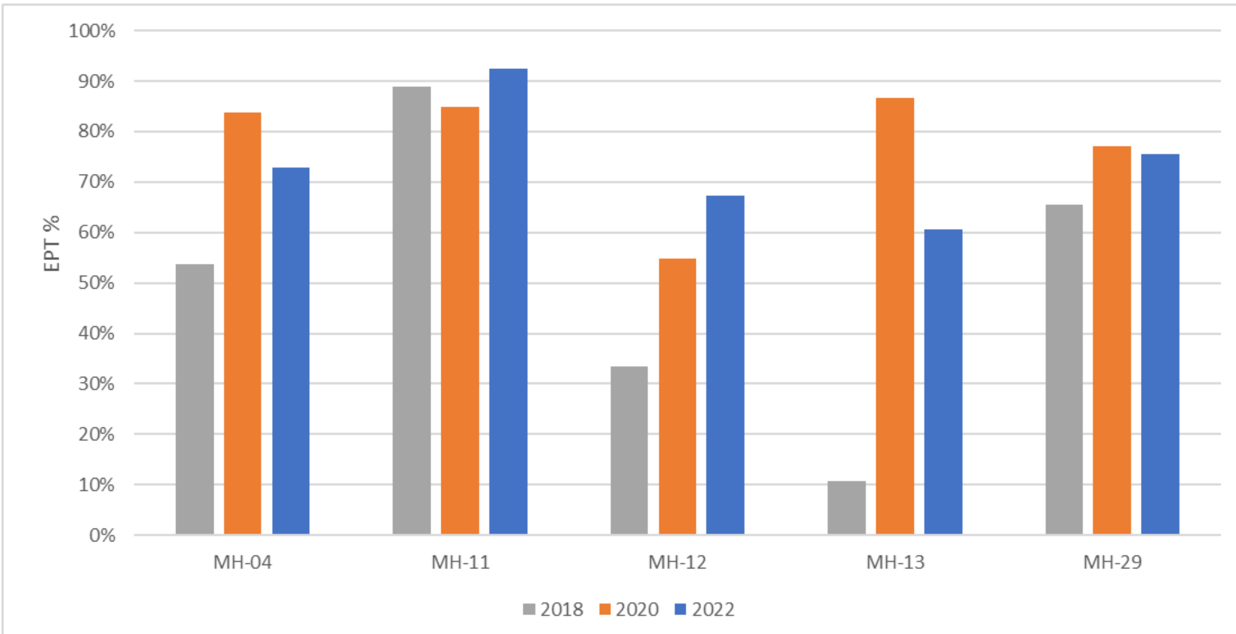



**Figure 4-8: % EPT at the SDH Aquatic Resources Study Stations, 2018-2022**

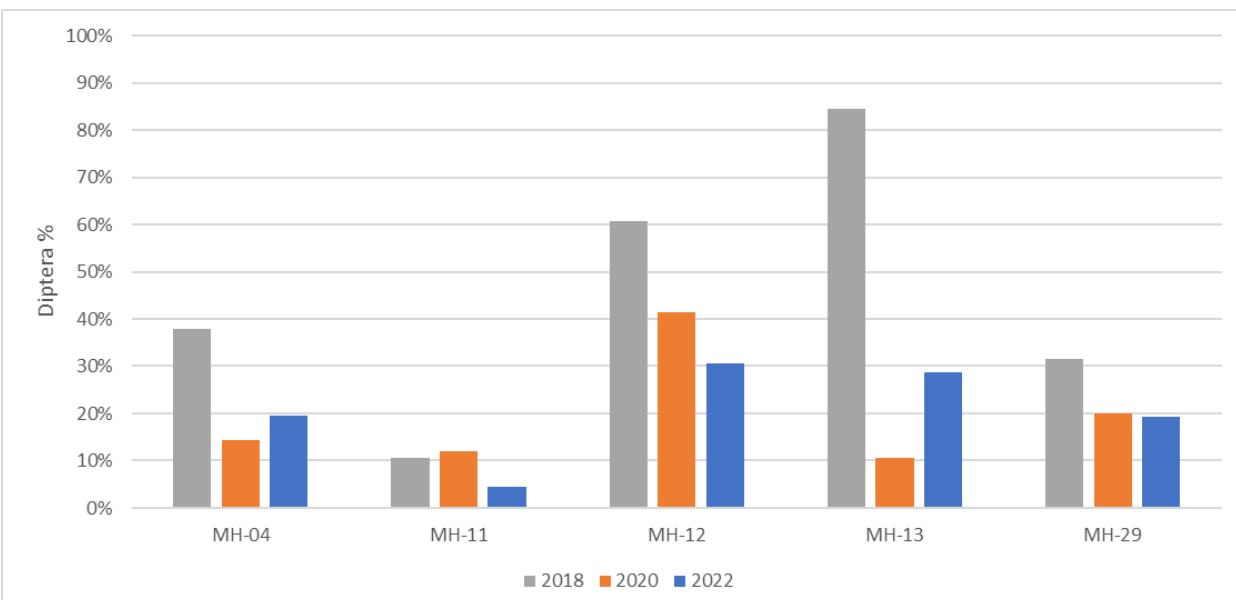



**Figure 4-9: Diptera (%) at the SDH Aquatic Resources Study Stations, 2018-2022**

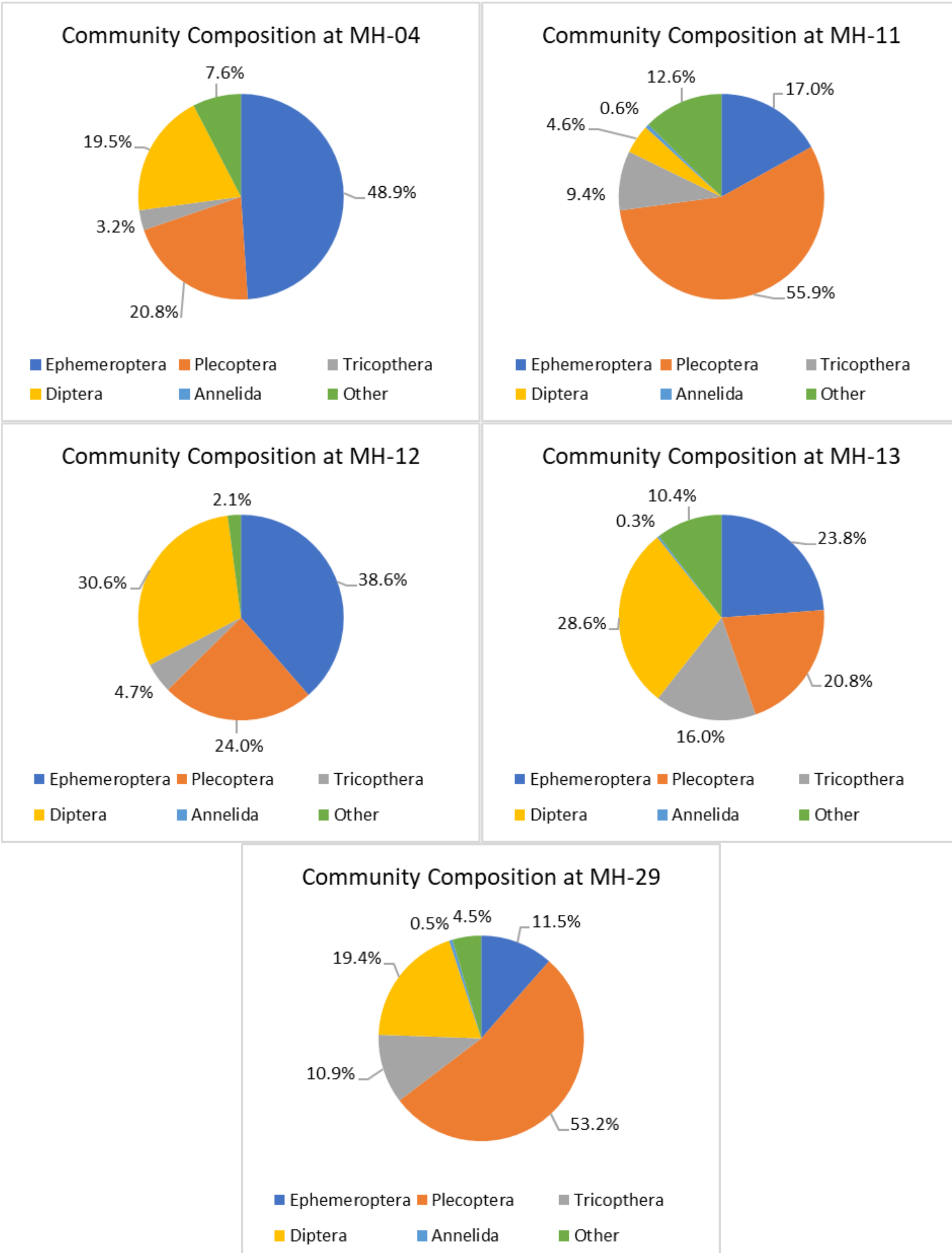



**Figure 4-10: Community Composition at the SDH Aquatic Resources Study Stations, 2022**

Since EPT community is an indication of overall health of the stream, Table 4-6 shows the EPT count at each site, the proportion of EPT in each community and the EPT richness, which is the variety of taxa found in each site.

**Table 4-6: EPT Abundance, Proportion and Richness, 2022**

| Site | # EPT | % EPT | EPT Richness |
|---|---|---|---|
| MH-04 | 5540 | 72.89% | 19 |
| MH-11 | 1081 | 92.40% | 20 |
| MH-12 | 4540 | 67.36% | 23 |
| MH-13 | 936 | 60.62% | 25 |
| MH-29 | 986 | 75.56% | 20 |

### 4.3.4 HILSENHOFF BIOTIC INDEX

The Hilsenhoff Biotic Index estimates the overall tolerance of benthic communities to pollution, weighted by the abundance of each taxonomic group detected in the sample. Each organism is assigned a tolerance value based on its sensitivity to pollution. Organisms with a value of 0 (low tolerance values) are pollution sensitive while organisms with a value of 10 (high tolerance values) are pollution tolerant. The HBI index values and their relation to water quality is detailed in Table 4-7.

**Table 4-7: Water Quality based on Hilsenhoff Biotic Index (HBI)**

| Hilsenhoff Biotic Index | Water Quality |
|---|---|
| 0.00 - 3.75 | Excellent |
| 3.76 - 4.25 | Very Good |
| 4.26 - 5.00 | Good |
| 5.01 - 5.75 | Fair |
| 5.76 - 6.50 | Fairly Poor |
| 6.51 - 7.25 | Poor |
| 7.26 - 10.00 | Very Poor |

In 2022, HBI scores for all stations were indicative of excellent water quality except for the benthic community at MH-04 which described very good water quality. Compared to historic data, water quality at most stations improved based on the HBI scores except for water quality at MH-12 and MH-29. However, the HBI score at these two stations remained within the “excellent” water quality range and therefore the slight difference between years can be considered negligible. Overall, the trend of improving HBI scores over the years is indicative of good water quality and benthic communities composed of pollution intolerant species, as presented in Figure 4-11.

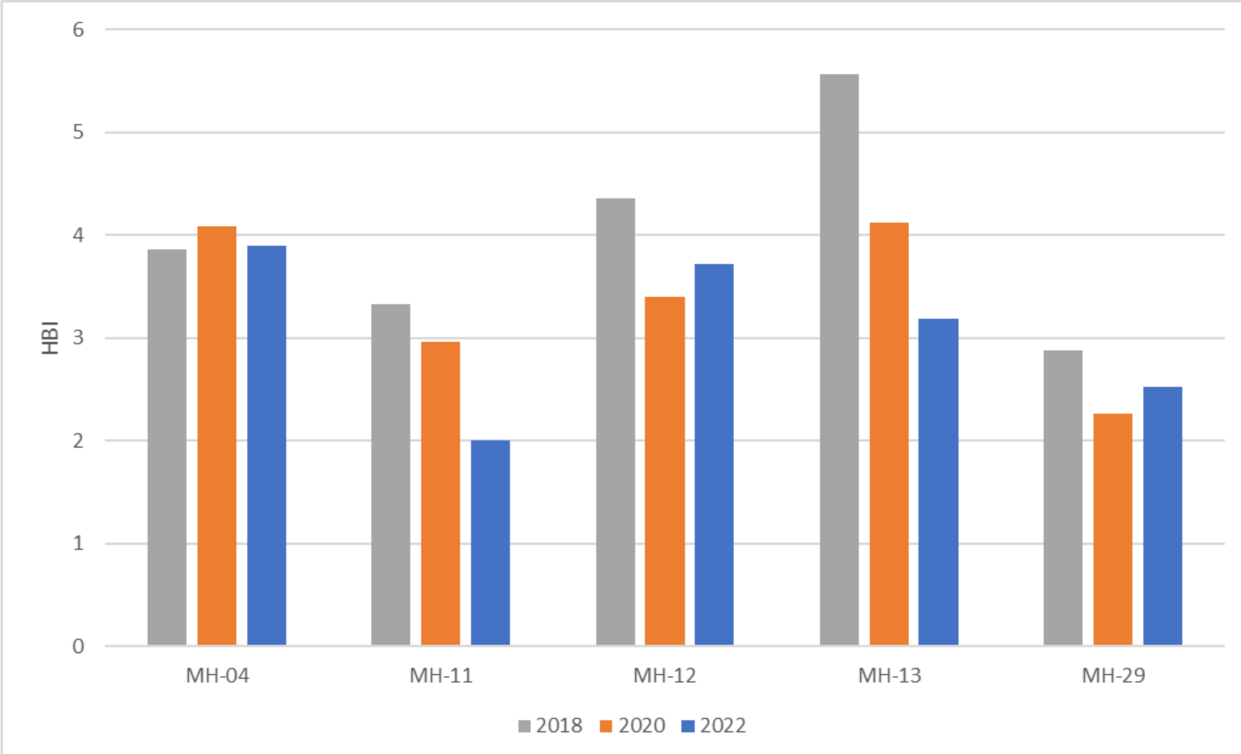



**Figure 4-11: Hilsenhoff Biotic Index at the SDH Aquatic Resources Study Stations, 2018-2022**

### 4.3.5 BENTHIC AND SEDIMENT DISCUSSION

Camp Creek, MH-04 sediment samples exceeded the ISQG for Arsenic, which is a change from recent years, and with similar levels of Cadmium, Lead, and Zinc. MH-04 had a sandy substrate. Abundance was slightly lower than in 2020, but taxonomic richness was slightly higher, as was the SDI. There was more Diptera and less EPT than in 2020, but the HBI was similar to 2018 and 2020 levels. Ephemeroptera (mayflies) was the dominant Order, as in 2020. Overall the site appears to be generally similar to 2020 conditions.

MH-11 is also a sandy substrate with lower Arsenic and Zinc than 2020 levels, similar Cadmium levels below the ISQG, and higher lead concentrations than in recent years. Abundance was similar to 2020 levels, but richness was lower, and SDI was slightly lower. % EPT was slightly higher, offset by a slight reduction in % Diptera, reflected in a slight increase in the HBI. Plecoptera (stoneflies) was the dominant Order, as in 2020. Overall the site appears to be slightly improved compared to 2020 conditions.

MH-12 is also a sandy substrate with slightly lower metals levels for Arsenic, Cadmium, Lead, and Zinc from 2020. Abundance, richness, and SDI were between 2018 and 2020 levels, with increased % in EPT and decreased % Diptera. The HBI is between 2018 and 2020 levels. Ephemeroptera was the dominant Order, which was a change from Plecoptera dominance in 2020. Both Ephemeroptera and Plecoptera indicate clean, well oxygenated water, clean gravels, and low pollution, and future sampling will assess if the change in dominant Order is significant.

False Canyon Creek, MH-13 is noted to have a pebbly substrate, changing from a substrate in previous years characterized as predominantly fines. Due to sampling jar constraints, the sediment sample results indicate a predominantly sandy soil, with higher Arsenic levels, but similar concentrations of Cadmium, Lead, and Zinc. Abundance had dropped from 2020, but richness has increased slightly, with a SDI exceeding 2018 levels. Similar to MH-04, % Diptera has increased from 2020 levels, and % EPT has decreased, with a HBI below previous sample levels. Diptera (true flies) was the dominant Order; however, Ephemeroptera and Plecoptera were also very dominant. This is a change from 2020 where Ephemeroptera was dominant. Overall this site appears to have slightly worse conditions than in previous years; however, it is unknown if this is within the natural variability of the system.

Access Creek, MH-29 is also a sandy substrate with slightly lower concentrations of Arsenic, Cadmium, Lead, and Zinc than previous years. The Lead sample for MH-29 is the only one that is below the PEL guideline. Abundance is lower than in 2020, and richness is similar, with a lower SDI. % EPT and % Diptera are very similar to 2020 levels, and the HBI is between 2018 and 2020 levels. Plecoptera was the dominant Order, as in 2020. Overall, the site appears to be generally similar to 2020 conditions.

## 4.4 FISH MONITORING

Fish monitoring was required at MH-13 and MH-30 as noted in the Water Use Licence (QZ16-051) found in Appendix A. Unfortunately, due to flooding and extensive beaver activity, no suitable helicopter landing site was found at MH-30. Furthermore, the stream channel at MH-30 has been significantly deepened by beaver activity making traditional fish inventory methods (i.e., electrofishing) challenging. During the fall of 2022, a new helicopter pad was cut at MH-30 enabling future fish and water quality monitoring at this station. Although overall fisheries trends cannot be described at SDH using a single station, fisheries trends at MH-13 can be evaluated using available data from 1994-2022.

In 2022, three slimy sculpin (*Cottus cognatus*) were captured at MH-13 via electrofishing and one slimy sculpin was captured using a minnow trap. A summary of 2022 fishing effort is detailed in Table 4-8, and a comparison of all fish captured since 1992 is presented in Table 4-9 and Figure 4-12. Laberge Consulting (Laberge, 2021) noted that the slimy sculpin population cycle follow a sinusoidal regression; the 2022 catch number do not follow this trend as seen in Figure 4-12. Figure 4-13 is a histogram based on length of captured fish (mm) of the data collected since 1992. Condition factor (K) was also calculated for each fish captured. Condition factor relates fish length and weight to gauge overall fish health (Mohr, 1984). Fish with higher condition factor (values above 1) are considered healthy while fish with a lower condition factor (values approaching 0.5) are considered unhealthy. Condition factor is described by the following formula: condition factor (K) = 100*(body weight/length$^3$). In both 2022 (average K = 1.15) and 2020 (average K = 1.02) fish condition was greater than one, indicating the slimy sculpin were in good condition.

Catch per unit effort (CPUE) was also compared between years to evaluate change in fish community structure. CPUE is calculated by dividing the total catch by the total amount of effort (hours) used to harvest the fish. Higher CPUE values indicate a more abundant fish population (i.e., less effort is needed to catch more fish) compared to a lower CPUE value which indicates a less abundant fish population (i.e., more effort is needed to catch fewer fish). In 2022, CPUE for electrofishing was lower than in 2020. The lower CPUE in 2022 may indicate a slightly less abundant population of slimy sculpin compared to 2020; however, slimy sculpin abundance at MH-13 may naturally fluctuate over time due to changing habitat. For example, slimy sculpin catch at MH-13 have been quite low since 2014 (Laberge, 2021). This may coincide with the increased beaver activity at MH-13. In 2014, Laberge noted many barriers, debris piles, and active beaver dams at MH-13 which may limit fish movement and colonization (Kemp et al., 2022). Slimy sculpin distribution and density are also sensitive to changes in water temperature and alterations in discharge patterns (Edwards and Cunjak, 2007). Beaver dams usually alter discharge patterns and create deeper stagnant pools, potentially increasing water temperature. This may explain the lower abundance of slimy sculpin from 2014-2022. More recently, from 2021-2022 above average snowpack and precipitation was recorded in the

Watson Lake region (Environment Yukon, 2022). High water stemming from above average snowpack and precipitation may have further altered discharge patterns at MH-13 and influenced the dispersion of slimy sculpin populations.

**Table 4-8: 2022 Fish Capture Results at MH-13 on August 9, 2022**

| Method | Effort | Species | Catch | Length (mm) | Weight (g) | Condition Factor (K) |
|---|---|---|---|---|---|---|
| Electrofishing | 453 seconds | Slimy sculpin | 3 | 62 | 3.31 | 1.38 |
| | | | | 106 | 15.26 | 1.28 |
| | | | | 112 | 12.73 | 0.91 |
| Minnow trapping | 147 hours (24.5h per 6 traps) | Slimy sculpin | 1 | 99 | 10.01 | 1.03 |

**Table 4-9: Comparison of slimy sculpin catch at MH-13, 1992-2022 (biennial sampling)**

| Year | Catch (number of fish) | | |
|---|---|---|---|
| | Electrofishing | Minnow Trapping | Total |
| 1992 | - | - | 9 |
| 1994 | 19 | 0 | 19 |
| 1996 | 6 | 12 | 18 |
| 1998 | 1 | 14 | 15 |
| 2000 | 4 | 2 | 6 |
| 2002 | 8 | 0 | 8 |
| 2004 | 18 | 7 | 25 |
| 2006 | 20 | 1 | 21 |
| 2008 | 32 | 46 | 78 |
| 2010 | 19 | 0 | 19 |
| 2012 | 20 | 1 | 21 |
| 2014 | 1 | 0 | 1 |
| 2016 | 0 | 1 | 1 |
| 2018 | 3 | 0 | 3 |
| 2020 | 10 | 2 | 12 |
| 2022 | 3 | 1 | 4 |
| Mean (STDEV) | 10.9 (9.4) | 5.8 (11.6) | 16.3 (17.7) |

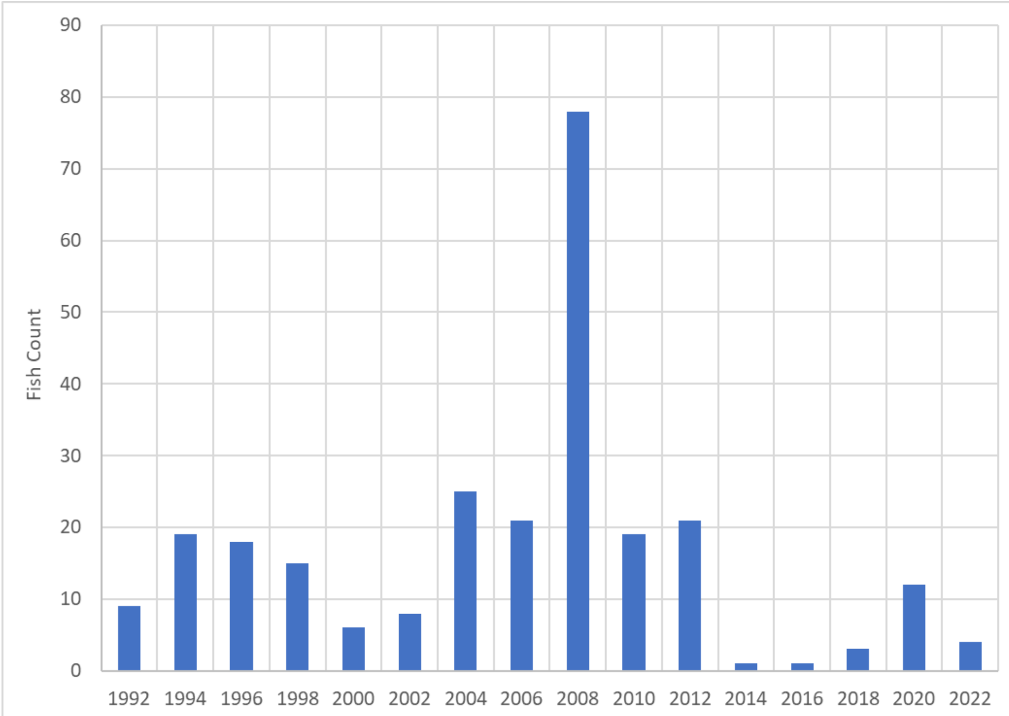



**Figure 4-12: Annual Fish Count**

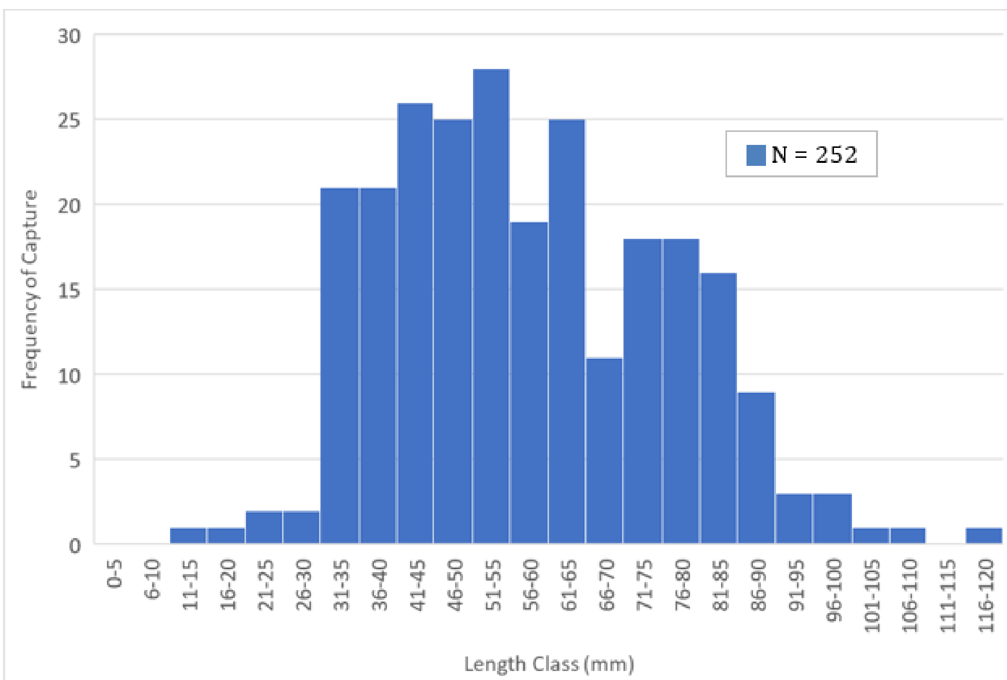



**Figure 4-13: Length Frequency Histogram of Slimy Sculpin Captured at MH-13 in False Canyon Creek, 1992 – 2022**

# 5 SUMMARY AND RECOMMENDATIONS

Overall, benthic and aquatic metrics across the SDH monitoring stations are indicative of good water quality and productive stream ecology. These results are consistent with historical findings from past aquatic assessments. Considering benthic indices are relatively stable across the years, it is unlikely that mine effluent is having an impact on benthic communities. Instead, environmental variability (turbidity, velocity, water depth, and sample timing) likely explain the small variance in benthic and fisheries metrics between years.

At station MH-30, increased beaver activity and associated flooding made landing at the station unsuccessful in 2022. During the fall of 2022, a new helicopter pad was cut at MH-30 enabling future fish and water quality monitoring at this station.

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# APPENDIX A:

# WATER USE LICENCE (QZ16-051)

**YUKON WATER BOARD**

Pursuant to the *Waters Act* and *Waters Regulation*, the Yukon Water Board hereby grants a Type B water licence for a quartz mining undertaking to:

Sä Dena Hes Operating Corp.
c/o Teck Resources Limited
3300-550 Burrard Street
Vancouver, BC V6C 0B3

| | | | |
|---|---|---|---|
| **LICENCE NUMBER:** | QZ16-051 | | |
| **LICENCE TYPE:** | B | **UNDERTAKING:** | QUARTZ |
| **WATER MANAGEMENT AREA:** | 01 Liard | | |
| **LOCATION:** | Upper False Canyon Creek and tributaries of False Canyon Creek, Sä Dena Hes Mine Site | | |
| **MAP CO-ORDINATES:** | Max Latitude: 60° 42' 21" N Max Longitude: 129° 11' 38" W<br>Min Latitude: 60° 18' 31" N Max Longitude: 128° 34' 08" W | | |
| **PURPOSE:** | To store/alter flow of water associated with maintenance and decommissioning activities and to deposit a waste to water. | | |
| **EFFECTIVE DATE:** | April 1, 2017 | | |
| **EXPIRY DATE:** | December 31, 2040 | | |

This licence shall be subject to the restrictions and conditions contained herein and to the restrictions and conditions contained in the *Waters Act* and the *Waters Regulation* made thereunder.

Dated this 30 day of March, 2017

Witness

Approved by:

Chairperson
YUKON WATER BOARD

## PART A - DEFINITIONS

"Act" means *Waters Act* and any amendments thereto.

"Adaptive Management Plan" means the *Sä Dena Hes Mine Post-Relcamation Adaptive Management Plan* submitted as part of the Application and included in the Register QZ16-051 as part of exhibit 1.16, and any subsequent revisions.

"Application" means Application QZ16-051, including any additional submissions and/or revisions submitted to the Yukon Water Board by the Licensee, up to the date of the Board's decision.

"Board" means the Yukon Water Board.

"Dam Safety Guidelines" means the most current version of the Dam Safety Guidelines issued by the Canadian Dam Association.

"Detailed Decommissioning and Reclamation Plan" or "DDRP" means the *Detailed Decommissioning and Reclamation Plan* that was submitted as part of the Application and included in Register QZ16-051 as exhibit 1.3 and any subsequent revisions.

"Environmental Monitoring, Surveillance and Reporting Plan" or "EMSRP" means the *Environmental Monitoring, Surveillance and Reporting Plan* submitted as part of the Application and included in Register QZ16-051 as Exhibit 1.24, and any subsequent revisions.

"Freshwater Intake end-of Pipe Fish Screen Guideline" means the most current version of the *Freshwater Intake end-of Pipe Fish Screen Guideline* issued by the Department of Fisheries and Oceans.

"Inspector" means any person designated as an Inspector under the Act.

"Natural Boundary" means the visible high water mark of any lake, river, stream or other body of water where the presence and action of water is so common and usual and so long continued as to mark upon the soil of the bed of the lake, river, stream or other body of water a character distinct from that of the banks thereof, both in respect to vegetation and in respect to the nature of the soil itself. In addition, the best estimates of the edge of dormant or old side channels and marsh areas are considered to be Natural Boundaries.

"Non-Acid Generating and Non-Metal Leaching" means rock with a paste pH $\geq 5.0$, a Neutralizing Potential: Acid Generation Potential Ratio (NPR) $\geq 3:1$ and a sulphur content of $< 0.3\%$.

"Post-Closure Geotechnical Monitoring Plan" means *Proposed Post Reclamation Geotechnical Monitoring Program* that was submitted as part of the Application and included in Register QZ16-051 as Appendix D in exhibit 1.24, and any subsequent revisions.

"Regulation" means the *Waters Regulation* made under the Act.

"Spill Contingency Plan" means the *Spill Contingency Plan* that was submitted as part of the Application and included in Register QZ16-051 as exhibit 1.28, and any subsequent revisions.

"Waste" means any substance as defined in the Act.

"Watercourse" means a natural watercourse, body of water or water supply, whether usually containing water or not, and includes groundwater, springs, swamps, and gulches.

"Wetted Perimeter" means the horizontal extent of the present water level while the work is taking place.

## PART B – WATER USE AND DEPOSIT OF WASTE

1. The Licensee is hereby authorized to
   a) deposit Waste in the form of;
      i. water from Burnick 1200, via sub-surface flow, to tributaries of False Canyon Creek; and
      ii. water from 1380 Portal, via sub-surface flow, to Upper False Canyon Creek.
      iii. seepage from North dam to Tributary E False Canyon Creek;
      iv. seepage and runoff from the south sediment retaining structure to Upper False Canyon Creek;
      v. collected runoff from the Jewelbox Hill dumps to Upper False Canyon Creek;
      vi. collected runoff from the North Hill dumps to tributaries of False Canyon Creek;
   b) Store and/or alter flow of water associated with the south sediment retention structure;
   c) carry out ongoing site monitoring and maintenance, including culvert maintenance and replacement; and
   d) decommission and reclaim the site road and access road, including culvert removal and bank stabilization,

   as described in the Application, and subject to the conditions of this licence. Where there is a discrepancy between the Application and this licence, the conditions of this licence shall prevail.

## PART C – DESIGN AND CONSTRUCTION

2. The Licensee shall submit to the Board final detailed design construction drawings, specifications and quality assurance/quality control procedures for the construction of any works associated with the implementation of the DDRP.

3. The design of all structures and facilities associated with the project shall be carried out using sound engineering practices and shall be completed and sealed by a Professional Engineer licenced to practice in Yukon.

4. The final detailed design construction drawings, specifications and quality assurance/quality control procedures submitted to the Board shall be consistent with the designs in the DDRP.

5. At least ten days prior to the proposed date of commencement of construction of any structure or facility, the Licensee shall submit to the Board a written notification, together with a detailed construction schedule and the name and contact number(s) of the construction superintendent.

6. Where site conditions require minor modification to the designs submitted to the Board, the Licensee shall notify the Board, at least 10 days in advance, of the details of the modifications or variations from final detailed designs, specifications and quality assurance/quality control procedures previously submitted to the Board, provide a detailed construction schedule and the name and contact number(s) of the construction superintendent. The notice shall be in writing and include an explanation of the reasons for the change and an assessment of the potential impact on the performance of the works. The notice shall be sealed by a Professional Engineer licensed to practice in Yukon.

7. As-constructed (record) drawings and construction reports for all structures and facilities shall be submitted to the Board within ninety days of the completion of construction. Each submission shall be sealed by a Professional Engineer licenced to practice in Yukon.

## PART D –OPERATING CONDITIONS

8. During the term of this licence, the Licensee shall maintain all works in good order in accordance with sound engineering and environmental practices.

9. The Licensee shall maintain the main access road from June through September in a manner such that heavy equipment can be taken to the site until the site has stabilized.

10. The Licensee shall maintain facilities and structures and undertake all monitoring in accordance with the requirements of this Licence.

11. When conducting any instream works, creek flow must be diverted around the work areas.

12. Where fish are present, the Licensee shall salvage all fish prior to de-watering any work area.

13. All works associated with the undertaking shall be maintained in good repair.

14. Construction and/or maintenance equipment shall be mechanically sound and free of leaks.

15. The tracks and/or wheels of heavy equipment are prohibited from entering the Wetted Perimeter of any Watercourse.

16. Granular bedding and backfill material shall consist of non-frozen material.

17. Except as authorized by this licence, no Waste shall enter any Watercourse as a result of any activities carried out by the Licensee.

18. All disturbed ground surfaces shall be stabilized in such a manner so as to prevent erosion and surface runoff.

Water Pumps

19. All water pumps shall be contained within an impermeable liner/structure that has the capacity to contain 110% of the maximum combined volumetric capacity of the fuel, lubricants and coolants within the engine of the water pump.

20. The Licensee shall provide barriers consisting of fish guards, screens, coverings or nets on all water intakes that are consistent with *Freshwater Intake end-of Pipe Fish Screen Guideline.*

21. The Licensee shall cease pumping or decanting and take remedial action if there is alteration to the bed or bank of the water channel as a result of pumping.

Rip-rap

22. Rip-rap shall be hard, dense, angular, Non-Acid Generating and Non-Metal Leaching quarry stone or boulders, free of seams, cracks, structural defects and contaminants, freeze-thaw resistant, non-slaking and free of fine-grained materials including silt and sand. Rip-rap gradation will conform to the specifications provided in the Application in Register QZ16-051 exhibit 1.15.

Geotextile

23. Specifications of the geotextile material shall comply with those described in the Application in Register QZ16-051 exhibit 1.2.

Culvert Removal

24. When removing culverts, the following procedures shall be followed:

    a) schedule removal of culverts so as to avoid concentrations of fish if such concentrations exist;

b) install or construct non-erodible cofferdams, silt barriers or other suitable methods to control siltation downstream of the work area;

c) reshape site to conform to grade of adjacent stream bank following removal of the culvert;

d) use rip-rap or other suitable methods, if required, to stabilize the bank at the work site; and

e) remove all silt controls following completion of work and ensure the grade of the drainage course is restored.

25. Culvert placement, removal and channel excavation shall be done in the dry, with the exception of connecting the existing channel to the diversion channel.

Spills and Unauthorized Discharges

26. Where a spill or an unauthorized discharge occurs, that is of a reportable quantity under the Yukon Spills Regulations, the Licensee shall immediately contact the 24-hour Yukon Spill Report number, (867) 667-7244 and implement the Spill Contingency Plan. A detailed written report on any such event including, but not limited to, dates, quantities, parameters, causes and other relevant details and explanations, shall be submitted to the Board not later than 10 days after the occurrence.

27. The Licensee shall apply the relevant procedures in the Spill Contingency Plan. The Licensee shall review the Spill Contingency Plan annually and shall provide a summary of that review, including any revisions to the plan, as a component of the annual report.

28. The Licensee shall maintain a log book of all spill or unauthorized discharge occurrences, including spills that are less than the reportable quantities under the Yukon Spills Regulations. The log book shall be made available at the request of an Inspector. The log book shall include, but not necessarily be limited to:

a) the date and time of the spill or unauthorized discharge occurrence;

b) the substance spilt or discharged;

c) the approximate amount spilt or discharged;

d) the location of the spill;

e) the distance between the spill or discharge and the nearest Watercourse; and

f) remedial measures taken to contain and clean-up the spill area or to cease the unauthorized discharge.

29. The Licensee shall include a summary of all spills or unauthorized discharges that occurred during the year reported, as part of the annual report.

30. All personnel shall be trained in procedures to be followed and the equipment to be used in

the containment of a spill.

31. Prior to the commencement of construction, the Licensee shall update the Spill Contingency Plan and provide the updated plan to the Board.

32. The Spill Contingency Plan shall be posted on site for the duration of the works.

Fuel Transfer and Refueling

33. Fuel, lubricants, hydraulic fluids, coolants and similar substances, with the exception with liquid associated with the water pump engine, shall be transferred a minimum of 30 metres from the Natural Boundary of any Watercourse, in such a way that said substances are not deposited in or allowed to be deposited in waters.

34. Water pumps may be refuelled within the Natural Boundary of any Watercourse. Refueling activities shall adhere to the following:

    a) no refueling shall be conducted within the Wetted Perimeter of any Watercourse;
    b) the fuel transfer shall be visually and continually monitored;
    c) fuel transfer nozzles shall be operated manually and will not be locked in the open position;
    d) spill kits, including absorbent pads shall be maintained in close proximity to the stationary equipment during refuelling operations;
    e) fuel transfers shall be conducted with an operator at each end of the transfer hose;
    f) shall only be conducted during daylight hours; and
    g) fuel transfer equipment components such as pumps, hoses and nozzles shall be visually checked for leaks or damage prior to each refuelling operation.

## PART E – PLANS AND STUDIES

EMSRP Update

35. The Licensee shall submit an updated EMSRP to the Board within 90 days of the effective date of this licence. The updated plan shall include, but not be limited to:

    a) The terms and conditions of this licence;
    b) An updated groundwater monitoring program that includes the following:

        i. Quarterly monitoring of the groundwater wells in Schedule A;
        ii. Quarterly reporting of site water monitoring data; and
        iii. Addition of dissolved oxygen and oxidation-reduction potential as field parameters for the groundwater program.

Adaptive Management Plan

36. The Licensee shall submit an updated Adaptive Management Plan to the Board within 90 days of the effective date of this licence. The updated plan shall include, but not be limited to:

    a) the terms and conditions of this licence;

    b) the addition of sulphate to the AMP for mine source flow path water quality and receiving environment surface water quality components of the AMP;

    c) the addition of specific numerical thresholds for the mine source groundwater quality AMP based on scientifically derived thresholds that are proactive and protective of the receiving environment; and

    d) as part of the annual reporting on the AMP, a detailed assessment of the full suite of paramaters being measured at AMP indicators stations and identification of any additional indicator parameters that should be incorporated into the AMP.

Groundwater-Surface Water Interaction Study

37. Within 90 days of the effective date of this licence, the Licensee shall submit to the Board a plan for the assessment of groundwater-surface water interactions at the site including, but not limited to:

    a) a review of all monitoring results from all wells on site;

    b) predictions of groundwater-surface water interactions; and

    c) verification of existing site information including rationale supporting location of receiving water monitoring stations.

38. The Licensee shall carryout the assessment according the plan and submit report documenting the results of the program and any recommendations stemming from the study on or before March 31, 2019.

39. Subject to any required assessments, authorizations or approvals, the Licensee shall implement all plans required by this section of this licence.

## PART F –RECEIVING WATER QUALITY STANDARDS

40. All results of grab sample analysis for MH-11, MH-12 and MH-15 shall meet the following receiving water quality standards.

| Parameter | Maximum Concentration in a Grab Sample |
|---|---|
| Aluminum, dissolved | if pH $\geq$ 6.5 = 0.05 mg/L<br>if pH < 6.5 = e[1.6−3.327(median pH)+0.402(median pH)^2] |
| Antimony, total | 9 µg/L |

| Parameter | Maximum Concentration in a Grab Sample |
|---|---|
| Arsenic, total | 5 μg/L |
| Beryllium, total | 0.13 μg/L |
| Cadmium, dissolved | $= e^{[0.736 \, x \ln(hardnesss) - 4.943]}$ in μg/L |
| Chromium VI, total | 1 μg/L |
| Cobalt, total | 4 μg/L |
| Copper, total[1] | if hardness ≤ 50 mg/L = 2 μg/L<br>if hardness >50 mg/L = 0.04 x (hardness) |
| Iron, total[2] | 1 mg/L |
| Lead, total[3] | **MH-12/ MH-15** (μg/L) $= \{3.31 + e^{[1.273 \ln(hardness) - 4.704]}\}$<br>**MH-11** (μg/L) $= 1.928 \times \{3.31 + e^{[1.273 \ln(hardness) - 4.704]}\}$ |
| Molybdenum, total | 0.073 mg/L |
| Nickel, total | if hardness ≤ 60 mg/L or unknown = 25 μg/L<br>if hardness > 60 mg/L and ≤ 180 mg/L = $[e^{\{0.76[\ln(\text{hardness})]+1.06\}}]$ μg/L<br>if hardness > 180 mg/L= 150 μg/L |
| Selenium, total | 2 μg/L |
| Silver, total | 0.25 μg/L |
| Sulphate, total | if hardness ≤ 30 mg/L =128 mg/L<br>if hardness > 30 mg/L and ≤ 75 mg/L =218 mg/L<br>if hardness > 75 mg/L and ≤ 180 mg/L =309 mg/L<br>if hardness > 180 mg/L =429 mg/L |
| Thallium, total | 0.8 μg/L |
| Zinc, total[3] | **MH-12 / MH-15**<br>if hardness ≤ 90 mg/L = 7.5 μg/L<br>if hardness > 90 mg/L $= [7.5 + 0.75(hardness - 90)]$ μg/L<br>**MH-11**<br>if hardness ≤ 90 mg/L = 18.75 μg/L<br>if hardness > 90 mg/L = 2.5 x $[7.5 + 0.75(hardness - 90)]$μg/L |

Hardness is measured in mg/L $CaCO_3$ at monitoring station

[1] Standard for Copper during month of May is 4 μg/L if hardness ≤ 50 mg/L or 0.08 x [hardness] if hardness > 50 mg/L

[2] Standard for Iron during month of May is 3.9 mg/L

[3] Apply to dissolved fraction when TSS is 4 mg/L or higher

## PART G - MONITORING AND SURVEILLANCE

41. The Licensee shall comply with the water quality monitoring program and surveillance network program as outlined in the EMSRP and in accordance with Schedule A of this licence and shall submit the data that is compiled as a result of these programs and studies as a component of the required annual reports.

42. Laboratory analyses shall be performed by a laboratory accredited under the International Organization for Standardization ISO/IEC 17025:2005 standard and the accreditation must include the actual tests being performed by the laboratory.

43. Monitoring and sampling shall be carried out in accordance with the procedures and standards described in:

    a) Guidance Document for the Sampling and Analysis of Metal Mining Effluents, April 2001, (Report: EPS 2/MM/5), Minerals and Metals Division, Environment Canada;

    b) Guidance Document for Flow Measurement of Metal Mining Effluents, April 2001, (Report: EPS 2/MM/4), Minerals and Metals Division, Environment Canada;

    c) Standard Guide for Sampling Ground-Water Monitoring Wells, ASTM D4448-01, ASTM International, PA, USA.

Physical Monitoring Program

44. The Licensee shall comply with the physical monitoring program as outlined in the EMSRP and Schedule B of this licence and shall submit the data that is compiled as a result of these programs and studies as a component of the required annual reports.

45. All earthworks and water retaining structures including, but not limited to, open pits, waste dumps, ditches, dams, dykes, weirs and appurtenances shall be inspected by a Professional Engineer licenced to practice in Yukon as per the Post-Closure Geotechnical Monitoring Plan. The results of the inspection, including all problems identified, remedial measures proposed, and remedial measures implemented, shall be compiled in a report that shall be submitted to the Board as part of the annual report.

46. The Licensee shall complete a dam safety review for all water retaining structures, including but not limited to dams, dykes, weirs and appurtenances at least once every ten years, with the first review to be completed no later than 2026. The review shall be conducted in accordance with the most recent Dam Safety Guidelines published by the Canadian Dam Association.

47. Details of any maintenance, inspection and/or surveillance activities undertaken in the previous year in relation to dam safety shall be included in the annual report.

48. The North tailings dam shall be monitored by the use of instrumentation as required by the Engineer of Record in the Post-Closure Geotechnical Monitoring Plan to ensure long term stability.

Fisheries Monitoring Program

49. A fisheries monitoring program shall be conducted in accordance to Schedule A-Part 3 of this licence and the EMSRP. The sample locations shall be marked in the field in a manner that ensures that replicate surveys can be made.

50. The Licensee shall survey sites MH-13, and MH-30 beginning in 2018, to confirm:

    a) a generalized stream bed and substrate characterization and to identify changes since the previous sampling, and

b) through generally accepted methodology, a catch per unit effort and the general implications of any changes observed as compared to prior sampling periods.

51. The results of the fisheries monitoring program shall be included in the Annual Report.

Benthic Invertebrate Monitoring

52. Benthic invertebrate monitoring shall be conducted in accordance with Schedule A-Part 3 of this licence and the EMSRP beginning in 2018.

53. The Licensee shall collect representative samples in accordance to the Canadian Aquatic Biomonitoring Network (CABIN) Field Manual for wadeable streams, and accepted preservation, enumerative and identification procedures.

54. Sample collection, identification, enumeration and data interpretation shall be performed by an individual having qualifications, expertise and experience in the subject.

55. Water sampling shall be conducted at each of the collection sites during the sample period per Schedule A.

56. Results of the benthic invertebrate monitoring and the water sampling and analysis shall be included in the Annual Report.

Sediment Monitoring

57. Sediment monitoring shall be conducted in accordance with Schedule A-Part 3 of this licence and the EMSRP.

58. The timing of the sediment monitoring shall coincide with the benthic invertebrate monitoring program. Triplicate samples shall be collected at each of the five sites indicated in the benthic invertebrate monitoring program.

59. All data collection shall be conducted in accordance to a nationally recognized sampling protocol (e.g. CCME Protocols Manual for Water Quality Sampling in Canada, 2011). The results shall be included in the Annual Report.

## PART H – GENERAL CONDITIONS

60. The Licensee shall ensure a copy of this Licence is maintained at the site during operations at all times.

Other Laws

61. No condition of the water use licence limits the applicability of any statutory authority.

62. All construction or installation of works authorized by this licence shall occur on property that the Licensee has the right to enter upon and use for that purpose.

Non-Compliance

63. In the event that the Licensee fails to comply with any provision or condition of this licence, the Board may, subject to the Act, cancel the licence.

Correspondence

64. Where any direction, notice, order or report under this licence is required to be in writing, it shall be given:

a) To the Licensee, if delivered, or mailed by registered mail, to the address identified on page 1 of this licence, and shall be deemed to have been given to the Licensee on the day it was delivered, or 7 days after the day it was mailed, as the case may be; or

b) To the Board, if delivered, faxed or mailed by registered mail, to the following address:

Yukon Water Board
Suite 106, 419 Range Road
Whitehorse YT Y1A 3V1

Fax#: (867) 456-3890

and shall be deemed to have been given to the Board on the day it was delivered or faxed, or 7 days after the day it was mailed, as the case may be.

c) The Board or the Licensee may, by notice in writing, change its address for delivery.

Annual Reports

65. The Licensee shall submit annual reports to the Board on or before March 31 of the year following the year reported. The report shall include the information required by the Regulation including, but not necessarily limited to:

a) summaries of all data generated as a result of the monitoring requirements of this licence, including analysis and interpretation by a qualified individual or firm and a discussion of any variances from baseline conditions or from previous years' data;

b) a detailed record of any major post-reclamation maintenance work carried out on the waste dumps, diversion works, roads or any other aspect on the property that may have an impact on water;

c) documentation of any activities carried out at the site including those carried out under the requirements of the DDRP or Adaptive Management Plan;

d) reporting on the Adaptive Management Plan; and

e) an identification of any recommendations from the physical monitoring program, or from the most recent dam inspections or safety reviews, that were either not implemented, or that did not comply with the schedule proposed in the report, or in the review, including an explanation of why the recommendations was not implemented.

Quarterly Reports

66. Unless otherwise specified in this licence, the Licensee shall forward to the Board a copy of all data collected as part of the monitoring programs of this licence no more than 30 days after the conclusion of each quarterly sampling event in which that data was collected.

Reports

67. The Licensee shall provide to the Board one unbound, single-sided, paper copy of all reports required by this licence. All reports must be reproducible by standard photocopier.

68. The Licensee shall upload electronic copies of all reports required by this licence to the Yukon Water Board's online licensing registry, Waterline. Electronic copies shall be submitted in one of the following formats: MS Word, MS Excel, or Adobe .pdf format.

69. All water quality, water quantity and water level data shall also be submitted in Excel format. Water quality results must be uploaded to Waterline in the format outlined in the most recent version of Yukon's "Laboratory Data Submission Standards for Water Quality". This guide is available on the Yukon Water Board website.

## SCHEDULE A – PART 1
## SURVEILLANCE MONITORING SITES

| Station ID | Station Description | Coordinates | |
|---|---|---|---|
| | | Northing | Easting |
| MH-11 | Camp Creek located 2 km downstream of the Reclaim Pond (Upper False Canyon Creek) | 6707788 | 509460 |
| MH-12 | East Fork of Tributary E – of False Canyon Creek, approximately 2 km downstream of the north tailings dam | 6712755 | 509688 |
| MH-02 | North Dam seepage | 6711477 | 508060 |
| MH-22 | Burnick 1200 Portal discharge | 6712946 | 506767 |
| SDH-S2 | Drainage from the 1380 Portal, present as a seep in the downslope waste rock dump | 6709558 | 506325 |
| MH-13 | False Canyon Creek main channel located 10 km downstream of the mine site | 6709113 | 512541 |
| MH-04 | Located near the Camp Creek headwaters above the former Reclaim Pond | 6710292 | 507267 |
| MH-15 | West Fork of Tributary E | 6718408 | 510041 |
| MH-29 | Access Creek Upstream of Camp Creek | 6708895 | 509146 |
| MH-30 | Unnamed Tributary Upstream of False Canyon Creek | 6707568 | 510985 |
| MW13-01 | Jewelbox/Main Zone – in 1380 Gully, downgradient of 1380 Portal. | 6710202 | 506635 |
| MW13-04 | Main Access Road | 6708729 | 507240 |
| MW13-05 | Main Access Road – south of the Mill Site on the Main Access Road. | 6709392 | 507318 |
| MW13-06 | Burnick 1200 Portal | 6713001 | 506761 |
| MW13-07 | North Dam – north of the North Dam and tailings pond area. | 6711502 | 507904 |
| MW13-10 | Mill site - northeast of the Mill Site | 6709866 | 507774 |
| MW13-08 | Downgradient of 1380 Portal | 6710234 | 507325 |
| MW13-13 | Downgradient of 1380 Portal | 6709814 | 506452 |
| MW14-01 | In proximity to the landfill. | 6712303 | 507861 |
| MW14-02 | In proximity to the landfill. | 6712330 | 507967 |
| MW14-03 | In proximity to the landfill. | 6712442 | 507922 |
| MW14-04 | In proximity to the landfill. | 6712365 | 508005 |

## SCHEDULE A – PART 2
## WATER MONITORING SURVEILLANCE PROGRAM

| Station Category | Station ID | Flow | Water Level | Field Measurements | | External Analytical Suite | |
|---|---|---|---|---|---|---|---|
| | | | | Frequency | Parameters | Frequency | Analytical Suite |
| Compliance Point | MH-11 | BM | | BM | C | BM | A |
| | MH-12 | BM | | BM | C | BM | A |
| | MH-15 | BM | | BM | C | BM | A |
| Discharge Source | MH-02 | BM | | BM | C | BM | A |
| | MH-22 | BM | | BM | C | BM | A |
| | SDH-S2 | BM | | BM | C | BM | A |
| Additional Surface Water Stations | MH-13 | BM | | BM | C | BM | A |
| | MH-04 | BM | | BM | C | BM | A |
| | MH-29 | BM | | BM | C | BM | A |
| | MH-30 | BM | | BM | C | BM | A |
| Groundwater | MW13-01 | | Q | Q | D | Q | B |
| | MW13-04 | | Q | Q | D | Q | B,H |
| | MW13-05 | | Q | Q | D | Q | B,H |
| | MW13-06 | | Q | Q | D | Q | B |
| | MW13-07 | | Q | Q | D | Q | B,H |
| | MW13-10 | | Q | Q | D | Q | B,H |
| | MW13-08 | | Q | Q | D | Q | B |
| | MW13-13 | | Q | Q | D | Q | B |
| | MW14-01 | | Q | Q | D | Q | B,H |
| | MW14-02 | | Q | Q | D | Q | B,H |
| | MW14-03 | | Q | Q | D | Q | B,H |
| | MW14-04 | | Q | Q | D | Q | B,H |

BM: Bi-monthly; S/F: Spring and Fall (freshet and low flow periods); Q:Quarterly (to include freshet and low flow periods

C: pH, specific conductance, water temperature

D: pH, specific conductance, water temperature, dissolved oxygen, ORP

A: pH, specific conductance, total alkalinity, TSS, TDS, total and dissolved metals, total ammonia-N, nitrate-N, nitrite-N, dissolved sulphate, hardness

B: pH, specific conductance, total alkalinity, dissolved metals, total ammonia-N, nitrate-N, nitrite-N, dissolved sulphate, hardness

H: hydrocarbons including BTEX, LEPH, HEPH, VPH, PAH

## SCHEDULE A – PART 3
## AQUATIC RESOURCES MONITORING PROGRAM

| Station ID | Benthics/ Sediments | Fisheries |
|---|---|---|
| MH-11 | BA-LFF | |
| MH-12 | BA-LFF | |
| MH-13 | BA-LFF | BA-LFF |
| MH-04 | BA-LFF | |
| MH-29 | BA-LFF | |
| MH-30 | BA-LFF | BA-LFF |

BA-LFF: Every two years during the low flow period (August or September)

Benthics: field collection and laboratory taxonomy using CABIN wadeable stream protocol.
Sediment: metals, total organic carbon and particle size
Fisheries: population and fish size

## SCHEDULE B – PHYSICAL MONITORING

Inspection of Relevant Mine Components

| Year | Frequency |
|---|---|
| 2017- 2026 | Annually |
| 2027-2040 | Years 2031, 2036, 2040 |

# APPENDIX B:

# ALS LABORATORY RESULTS FOR SURFACE WATER AND SEDIMENT SAMPLES, AUGUST 2022

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200850-AA** | Page | : 1 of 10 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Aug-2022 16:45 |
| PO | : 10289 | Date Analysis Commenced | : 15-Aug-2022 |
| C-O-C number | : ---- | Issue Date | : 23-Aug-2022 14:11 |
| Sampler | : ---- | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 11 | | |
| No. of samples analysed | : 11 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Metals, Burnaby, British Columbia |
| Delson Resende | Lab Assistant | Metals, Burnaby, British Columbia |
| Hamideh Moradi | Analyst | Metals, Burnaby, British Columbia |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |
| Kyle Chang | Lab Assistant | Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Inorganics, Burnaby, British Columbia |
| Owen Cheng | | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| - | No Unit |
| µg/L | micrograms per litre |
| µS/cm | Microsiemens per centimetre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLDS* | *Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.* |
| *DLM* | *Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).* |

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-02_2022-08-08 | SD_MH-04_2022-08-08 | SD_MH-11_2022-08-08 | SD_MH-12_2022-08-08 | SD_MH-13_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 09-Aug-2022 10:02 | 08-Aug-2022 15:45 | 10-Aug-2022 10:45 | 09-Aug-2022 11:45 | 09-Aug-2022 13:30 |
| | | | | | WR2200850-001 | WR2200850-002 | WR2200850-003 | WR2200850-004 | WR2200850-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 360 | 142 | 211 | 162 | 190 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 1070 | 297 | 375 | 317 | 358 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 584 | 147 | 196 | 170 | 197 |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | 564 | 144 | 187 | 160 | 185 |
| **pH** | ---- | E108 | 0.10 | pH units | 7.98 | 8.17 | 8.23 | 8.30 | 8.27 |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 781 | 170 | 201 | 177 | 192 |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 5.5 | <1.0 | <1.0 | 1.0 | 1.7 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | <0.0050 | 0.0089 | <0.0050 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.250 DLDS | <0.050 | <0.050 | <0.050 | <0.050 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | <0.0250 DLDS | 0.134 | 0.0854 | 0.0412 | 0.0127 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0050 DLDS | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 267 | 14.7 | 12.0 | 7.93 | 6.23 |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0128 | 0.0048 | 0.0085 | 0.0093 | 0.0128 |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | <0.00010 | 0.00012 | 0.00015 | 0.00022 | 0.00012 |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00074 | 0.00042 | 0.00062 | 0.00087 | 0.00054 |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | 0.193 | 0.0210 | 0.0650 | 0.0738 | 0.155 |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.000104 | 0.000261 | 0.0000691 | 0.0000410 | 0.0000250 |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | 198 | 52.9 | 62.4 | 54.6 | 53.6 |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | 0.00100 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00290 |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | 0.121 | <0.010 | 0.054 | 0.012 | 0.247 |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000346 | 0.000239 | 0.000265 | 0.000281 | 0.000132 |
| **lithium, total** | 7439-93-2 | E420 | 0.0010 | mg/L | <0.0010 | 0.0014 | 0.0017 | 0.0015 | 0.0012 |
| **magnesium, total** | 7439-95-4 | E420 | 0.100 | mg/L | 17.0 | 3.00 | 7.58 | 5.66 | 12.5 |

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-02_2022-08-08 | SD_MH-04_2022-08-08 | SD_MH-11_2022-08-08 | SD_MH-12_2022-08-08 | SD_MH-13_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 09-Aug-2022 10:02 | 08-Aug-2022 15:45 | 10-Aug-2022 10:45 | 09-Aug-2022 11:45 | 09-Aug-2022 13:30 |
| | | | | | WR2200850-001 | WR2200850-002 | WR2200850-003 | WR2200850-004 | WR2200850-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 2.37 | 0.00075 | 0.00869 | 0.00163 | 0.0113 |
| mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00141 | 0.000665 | 0.000851 | 0.00120 | 0.00106 |
| nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | 0.00107 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| potassium, total | 7440-09-7 | E420 | 0.100 | mg/L | 2.21 | 0.379 | 0.355 | 0.422 | 0.293 |
| selenium, total | 7782-49-2 | E420 | 0.050 | µg/L | 0.088 | 0.734 | 0.532 | 0.579 | 0.512 |
| silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 6.14 | 3.33 | 3.79 | 4.32 | 3.38 |
| silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 11.0 | 0.785 | 1.04 | 0.950 | 0.875 |
| strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.690 | 0.186 | 0.248 | 0.205 | 0.202 |
| sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 100 | 5.12 | 4.38 | 2.69 | 2.32 |
| thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00140 | 0.000745 | 0.000952 | 0.000854 | 0.00116 |
| vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | 0.0145 | 0.0043 | 0.0058 | <0.0030 | <0.0030 |
| zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0024 | 0.0020 | 0.0069 | 0.0025 | 0.0029 |
| antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00010 | 0.00014 | 0.00016 | 0.00021 | 0.00011 |
| arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00071 | 0.00042 | 0.00062 | 0.00087 | 0.00050 |
| barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.184 | 0.0204 | 0.0617 | 0.0792 | 0.153 |
| beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000692 | 0.000261 | 0.0000576 | 0.0000416 | 0.0000149 |
| calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 205 | 53.7 | 65.4 | 58.2 | 56.7 |
| chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | 0.00099 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |

## Analytical Results

| Sub-Matrix: Surface Water (Matrix: Water) | | | | Client sample ID | SD_MH-02_2022-08-08 | SD_MH-04_2022-08-08 | SD_MH-11_2022-08-08 | SD_MH-12_2022-08-08 | SD_MH-13_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 09-Aug-2022 10:02 | 08-Aug-2022 15:45 | 10-Aug-2022 10:45 | 09-Aug-2022 11:45 | 09-Aug-2022 13:30 |
| Analyte | CAS Number | Method | LOR | Unit | WR2200850-001 | WR2200850-002 | WR2200850-003 | WR2200850-004 | WR2200850-005 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00038 | 0.00048 | 0.00034 | 0.00033 | 0.00048 |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | 0.070 | <0.010 | 0.034 | <0.010 | 0.108 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000080 | 0.000134 | 0.000114 | <0.000050 | <0.000050 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | <0.0010 | 0.0015 | 0.0018 | 0.0015 | 0.0012 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 17.6 | 3.09 | 7.84 | 6.01 | 13.4 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 2.51 | 0.00046 | 0.00745 | 0.00078 | 0.00727 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00147 | 0.000715 | 0.000930 | 0.00124 | 0.00106 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | 0.00108 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 2.27 | 0.399 | 0.366 | 0.446 | 0.325 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.118 | 0.874 | 0.680 | 0.668 | 0.606 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 5.71 | 3.02 | 3.64 | 4.35 | 3.54 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 11.1 | 0.814 | 1.05 | 1.01 | 0.934 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.729 | 0.207 | 0.276 | 0.227 | 0.211 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 92.7 | 5.13 | 4.28 | 2.99 | 2.44 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00143 | 0.000765 | 0.000935 | 0.000910 | 0.00127 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0134 | 0.0045 | 0.0049 | 0.0015 | <0.0010 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Speciated Metals** | | | | | | | | | |
| **chromium, hexavalent [Cr VI], total** | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-08-08 | SD_MH-22_2022-08-08 | SD_MH-29_2022-08-08 | SD_MH-FB_2022-08-08 | SD_MH-FD_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 09-Aug-2022 12:00 | 10-Aug-2022 14:20 | 10-Aug-2022 12:00 | 10-Aug-2022 | 09-Aug-2022 |
| | | | | | WR2200850-006 | WR2200850-007 | WR2200850-008 | WR2200850-009 | WR2200850-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | 196 | 106 | 182 | <1.0 | 196 |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | 360 | 273 | 337 | <2.0 | 359 |
| **hardness (as CaCO3), dissolved** | ---- | EC100 | 0.60 | mg/L | 199 | 135 | 182 | <0.60 | 198 |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | 188 | 135 | 180 | <0.60 | 201 |
| **pH** | ---- | E108 | 0.10 | pH units | 8.23 | 7.93 | 8.25 | 5.23 | 8.23 |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | 196 | 158 | 193 | <10 | 190 |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | 1.3 | <1.0 | <1.0 | <1.0 | 1.3 |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | 0.0056 | <0.0050 | <0.0050 | <0.0050 | 0.0059 |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | 0.0076 | 0.117 | 0.0398 | <0.0050 | 0.0076 |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | 2.64 | 33.3 | 2.79 | <0.30 | 2.64 |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | 0.0101 | <0.0030 | 0.0066 | <0.0030 | 0.0082 |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00011 | 0.00231 | 0.00018 | <0.00010 | 0.00011 |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00048 | 0.00383 | 0.00082 | <0.00010 | 0.00052 |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | 0.194 | 0.0159 | 0.0518 | <0.00010 | 0.196 |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.0000155 | 0.00316 | 0.0000609 | <0.0000050 | 0.0000086 |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | 54.6 | 44.1 | 63.2 | <0.050 | 59.6 |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0.00062 | <0.00050 | <0.00050 |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | 0.172 | <0.010 | 0.014 | <0.010 | 0.163 |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | 0.000223 | <0.000050 | <0.000050 | <0.000050 |
| **lithium, total** | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0012 | 0.0052 | 0.0016 | <0.0010 | 0.0012 |
| **magnesium, total** | 7439-95-4 | E420 | 0.100 | mg/L | 12.5 | 5.97 | 5.42 | <0.100 | 12.7 |
| **manganese, total** | 7439-96-5 | E420 | 0.00010 | mg/L | 0.0128 | 0.00038 | 0.00395 | <0.00010 | 0.0125 |

## Analytical Results

Sub-Matrix: **Surface Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-08-08 | SD_MH-22_2022-08-08 | SD_MH-29_2022-08-08 | SD_MH-FB_2022-08-08 | SD_MH-FD_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 09-Aug-2022 12:00 | 10-Aug-2022 14:20 | 10-Aug-2022 12:00 | 10-Aug-2022 | 09-Aug-2022 |
| | | | | | WR2200850-006 | WR2200850-007 | WR2200850-008 | WR2200850-009 | WR2200850-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Total Metals** | | | | | | | | | |
| **mercury, total** | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, total** | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00182 | 0.00876 | 0.000655 | <0.000050 | 0.00183 |
| **nickel, total** | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | 0.00333 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, total** | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, total** | 7440-09-7 | E420 | 0.100 | mg/L | 0.300 | 0.545 | 0.254 | <0.100 | 0.279 |
| **selenium, total** | 7782-49-2 | E420 | 0.050 | µg/L | 0.427 | 11.5 | 0.497 | <0.050 | 0.409 |
| **silicon, total** | 7440-21-3 | E420 | 0.10 | mg/L | 3.91 | 4.51 | 4.05 | <0.10 | 3.83 |
| **silver, total** | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, total** | 7440-23-5 | E420 | 0.050 | mg/L | 0.975 | 0.834 | 0.893 | <0.050 | 0.985 |
| **strontium, total** | 7440-24-6 | E420 | 0.00020 | mg/L | 0.176 | 0.201 | 0.220 | <0.00020 | 0.184 |
| **sulfur, total** | 7704-34-9 | E420 | 0.50 | mg/L | 0.89 | 11.9 | 1.22 | <0.50 | 1.37 |
| **thallium, total** | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | 0.000016 | <0.000010 | <0.000010 | <0.000010 |
| **tin, total** | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, total** | 7440-32-6 | E420 | 0.00030 | mg/L | 0.00042 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, total** | 7440-61-1 | E420 | 0.000010 | mg/L | 0.000688 | 0.00286 | 0.000557 | <0.000010 | 0.000685 |
| **vanadium, total** | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, total** | 7440-66-6 | E420 | 0.0030 | mg/L | <0.0030 | 0.424 | <0.0030 | <0.0030 | <0.0030 |
| **zirconium, total** | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Dissolved Metals** | | | | | | | | | |
| **aluminum, dissolved** | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0029 | <0.0010 | 0.0022 | <0.0010 | 0.0026 |
| **antimony, dissolved** | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00010 | 0.00234 | 0.00017 | <0.00010 | <0.00010 |
| **arsenic, dissolved** | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00046 | 0.00378 | 0.00081 | <0.00010 | 0.00042 |
| **barium, dissolved** | 7440-39-3 | E421 | 0.00010 | mg/L | 0.195 | 0.0161 | 0.0540 | <0.00010 | 0.203 |
| **beryllium, dissolved** | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **bismuth, dissolved** | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| **boron, dissolved** | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| **cadmium, dissolved** | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000092 | 0.00329 | 0.0000646 | <0.0000050 | 0.0000051 |
| **calcium, dissolved** | 7440-70-2 | E421 | 0.050 | mg/L | 57.7 | 44.2 | 63.9 | <0.050 | 57.6 |
| **chromium, dissolved** | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **cobalt, dissolved** | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **copper, dissolved** | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00024 | 0.00037 | 0.00037 | <0.00020 | 0.00024 |

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-15_2022-08-08 | SD_MH-22_2022-08-08 | SD_MH-29_2022-08-08 | SD_MH-FB_2022-08-08 | SD_MH-FD_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 09-Aug-2022 12:00 | 10-Aug-2022 14:20 | 10-Aug-2022 12:00 | 10-Aug-2022 | 09-Aug-2022 |
| | | | | | WR2200850-006 | WR2200850-007 | WR2200850-008 | WR2200850-009 | WR2200850-010 |
| | | | | | Result | Result | Result | Result | Result |
| **Dissolved Metals** | | | | | | | | | |
| **iron, dissolved** | 7439-89-6 | E421 | 0.010 | mg/L | 0.088 | <0.010 | <0.010 | <0.010 | 0.087 |
| **lead, dissolved** | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | 0.000189 | <0.000050 | <0.000050 | <0.000050 |
| **lithium, dissolved** | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0012 | 0.0052 | 0.0015 | <0.0010 | 0.0012 |
| **magnesium, dissolved** | 7439-95-4 | E421 | 0.100 | mg/L | 13.3 | 6.08 | 5.52 | <0.100 | 13.2 |
| **manganese, dissolved** | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00549 | 0.00036 | 0.00320 | <0.00010 | 0.00553 |
| **mercury, dissolved** | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| **molybdenum, dissolved** | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00184 | 0.00886 | 0.000633 | <0.000050 | 0.00178 |
| **nickel, dissolved** | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | 0.00326 | <0.00050 | <0.00050 | <0.00050 |
| **phosphorus, dissolved** | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| **potassium, dissolved** | 7440-09-7 | E421 | 0.100 | mg/L | 0.302 | 0.557 | 0.270 | <0.100 | 0.289 |
| **selenium, dissolved** | 7782-49-2 | E421 | 0.050 | µg/L | 0.457 | 12.0 | 0.456 | <0.050 | 0.421 |
| **silicon, dissolved** | 7440-21-3 | E421 | 0.050 | mg/L | 3.88 | 4.63 | 4.16 | <0.050 | 3.87 |
| **silver, dissolved** | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **sodium, dissolved** | 7440-23-5 | E421 | 0.050 | mg/L | 0.979 | 0.813 | 0.888 | <0.050 | 0.966 |
| **strontium, dissolved** | 7440-24-6 | E421 | 0.00020 | mg/L | 0.189 | 0.217 | 0.218 | <0.00020 | 0.186 |
| **sulfur, dissolved** | 7704-34-9 | E421 | 0.50 | mg/L | 0.92 | 11.8 | 1.05 | <0.50 | 1.17 |
| **thallium, dissolved** | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | 0.000018 | <0.000010 | <0.000010 | <0.000010 |
| **tin, dissolved** | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **titanium, dissolved** | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| **uranium, dissolved** | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000695 | 0.00294 | 0.000589 | <0.000010 | 0.000706 |
| **vanadium, dissolved** | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **zinc, dissolved** | 7440-66-6 | E421 | 0.0010 | mg/L | <0.0010 | 0.454 | <0.0010 | <0.0010 | <0.0010 |
| **zirconium, dissolved** | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **dissolved mercury filtration location** | ---- | EP509 | - | - | Field | Field | Field | Field | Field |
| **dissolved metals filtration location** | ---- | EP421 | - | - | Field | Field | Field | Field | Field |
| **Speciated Metals** | | | | | | | | | |
| **chromium, hexavalent [Cr VI], total** | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| **chromium, trivalent [Cr III], total** | 16065-83-1 | EC535 | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

## *Analytical Results*

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| Analyte | CAS Number | Method | LOR | Unit | SD_MH-TB_2022-08-08 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 11-Aug-2022 | ---- | ---- | ---- | ---- |
| | | | | | WR2200850-011 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Physical Tests** | | | | | | | | | |
| **alkalinity, total (as CaCO3)** | ---- | E290 | 1.0 | mg/L | <1.0 | ---- | ---- | ---- | ---- |
| **conductivity** | ---- | E100 | 2.0 | µS/cm | <2.0 | ---- | ---- | ---- | ---- |
| **hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A | 0.60 | mg/L | <0.60 | ---- | ---- | ---- | ---- |
| **pH** | ---- | E108 | 0.10 | pH units | 5.23 | ---- | ---- | ---- | ---- |
| **solids, total dissolved [TDS]** | ---- | E162 | 10 | mg/L | <10 | ---- | ---- | ---- | ---- |
| **solids, total suspended [TSS]** | ---- | E160-L | 1.0 | mg/L | <1.0 | ---- | ---- | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | |
| **ammonia, total (as N)** | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **bromide** | 24959-67-9 | E235.Br-L | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **nitrate (as N)** | 14797-55-8 | E235.NO3-L | 0.0050 | mg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **nitrite (as N)** | 14797-65-0 | E235.NO2-L | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| **sulfate (as SO4)** | 14808-79-8 | E235.SO4 | 0.30 | mg/L | <0.30 | ---- | ---- | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **aluminum, total** | 7429-90-5 | E420 | 0.0030 | mg/L | <0.0030 | ---- | ---- | ---- | ---- |
| **antimony, total** | 7440-36-0 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **arsenic, total** | 7440-38-2 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **barium, total** | 7440-39-3 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **beryllium, total** | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | ---- | ---- | ---- | ---- |
| **bismuth, total** | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **boron, total** | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| **cadmium, total** | 7440-43-9 | E420 | 0.0000050 | mg/L | <0.0000050 | ---- | ---- | ---- | ---- |
| **calcium, total** | 7440-70-2 | E420 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **chromium, total** | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **cobalt, total** | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **copper, total** | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **iron, total** | 7439-89-6 | E420 | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |
| **lead, total** | 7439-92-1 | E420 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **lithium, total** | 7439-93-2 | E420 | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| **magnesium, total** | 7439-95-4 | E420 | 0.100 | mg/L | <0.100 | ---- | ---- | ---- | ---- |
| **manganese, total** | 7439-96-5 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **mercury, total** | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | ---- | ---- | ---- | ---- |
| **molybdenum, total** | 7439-98-7 | E420 | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |

## Analytical Results

Sub-Matrix: **Surface Water**

(Matrix: **Water**)

| | | | | Client sample ID | SD_MH-TB_2022-08-08 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 11-Aug-2022 | ---- | ---- | ---- | ---- |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | WR2200850-011 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **nickel, total** | 7440-02-0 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **phosphorus, total** | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **potassium, total** | 7440-09-7 | E420 | 0.100 | mg/L | <0.100 | ---- | ---- | ---- | ---- |
| **selenium, total** | 7782-49-2 | E420 | 0.050 | µg/L | <0.050 | ---- | ---- | ---- | ---- |
| **silicon, total** | 7440-21-3 | E420 | 0.10 | mg/L | <0.10 | ---- | ---- | ---- | ---- |
| **silver, total** | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **sodium, total** | 7440-23-5 | E420 | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **strontium, total** | 7440-24-6 | E420 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |
| **sulfur, total** | 7704-34-9 | E420 | 0.50 | mg/L | <0.50 | ---- | ---- | ---- | ---- |
| **thallium, total** | 7440-28-0 | E420 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **tin, total** | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **titanium, total** | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | ---- | ---- | ---- | ---- |
| **uranium, total** | 7440-61-1 | E420 | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **vanadium, total** | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **zinc, total** | 7440-66-6 | E420 | 0.0030 | mg/L | <0.0030 | ---- | ---- | ---- | ---- |
| **zirconium, total** | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | ---- | ---- | ---- | ---- |

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200850-AA** | Page | : 1 of 22 |
| Client | : Teck Metals Ltd | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Aug-2022 16:45 |
| PO | : 10289 | Date Analysis Commenced | : 15-Aug-2022 |
| C-O-C number | : ---- | Issue Date | : 23-Aug-2022 14:11 |
| Sampler | : ---- | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 11 | | |
| No. of samples analysed | : 11 | | |



This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Angela Ren | Team Leader - Metals | Vancouver Metals, Burnaby, British Columbia |
| Delson Resende | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |
| Hamideh Moradi | Analyst | Vancouver Metals, Burnaby, British Columbia |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Vancouver Metals, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Vancouver Metals, Burnaby, British Columbia |
| Kyle Chang | Lab Assistant | Vancouver Metals, Burnaby, British Columbia |
| Lindsay Gung | Supervisor - Water Chemistry | Vancouver Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Vancouver Inorganics, Burnaby, British Columbia |
| Owen Cheng | | Vancouver Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Physical Tests (QC Lot: 603737)** | | | | | | | | | | | |
| WR2200850-003 | SD_MH-11_2022-08-08 | pH | ---- | E108 | 0.10 | pH units | 8.23 | 8.24 | 0.121% | 4% | ---- |
| **Physical Tests (QC Lot: 603738)** | | | | | | | | | | | |
| WR2200850-003 | SD_MH-11_2022-08-08 | alkalinity, total (as CaCO3) | ---- | E290 | 1.0 | mg/L | 211 | 180 | 16.0% | 20% | ---- |
| **Physical Tests (QC Lot: 603739)** | | | | | | | | | | | |
| WR2200850-003 | SD_MH-11_2022-08-08 | conductivity | ---- | E100 | 2.0 | µS/cm | 375 | 341 | 9.50% | 10% | ---- |
| **Physical Tests (QC Lot: 604409)** | | | | | | | | | | | |
| WR2200849-008 | Anonymous | solids, total dissolved [TDS] | ---- | E162 | 20 | mg/L | 264 | 266 | 0.566% | 20% | ---- |
| **Anions and Nutrients (QC Lot: 603782)** | | | | | | | | | | | |
| WR2200850-001 | SD_MH-02_2022-08-08 | ammonia, total (as N) | 7664-41-7 | E298 | 0.0050 | mg/L | <0.0050 | <0.0050 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 603794)** | | | | | | | | | | | |
| WR2200850-007 | SD_MH-22_2022-08-08 | aluminum, total | 7429-90-5 | E420 | 0.0030 | mg/L | <0.0030 | <0.0030 | 0 | Diff <2x LOR | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.00010 | mg/L | 0.00231 | 0.00238 | 2.91% | 20% | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.00010 | mg/L | 0.00383 | 0.00387 | 0.904% | 20% | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.00010 | mg/L | 0.0159 | 0.0155 | 2.26% | 20% | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.0000050 | mg/L | 0.00316 | 0.00325 | 2.69% | 20% | ---- |
| | | calcium, total | 7440-70-2 | E420 | 0.050 | mg/L | 44.1 | 44.5 | 1.00% | 20% | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | iron, total | 7439-89-6 | E420 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.000050 | mg/L | 0.000223 | 0.000226 | 0.000004 | Diff <2x LOR | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0010 | mg/L | 0.0052 | 0.0053 | 0.00006 | Diff <2x LOR | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 0.100 | mg/L | 5.97 | 5.93 | 0.741% | 20% | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.00010 | mg/L | 0.00038 | 0.00036 | 0.00002 | Diff <2x LOR | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.000050 | mg/L | 0.00876 | 0.00919 | 4.85% | 20% | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.00050 | mg/L | 0.00333 | 0.00332 | 0.000007 | Diff <2x LOR | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, total | 7440-09-7 | E420 | 0.100 | mg/L | 0.545 | 0.543 | 0.002 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Total Metals (QC Lot: 603794) - continued** | | | | | | | | | | | |
| WR2200850-007 | SD_MH-22_2022-08-08 | selenium, total | 7782-49-2 | E420 | 0.000050 | mg/L | 11.5 µg/L | 0.0119 | 3.29% | 20% | ---- |
| | | silicon, total | 7440-21-3 | E420 | 0.10 | mg/L | 4.51 | 4.54 | 0.501% | 20% | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, total | 7440-23-5 | E420 | 0.050 | mg/L | 0.834 | 0.837 | 0.274% | 20% | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.00020 | mg/L | 0.201 | 0.209 | 3.77% | 20% | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 0.50 | mg/L | 11.9 | 11.8 | 0.758% | 20% | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.000010 | mg/L | 0.000016 | 0.000016 | 0.0000008 | Diff <2x LOR | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.000010 | mg/L | 0.00286 | 0.00290 | 1.25% | 20% | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.0030 | mg/L | 0.424 | 0.429 | 1.15% | 20% | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 603802)** | | | | | | | | | | | |
| VA22B8907-021 | Anonymous | aluminum, total | 7429-90-5 | E420 | 0.0150 | mg/L | 1.21 | 1.45 | 18.2% | 20% | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.00050 | mg/L | 0.00106 | 0.00113 | 0.00006 | Diff <2x LOR | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.00050 | mg/L | 0.0416 | 0.0417 | 0.220% | 20% | ---- |
| | | barium, total | 7440-39-3 | E420 | 0.00050 | mg/L | 0.0395 | 0.0398 | 0.733% | 20% | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.000100 | mg/L | 0.000200 | 0.000207 | 0.000007 | Diff <2x LOR | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.000250 | mg/L | <0.000250 | <0.000250 | 0 | Diff <2x LOR | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.050 | mg/L | 1.41 | 1.44 | 2.03% | 20% | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.0000250 | mg/L | <0.0000250 | <0.0000250 | 0 | Diff <2x LOR | ---- |
| | | calcium, total | 7440-70-2 | E420 | 0.250 | mg/L | 796 | 834 | 4.59% | 20% | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.00050 | mg/L | 0.00102 | 0.00102 | 0.000006 | Diff <2x LOR | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.00050 | mg/L | 0.00501 | 0.00510 | 1.79% | 20% | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.00250 | mg/L | <0.00250 | <0.00250 | 0 | Diff <2x LOR | ---- |
| | | iron, total | 7439-89-6 | E420 | 0.050 | mg/L | 1.01 | 1.17 | 14.2% | 20% | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.000250 | mg/L | 0.00112 | 0.00120 | 0.000079 | Diff <2x LOR | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0050 | mg/L | 0.0970 | 0.102 | 5.43% | 20% | ---- |
| | | magnesium, total | 7439-95-4 | E420 | 0.0250 | mg/L | 71.0 | 73.2 | 3.05% | 20% | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.00050 | mg/L | 0.0318 | 0.0347 | 8.73% | 20% | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.000250 | mg/L | 0.00172 | 0.00182 | 0.000109 | Diff <2x LOR | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.00250 | mg/L | <0.00250 | <0.00250 | 0 | Diff <2x LOR | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 0.250 | mg/L | 0.346 | 0.327 | 0.019 | Diff <2x LOR | ---- |
| | | potassium, total | 7440-09-7 | E420 | 0.250 | mg/L | 3.69 | 3.71 | 0.418% | 20% | ---- |

Sub-Matrix: **Water**

**Laboratory Duplicate (DUP) Report**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QC Lot: 603802) - continued** | | | | | | | | | | | |
| VA22B8907-021 | Anonymous | selenium, total | 7782-49-2 | E420 | 0.000250 | mg/L | 0.0124 | 0.0128 | 2.95% | 20% | ---- |
| | | silicon, total | 7440-21-3 | E420 | 0.50 | mg/L | 26.0 | 26.5 | 2.03% | 20% | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.000050 | mg/L | 0.000086 | 0.000097 | 0.000011 | Diff <2x LOR | ---- |
| | | sodium, total | 7440-23-5 | E420 | 0.250 | mg/L | 351 | 357 | 1.56% | 20% | ---- |
| | | strontium, total | 7440-24-6 | E420 | 0.00100 | mg/L | 9.74 | 9.86 | 1.28% | 20% | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 2.50 | mg/L | 599 | 598 | 0.112% | 20% | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.000050 | mg/L | 0.000180 | 0.000193 | 0.000013 | Diff <2x LOR | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.00150 | mg/L | 0.0104 | 0.0119 | 0.00151 | Diff <2x LOR | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.000050 | mg/L | 0.0137 | 0.0141 | 3.44% | 20% | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.00250 | mg/L | 0.0254 | 0.0254 | 0.124% | 20% | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.0150 | mg/L | <0.0150 | <0.0150 | 0 | Diff <2x LOR | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.00100 | mg/L | 0.00229 | 0.00212 | 0.00017 | Diff <2x LOR | ---- |
| **Total Metals (QC Lot: 610976)** | | | | | | | | | | | |
| WR2200830-005 | Anonymous | mercury, total | 7439-97-6 | E508 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 603752)** | | | | | | | | | | | |
| VA22B8907-014 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0048 | 0.0048 | 0.00002 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.0100 | 0.00991 | 1.35% | 20% | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.138 | 0.140 | 1.20% | 20% | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0399 | 0.0404 | 1.22% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000100 | mg/L | <0.000100 | <0.000100 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | 0.234 | 0.237 | 0.900% | 20% | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000158 | 0.0000137 | 0.0000021 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 54.7 | 54.4 | 0.432% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | 0.00098 | 0.00096 | 0.00002 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00068 | 0.00067 | 0.00001 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | 0.000365 | 0.000370 | 0.000005 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0884 | 0.0829 | 6.40% | 20% | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.0050 | mg/L | 9.71 | 9.81 | 1.02% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00163 | 0.00171 | 4.73% | 20% | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.0107 | 0.0104 | 2.76% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Dissolved Metals (QC Lot: 603752) - continued** | | | | | | | | | | | |
| VA22B8907-014 | Anonymous | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | 0.535 | 0.588 | 9.34% | 20% | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.050 | mg/L | 4.01 | 4.07 | 1.53% | 20% | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | 0.00424 | 0.00429 | 1.02% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 10.7 | 10.8 | 0.368% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 75.0 | 75.2 | 0.264% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 1.24 | 1.18 | 4.58% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 45.8 | 45.4 | 0.829% | 20% | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | 0.000016 | 0.000014 | 0.000002 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | 0.00639 | 0.00645 | 0.985% | 20% | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.00251 | 0.00253 | 0.554% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | 0.0105 | 0.0105 | 0.572% | 20% | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0180 | 0.0190 | 5.74% | 20% | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 603753)** | | | | | | | | | | | |
| WR2200850-004 | SD_MH-12_2022-08-08 | aluminum, dissolved | 7429-90-5 | E421 | 0.0010 | mg/L | 0.0025 | 0.0025 | 0.00003 | Diff <2x LOR | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.00010 | mg/L | 0.00021 | 0.00021 | 0.000003 | Diff <2x LOR | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.00010 | mg/L | 0.00087 | 0.00089 | 0.00002 | Diff <2x LOR | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | 0.00010 | mg/L | 0.0792 | 0.0734 | 7.61% | 20% | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.000020 | mg/L | <0.000020 | <0.000020 | 0 | Diff <2x LOR | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.0000050 | mg/L | 0.0000416 | 0.0000468 | 0.0000052 | Diff <2x LOR | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | 0.050 | mg/L | 58.2 | 58.3 | 0.113% | 20% | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.00020 | mg/L | 0.00033 | 0.00033 | 0.000002 | Diff <2x LOR | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 0.010 | mg/L | <0.010 | <0.010 | 0 | Diff <2x LOR | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.000050 | mg/L | <0.000050 | <0.000050 | 0 | Diff <2x LOR | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0010 | mg/L | 0.0015 | 0.0014 | 0.00004 | Diff <2x LOR | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 0.100 | mg/L | 6.01 | 6.13 | 1.85% | 20% | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.00010 | mg/L | 0.00078 | 0.00082 | 0.00004 | Diff <2x LOR | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.000050 | mg/L | 0.00124 | 0.00119 | 4.25% | 20% | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QC Lot: 603753) - continued** | | | | | | | | | | | |
| WR2200850-004 | SD_MH-12_2022-08-08 | phosphorus, dissolved | 7723-14-0 | E421 | 0.050 | mg/L | <0.050 | <0.050 | 0 | Diff <2x LOR | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 0.100 | mg/L | 0.446 | 0.439 | 0.007 | Diff <2x LOR | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.000050 | mg/L | 0.668 µg/L | 0.000680 | 1.70% | 20% | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 0.050 | mg/L | 4.35 | 4.34 | 0.164% | 20% | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 0.050 | mg/L | 1.01 | 0.984 | 2.50% | 20% | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | 0.00020 | mg/L | 0.227 | 0.222 | 2.41% | 20% | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 0.50 | mg/L | 2.99 | 3.26 | 0.27 | Diff <2x LOR | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.000010 | mg/L | <0.000010 | <0.000010 | 0 | Diff <2x LOR | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.00010 | mg/L | <0.00010 | <0.00010 | 0 | Diff <2x LOR | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.00030 | mg/L | <0.00030 | <0.00030 | 0 | Diff <2x LOR | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.000010 | mg/L | 0.000910 | 0.000911 | 0.0904% | 20% | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.0010 | mg/L | 0.0015 | 0.0016 | 0.00007 | Diff <2x LOR | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.00020 | mg/L | <0.00020 | <0.00020 | 0 | Diff <2x LOR | ---- |
| **Dissolved Metals (QC Lot: 610979)** | | | | | | | | | | | |
| WR2200829-002 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | 0 | Diff <2x LOR | ---- |
| **Speciated Metals (QC Lot: 604157)** | | | | | | | | | | | |
| KS2202967-008 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.00050 | mg/L | <0.00050 | <0.00050 | 0 | Diff <2x LOR | ---- |
| **Speciated Metals (QC Lot: 605956)** | | | | | | | | | | | |
| VA22B8954-021 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.00050 | mg/L | 0.00060 | 0.00060 | 0 | Diff <2x LOR | ---- |

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Physical Tests (QCLot: 603738)** | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 603739)** | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | <1.0 | ---- |
| **Physical Tests (QCLot: 604403)** | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | <1.0 | ---- |
| **Physical Tests (QCLot: 604409)** | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | <10 | ---- |
| **Anions and Nutrients (QCLot: 603740)** | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | <0.050 | ---- |
| **Anions and Nutrients (QCLot: 603741)** | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | <0.0050 | ---- |
| **Anions and Nutrients (QCLot: 603742)** | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | <0.0010 | ---- |
| **Anions and Nutrients (QCLot: 603743)** | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | <0.30 | ---- |
| **Anions and Nutrients (QCLot: 603782)** | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | <0.0050 | ---- |
| **Total Metals (QCLot: 603794)** | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | <0.050 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | <0.010 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | <0.0010 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 603794) - continued** | | | | | | |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | <0.050 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | <0.050 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | <0.10 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | <0.050 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | <0.50 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| **Total Metals (QCLot: 603802)** | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | <0.050 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | <0.010 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | <0.0050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 603802) - continued** | | | | | | |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | <0.050 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | <0.050 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | <0.10 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | <0.050 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | <0.50 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | <0.0030 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | <0.00020 | ---- |
| **Total Metals (QCLot: 610976)** | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Dissolved Metals (QCLot: 603752)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 603752) - continued** | | | | | | |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 603753)** | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | <0.000020 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | <0.010 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | <0.0000050 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | <0.050 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | <0.010 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | <0.0050 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 603753) - continued** | | | | | | |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | <0.050 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | <0.050 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | <0.000050 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | <0.050 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | <0.050 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | <0.50 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | <0.00010 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | <0.00030 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | <0.000010 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | <0.00050 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | <0.0010 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | <0.00020 | ---- |
| **Dissolved Metals (QCLot: 610979)** | | | | | | |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | <0.0000050 | ---- |
| **Speciated Metals (QCLot: 604157)** | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | <0.00050 | ---- |
| **Speciated Metals (QCLot: 605956)** | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | <0.00050 | ---- |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 603737)** | | | | | | | | | |
| pH | ---- | E108 | ---- | pH units | 7 pH units | 100 | 98.0 | 102 | ---- |
| **Physical Tests (QCLot: 603738)** | | | | | | | | | |
| alkalinity, total (as CaCO3) | ---- | E290 | 1 | mg/L | 500 mg/L | 109 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 603739)** | | | | | | | | | |
| conductivity | ---- | E100 | 1 | µS/cm | 146.9 µS/cm | 99.2 | 90.0 | 110 | ---- |
| **Physical Tests (QCLot: 604403)** | | | | | | | | | |
| solids, total suspended [TSS] | ---- | E160-L | 1 | mg/L | 150 mg/L | 106 | 85.0 | 115 | ---- |
| **Physical Tests (QCLot: 604409)** | | | | | | | | | |
| solids, total dissolved [TDS] | ---- | E162 | 10 | mg/L | 1000 mg/L | 106 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 603740)** | | | | | | | | | |
| bromide | 24959-67-9 | E235.Br-L | 0.05 | mg/L | 0.5 mg/L | 101 | 85.0 | 115 | ---- |
| **Anions and Nutrients (QCLot: 603741)** | | | | | | | | | |
| nitrate (as N) | 14797-55-8 | E235.NO3-L | 0.005 | mg/L | 2.5 mg/L | 98.8 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 603742)** | | | | | | | | | |
| nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.001 | mg/L | 0.5 mg/L | 99.8 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 603743)** | | | | | | | | | |
| sulfate (as SO4) | 14808-79-8 | E235.SO4 | 0.3 | mg/L | 100 mg/L | 99.8 | 90.0 | 110 | ---- |
| **Anions and Nutrients (QCLot: 603782)** | | | | | | | | | |
| ammonia, total (as N) | 7664-41-7 | E298 | 0.005 | mg/L | 0.2 mg/L | 102 | 85.0 | 115 | ---- |
| **Total Metals (QCLot: 603794)** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | 2 mg/L | 103 | 80.0 | 120 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | 1 mg/L | 103 | 80.0 | 120 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | 0.25 mg/L | 106 | 80.0 | 120 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | 0.1 mg/L | 102 | 80.0 | 120 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | 1 mg/L | 100 | 80.0 | 120 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | 0.1 mg/L | 101 | 80.0 | 120 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | 0.25 mg/L | 101 | 80.0 | 120 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | 0.25 mg/L | 99.9 | 80.0 | 120 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | 0.25 mg/L | 98.8 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

| Analyte | CAS Number | Method | LOR | Unit | Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 603794) - continued** | | | | | | | | | |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | 0.5 mg/L | 103 | 80.0 | 120 | ---- |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | 0.25 mg/L | 105 | 80.0 | 120 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | 0.5 mg/L | 101 | 80.0 | 120 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | 10 mg/L | 97.9 | 80.0 | 120 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | 50 mg/L | 107 | 80.0 | 120 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | 1 mg/L | 104 | 80.0 | 120 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | 10 mg/L | 109 | 80.0 | 120 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | 0.1 mg/L | 95.6 | 80.0 | 120 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | 50 mg/L | 109 | 80.0 | 120 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | 0.25 mg/L | 101 | 80.0 | 120 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | 50 mg/L | 102 | 80.0 | 120 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | 1 mg/L | 103 | 80.0 | 120 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | 0.5 mg/L | 102 | 80.0 | 120 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | 0.25 mg/L | 100.0 | 80.0 | 120 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | 0.005 mg/L | 102 | 80.0 | 120 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | 0.5 mg/L | 103 | 80.0 | 120 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | 0.5 mg/L | 100 | 80.0 | 120 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | 0.1 mg/L | 97.8 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 603802)** | | | | | | | | | |
| aluminum, total | 7429-90-5 | E420 | 0.003 | mg/L | 2 mg/L | 96.6 | 80.0 | 120 | ---- |
| antimony, total | 7440-36-0 | E420 | 0.0001 | mg/L | 1 mg/L | 97.8 | 80.0 | 120 | ---- |
| arsenic, total | 7440-38-2 | E420 | 0.0001 | mg/L | 1 mg/L | 95.4 | 80.0 | 120 | ---- |
| barium, total | 7440-39-3 | E420 | 0.0001 | mg/L | 0.25 mg/L | 98.9 | 80.0 | 120 | ---- |
| beryllium, total | 7440-41-7 | E420 | 0.00002 | mg/L | 0.1 mg/L | 97.8 | 80.0 | 120 | ---- |
| bismuth, total | 7440-69-9 | E420 | 0.00005 | mg/L | 1 mg/L | 92.4 | 80.0 | 120 | ---- |
| boron, total | 7440-42-8 | E420 | 0.01 | mg/L | 1 mg/L | 88.8 | 80.0 | 120 | ---- |
| cadmium, total | 7440-43-9 | E420 | 0.000005 | mg/L | 0.1 mg/L | 94.8 | 80.0 | 120 | ---- |
| calcium, total | 7440-70-2 | E420 | 0.05 | mg/L | 50 mg/L | 96.0 | 80.0 | 120 | ---- |
| chromium, total | 7440-47-3 | E420 | 0.0005 | mg/L | 0.25 mg/L | 91.6 | 80.0 | 120 | ---- |
| cobalt, total | 7440-48-4 | E420 | 0.0001 | mg/L | 0.25 mg/L | 94.7 | 80.0 | 120 | ---- |
| copper, total | 7440-50-8 | E420 | 0.0005 | mg/L | 0.25 mg/L | 93.1 | 80.0 | 120 | ---- |
| iron, total | 7439-89-6 | E420 | 0.01 | mg/L | 1 mg/L | 97.8 | 80.0 | 120 | ---- |
| lead, total | 7439-92-1 | E420 | 0.00005 | mg/L | 0.5 mg/L | 92.6 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Total Metals (QCLot: 603802) - continued** | | | | | | | | | |
| lithium, total | 7439-93-2 | E420 | 0.001 | mg/L | 0.25 mg/L | 97.5 | 80.0 | 120 | ---- |
| magnesium, total | 7439-95-4 | E420 | 0.005 | mg/L | 50 mg/L | 95.8 | 80.0 | 120 | ---- |
| manganese, total | 7439-96-5 | E420 | 0.0001 | mg/L | 0.25 mg/L | 93.2 | 80.0 | 120 | ---- |
| molybdenum, total | 7439-98-7 | E420 | 0.00005 | mg/L | 0.25 mg/L | 95.1 | 80.0 | 120 | ---- |
| nickel, total | 7440-02-0 | E420 | 0.0005 | mg/L | 0.5 mg/L | 93.3 | 80.0 | 120 | ---- |
| phosphorus, total | 7723-14-0 | E420 | 0.05 | mg/L | 10 mg/L | 89.0 | 80.0 | 120 | ---- |
| potassium, total | 7440-09-7 | E420 | 0.05 | mg/L | 50 mg/L | 98.0 | 80.0 | 120 | ---- |
| selenium, total | 7782-49-2 | E420 | 0.00005 | mg/L | 1 mg/L | 95.7 | 80.0 | 120 | ---- |
| silicon, total | 7440-21-3 | E420 | 0.1 | mg/L | 10 mg/L | 103 | 80.0 | 120 | ---- |
| silver, total | 7440-22-4 | E420 | 0.00001 | mg/L | 0.1 mg/L | 87.5 | 80.0 | 120 | ---- |
| sodium, total | 7440-23-5 | E420 | 0.05 | mg/L | 50 mg/L | 94.9 | 80.0 | 120 | ---- |
| strontium, total | 7440-24-6 | E420 | 0.0002 | mg/L | 0.25 mg/L | 98.9 | 80.0 | 120 | ---- |
| sulfur, total | 7704-34-9 | E420 | 0.5 | mg/L | 50 mg/L | 86.3 | 80.0 | 120 | ---- |
| thallium, total | 7440-28-0 | E420 | 0.00001 | mg/L | 1 mg/L | 94.2 | 80.0 | 120 | ---- |
| tin, total | 7440-31-5 | E420 | 0.0001 | mg/L | 0.5 mg/L | 93.8 | 80.0 | 120 | ---- |
| titanium, total | 7440-32-6 | E420 | 0.0003 | mg/L | 0.25 mg/L | 93.2 | 80.0 | 120 | ---- |
| uranium, total | 7440-61-1 | E420 | 0.00001 | mg/L | 0.005 mg/L | 97.0 | 80.0 | 120 | ---- |
| vanadium, total | 7440-62-2 | E420 | 0.0005 | mg/L | 0.5 mg/L | 95.6 | 80.0 | 120 | ---- |
| zinc, total | 7440-66-6 | E420 | 0.003 | mg/L | 0.5 mg/L | 94.8 | 80.0 | 120 | ---- |
| zirconium, total | 7440-67-7 | E420 | 0.0002 | mg/L | 0.1 mg/L | 93.7 | 80.0 | 120 | ---- |
| **Total Metals (QCLot: 610976)** | | | | | | | | | |
| mercury, total | 7439-97-6 | E508 | 0.000005 | mg/L | 0.0001 mg/L | 102 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 603752)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 97.2 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 100 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 95.9 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 95.7 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 98.2 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 89.3 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 93.2 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 93.3 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 94.5 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 93.4 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 94.0 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 96.2 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 97.1 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| Analyte | CAS Number | Method | LOR | Unit | Laboratory Control Sample (LCS) Report: Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals (QCLot: 603752) - continued** | | | | | | | | | |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 93.5 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 97.3 | 80.0 | 120 | ---- |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 98.7 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 96.0 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 104 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 94.4 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 101 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 98.3 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 92.0 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 94.2 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 92.7 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 95.0 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 102 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 94.8 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 94.0 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 93.3 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 93.3 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 94.9 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 96.0 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 94.1 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 98.0 | 80.0 | 120 | ---- |
| **Dissolved Metals (QCLot: 603753)** | | | | | | | | | |
| aluminum, dissolved | 7429-90-5 | E421 | 0.001 | mg/L | 2 mg/L | 94.9 | 80.0 | 120 | ---- |
| antimony, dissolved | 7440-36-0 | E421 | 0.0001 | mg/L | 1 mg/L | 96.4 | 80.0 | 120 | ---- |
| arsenic, dissolved | 7440-38-2 | E421 | 0.0001 | mg/L | 1 mg/L | 93.6 | 80.0 | 120 | ---- |
| barium, dissolved | 7440-39-3 | E421 | 0.0001 | mg/L | 0.25 mg/L | 93.3 | 80.0 | 120 | ---- |
| beryllium, dissolved | 7440-41-7 | E421 | 0.00002 | mg/L | 0.1 mg/L | 92.4 | 80.0 | 120 | ---- |
| bismuth, dissolved | 7440-69-9 | E421 | 0.00005 | mg/L | 1 mg/L | 97.8 | 80.0 | 120 | ---- |
| boron, dissolved | 7440-42-8 | E421 | 0.01 | mg/L | 1 mg/L | 90.4 | 80.0 | 120 | ---- |
| cadmium, dissolved | 7440-43-9 | E421 | 0.000005 | mg/L | 0.1 mg/L | 97.6 | 80.0 | 120 | ---- |
| calcium, dissolved | 7440-70-2 | E421 | 0.05 | mg/L | 50 mg/L | 94.4 | 80.0 | 120 | ---- |
| chromium, dissolved | 7440-47-3 | E421 | 0.0005 | mg/L | 0.25 mg/L | 92.4 | 80.0 | 120 | ---- |
| cobalt, dissolved | 7440-48-4 | E421 | 0.0001 | mg/L | 0.25 mg/L | 93.6 | 80.0 | 120 | ---- |
| copper, dissolved | 7440-50-8 | E421 | 0.0002 | mg/L | 0.25 mg/L | 94.1 | 80.0 | 120 | ---- |
| iron, dissolved | 7439-89-6 | E421 | 0.01 | mg/L | 1 mg/L | 106 | 80.0 | 120 | ---- |
| lead, dissolved | 7439-92-1 | E421 | 0.00005 | mg/L | 0.5 mg/L | 93.7 | 80.0 | 120 | ---- |
| lithium, dissolved | 7439-93-2 | E421 | 0.001 | mg/L | 0.25 mg/L | 91.9 | 80.0 | 120 | ---- |

Sub-Matrix: **Water**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 603753) - continued** | | | | | | | | | |
| magnesium, dissolved | 7439-95-4 | E421 | 0.005 | mg/L | 50 mg/L | 95.8 | 80.0 | 120 | ---- |
| manganese, dissolved | 7439-96-5 | E421 | 0.0001 | mg/L | 0.25 mg/L | 96.3 | 80.0 | 120 | ---- |
| molybdenum, dissolved | 7439-98-7 | E421 | 0.00005 | mg/L | 0.25 mg/L | 94.2 | 80.0 | 120 | ---- |
| nickel, dissolved | 7440-02-0 | E421 | 0.0005 | mg/L | 0.5 mg/L | 95.4 | 80.0 | 120 | ---- |
| phosphorus, dissolved | 7723-14-0 | E421 | 0.05 | mg/L | 10 mg/L | 95.0 | 80.0 | 120 | ---- |
| potassium, dissolved | 7440-09-7 | E421 | 0.05 | mg/L | 50 mg/L | 94.9 | 80.0 | 120 | ---- |
| selenium, dissolved | 7782-49-2 | E421 | 0.00005 | mg/L | 1 mg/L | 96.4 | 80.0 | 120 | ---- |
| silicon, dissolved | 7440-21-3 | E421 | 0.05 | mg/L | 10 mg/L | 103 | 80.0 | 120 | ---- |
| silver, dissolved | 7440-22-4 | E421 | 0.00001 | mg/L | 0.1 mg/L | 87.9 | 80.0 | 120 | ---- |
| sodium, dissolved | 7440-23-5 | E421 | 0.05 | mg/L | 50 mg/L | 94.7 | 80.0 | 120 | ---- |
| strontium, dissolved | 7440-24-6 | E421 | 0.0002 | mg/L | 0.25 mg/L | 96.2 | 80.0 | 120 | ---- |
| sulfur, dissolved | 7704-34-9 | E421 | 0.5 | mg/L | 50 mg/L | 84.2 | 80.0 | 120 | ---- |
| thallium, dissolved | 7440-28-0 | E421 | 0.00001 | mg/L | 1 mg/L | 93.5 | 80.0 | 120 | ---- |
| tin, dissolved | 7440-31-5 | E421 | 0.0001 | mg/L | 0.5 mg/L | 91.4 | 80.0 | 120 | ---- |
| titanium, dissolved | 7440-32-6 | E421 | 0.0003 | mg/L | 0.25 mg/L | 91.0 | 80.0 | 120 | ---- |
| uranium, dissolved | 7440-61-1 | E421 | 0.00001 | mg/L | 0.005 mg/L | 100 | 80.0 | 120 | ---- |
| vanadium, dissolved | 7440-62-2 | E421 | 0.0005 | mg/L | 0.5 mg/L | 95.1 | 80.0 | 120 | ---- |
| zinc, dissolved | 7440-66-6 | E421 | 0.001 | mg/L | 0.5 mg/L | 97.2 | 80.0 | 120 | ---- |
| zirconium, dissolved | 7440-67-7 | E421 | 0.0002 | mg/L | 0.1 mg/L | 92.2 | 80.0 | 120 | ---- |
| mercury, dissolved | 7439-97-6 | E509 | 0.000005 | mg/L | 0.0001 mg/L | 103 | 80.0 | 120 | ---- |
| **Speciated Metals (QCLot: 604157)** | | | | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | 0.25 mg/L | 99.3 | 90.0 | 110 | ---- |
| **Speciated Metals (QCLot: 605956)** | | | | | | | | | |
| chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.0005 | mg/L | 0.25 mg/L | 99.8 | 90.0 | 110 | ---- |

## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Anions and Nutrients (QCLot: 603740)** | | | | | | | | | | |
| WR2200853-002 | Anonymous | bromide | 24959-67-9 | E235.Br-L | 0.482 mg/L | 0.5 mg/L | 96.3 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 603741)** | | | | | | | | | | |
| WR2200853-002 | Anonymous | nitrate (as N) | 14797-55-8 | E235.NO3-L | 2.34 mg/L | 2.5 mg/L | 93.6 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 603742)** | | | | | | | | | | |
| WR2200853-002 | Anonymous | nitrite (as N) | 14797-65-0 | E235.NO2-L | 0.472 mg/L | 0.5 mg/L | 94.3 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 603743)** | | | | | | | | | | |
| WR2200853-002 | Anonymous | sulfate (as SO4) | 14808-79-8 | E235.SO4 | 94.8 mg/L | 100 mg/L | 94.8 | 75.0 | 125 | ---- |
| **Anions and Nutrients (QCLot: 603782)** | | | | | | | | | | |
| WR2200850-002 | SD_MH-04_2022-08-08 | ammonia, total (as N) | 7664-41-7 | E298 | 0.103 mg/L | 0.1 mg/L | 103 | 75.0 | 125 | ---- |
| **Total Metals (QCLot: 603794)** | | | | | | | | | | |
| WR2200850-008 | SD_MH-29_2022-08-08 | aluminum, total | 7429-90-5 | E420 | 0.190 mg/L | 0.2 mg/L | 94.9 | 70.0 | 130 | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.0194 mg/L | 0.02 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.0202 mg/L | 0.02 mg/L | 101 | 70.0 | 130 | ---- |
| | | barium, total | 7440-39-3 | E420 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.0387 mg/L | 0.04 mg/L | 96.8 | 70.0 | 130 | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.00936 mg/L | 0.01 mg/L | 93.6 | 70.0 | 130 | ---- |
| | | boron, total | 7440-42-8 | E420 | 0.100 mg/L | 0.1 mg/L | 99.6 | 70.0 | 130 | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.00388 mg/L | 0.004 mg/L | 96.9 | 70.0 | 130 | ---- |
| | | calcium, total | 7440-70-2 | E420 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.0388 mg/L | 0.04 mg/L | 97.1 | 70.0 | 130 | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.0193 mg/L | 0.02 mg/L | 96.4 | 70.0 | 130 | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.0189 mg/L | 0.02 mg/L | 94.4 | 70.0 | 130 | ---- |
| | | iron, total | 7439-89-6 | E420 | 1.91 mg/L | 2 mg/L | 95.7 | 70.0 | 130 | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.0187 mg/L | 0.02 mg/L | 93.5 | 70.0 | 130 | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.0978 mg/L | 0.1 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | magnesium, total | 7439-95-4 | E420 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.0195 mg/L | 0.02 mg/L | 97.4 | 70.0 | 130 | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.0199 mg/L | 0.02 mg/L | 99.5 | 70.0 | 130 | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.0378 mg/L | 0.04 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 9.41 mg/L | 10 mg/L | 94.1 | 70.0 | 130 | ---- |
| | | potassium, total | 7440-09-7 | E420 | 4.07 mg/L | 4 mg/L | 102 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Spike Concentration | Spike Target | Recovery (%) MS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals (QCLot: 603794) - continued** | | | | | | | | | | |
| WR2200850-008 | SD_MH-29_2022-08-08 | selenium, total | 7782-49-2 | E420 | 0.0432 mg/L | 0.04 mg/L | 108 | 70.0 | 130 | ---- |
| | | silicon, total | 7440-21-3 | E420 | 9.54 mg/L | 10 mg/L | 95.4 | 70.0 | 130 | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.00372 mg/L | 0.004 mg/L | 93.1 | 70.0 | 130 | ---- |
| | | sodium, total | 7440-23-5 | E420 | 1.98 mg/L | 2 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | strontium, total | 7440-24-6 | E420 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, total | 7704-34-9 | E420 | 21.2 mg/L | 20 mg/L | 106 | 70.0 | 130 | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.00364 mg/L | 0.004 mg/L | 91.0 | 70.0 | 130 | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.0194 mg/L | 0.02 mg/L | 97.1 | 70.0 | 130 | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.0389 mg/L | 0.04 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.00369 mg/L | 0.004 mg/L | 92.3 | 70.0 | 130 | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.0983 mg/L | 0.1 mg/L | 98.3 | 70.0 | 130 | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.375 mg/L | 0.4 mg/L | 93.7 | 70.0 | 130 | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.0385 mg/L | 0.04 mg/L | 96.4 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 603802)** | | | | | | | | | | |
| VA22B8907-022 | Anonymous | aluminum, total | 7429-90-5 | E420 | ND mg/L | 0.4 mg/L | ND | 70.0 | 130 | ---- |
| | | antimony, total | 7440-36-0 | E420 | 0.0404 mg/L | 0.04 mg/L | 101 | 70.0 | 130 | ---- |
| | | arsenic, total | 7440-38-2 | E420 | 0.0406 mg/L | 0.04 mg/L | 102 | 70.0 | 130 | ---- |
| | | barium, total | 7440-39-3 | E420 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, total | 7440-41-7 | E420 | 0.0780 mg/L | 0.08 mg/L | 97.5 | 70.0 | 130 | ---- |
| | | bismuth, total | 7440-69-9 | E420 | 0.0184 mg/L | 0.02 mg/L | 92.3 | 70.0 | 130 | ---- |
| | | boron, total | 7440-42-8 | E420 | ND mg/L | 0.2 mg/L | ND | 70.0 | 130 | ---- |
| | | cadmium, total | 7440-43-9 | E420 | 0.00778 mg/L | 0.008 mg/L | 97.3 | 70.0 | 130 | ---- |
| | | calcium, total | 7440-70-2 | E420 | ND mg/L | 8 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, total | 7440-47-3 | E420 | 0.0762 mg/L | 0.08 mg/L | 95.3 | 70.0 | 130 | ---- |
| | | cobalt, total | 7440-48-4 | E420 | 0.0386 mg/L | 0.04 mg/L | 96.5 | 70.0 | 130 | ---- |
| | | copper, total | 7440-50-8 | E420 | 0.0366 mg/L | 0.04 mg/L | 91.5 | 70.0 | 130 | ---- |
| | | iron, total | 7439-89-6 | E420 | 3.80 mg/L | 4 mg/L | 95.0 | 70.0 | 130 | ---- |
| | | lead, total | 7439-92-1 | E420 | 0.0359 mg/L | 0.04 mg/L | 89.6 | 70.0 | 130 | ---- |
| | | lithium, total | 7439-93-2 | E420 | 0.191 mg/L | 0.2 mg/L | 95.5 | 70.0 | 130 | ---- |
| | | magnesium, total | 7439-95-4 | E420 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, total | 7439-96-5 | E420 | 0.0387 mg/L | 0.04 mg/L | 96.7 | 70.0 | 130 | ---- |
| | | molybdenum, total | 7439-98-7 | E420 | 0.0418 mg/L | 0.04 mg/L | 105 | 70.0 | 130 | ---- |
| | | nickel, total | 7440-02-0 | E420 | 0.0752 mg/L | 0.08 mg/L | 94.0 | 70.0 | 130 | ---- |
| | | phosphorus, total | 7723-14-0 | E420 | 20.6 mg/L | 20 mg/L | 103 | 70.0 | 130 | ---- |
| | | potassium, total | 7440-09-7 | E420 | 7.75 mg/L | 8 mg/L | 96.9 | 70.0 | 130 | ---- |
| | | selenium, total | 7782-49-2 | E420 | 0.0854 mg/L | 0.08 mg/L | 107 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *Concentration* | *Target* | *MS* | *Low* | *High* | *Qualifier* |
| **Total Metals (QCLot: 603802) - continued** | | | | | | | | | | |
| VA22B8907-022 | Anonymous | silicon, total | 7440-21-3 | E420 | 19.2 mg/L | 20 mg/L | 95.9 | 70.0 | 130 | ---- |
| | | silver, total | 7440-22-4 | E420 | 0.00754 mg/L | 0.008 mg/L | 94.3 | 70.0 | 130 | ---- |
| | | sodium, total | 7440-23-5 | E420 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, total | 7440-24-6 | E420 | ND mg/L | 0.04 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, total | 7704-34-9 | E420 | ND mg/L | 40 mg/L | ND | 70.0 | 130 | ---- |
| | | thallium, total | 7440-28-0 | E420 | 0.00714 mg/L | 0.008 mg/L | 89.2 | 70.0 | 130 | ---- |
| | | tin, total | 7440-31-5 | E420 | 0.0405 mg/L | 0.04 mg/L | 101 | 70.0 | 130 | ---- |
| | | titanium, total | 7440-32-6 | E420 | 0.0816 mg/L | 0.08 mg/L | 102 | 70.0 | 130 | ---- |
| | | uranium, total | 7440-61-1 | E420 | 0.00876 mg/L | 0.008 mg/L | 109 | 70.0 | 130 | ---- |
| | | vanadium, total | 7440-62-2 | E420 | 0.204 mg/L | 0.2 mg/L | 102 | 70.0 | 130 | ---- |
| | | zinc, total | 7440-66-6 | E420 | 0.736 mg/L | 0.8 mg/L | 92.1 | 70.0 | 130 | ---- |
| | | zirconium, total | 7440-67-7 | E420 | 0.0799 mg/L | 0.08 mg/L | 99.8 | 70.0 | 130 | ---- |
| **Total Metals (QCLot: 610976)** | | | | | | | | | | |
| WR2200850-001 | SD_MH-02_2022-08-08 | mercury, total | 7439-97-6 | E508 | 0.000103 mg/L | 0.0001 mg/L | 103 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 603752)** | | | | | | | | | | |
| VA22B8907-015 | Anonymous | aluminum, dissolved | 7429-90-5 | E421 | ND mg/L | 0.2 mg/L | ND | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0198 mg/L | 0.02 mg/L | 99.2 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0423 mg/L | 0.04 mg/L | 106 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00843 mg/L | 0.01 mg/L | 84.3 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | ND mg/L | 0.1 mg/L | ND | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00385 mg/L | 0.004 mg/L | 96.3 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0361 mg/L | 0.04 mg/L | 90.4 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0193 mg/L | 0.02 mg/L | 96.6 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0187 mg/L | 0.02 mg/L | 93.5 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.90 mg/L | 2 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0188 mg/L | 0.02 mg/L | 93.9 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.104 mg/L | 0.1 mg/L | 104 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | 1.03 mg/L | 1 mg/L | 103 | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0196 mg/L | 0.02 mg/L | 98.1 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0378 mg/L | 0.04 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 11.2 mg/L | 10 mg/L | 112 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| *Laboratory sample ID* | *Client sample ID* | *Analyte* | *CAS Number* | *Method* | *Concentration* | *Target* | *MS* | *Low* | *High* | *Qualifier* |
| **Dissolved Metals (QCLot: 603752) - continued** | | | | | | | | | | |
| VA22B8907-015 | Anonymous | selenium, dissolved | 7782-49-2 | E421 | 0.0408 mg/L | 0.04 mg/L | 102 | 70.0 | 130 | ---- |
| | | silicon, dissolved | 7440-21-3 | E421 | 9.88 mg/L | 10 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00403 mg/L | 0.004 mg/L | 101 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | ND mg/L | 2 mg/L | ND | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | ND mg/L | 20 mg/L | ND | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00378 mg/L | 0.004 mg/L | 94.5 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0419 mg/L | 0.04 mg/L | 105 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.00391 mg/L | 0.004 mg/L | 97.7 | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.100 mg/L | 0.1 mg/L | 100 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.392 mg/L | 0.4 mg/L | 98.0 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0440 mg/L | 0.04 mg/L | 110 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 603753)** | | | | | | | | | | |
| WR2200850-005 | SD_MH-13_2022-08-08 | aluminum, dissolved | 7429-90-5 | E421 | 0.202 mg/L | 0.2 mg/L | 101 | 70.0 | 130 | ---- |
| | | antimony, dissolved | 7440-36-0 | E421 | 0.0194 mg/L | 0.02 mg/L | 97.2 | 70.0 | 130 | ---- |
| | | arsenic, dissolved | 7440-38-2 | E421 | 0.0205 mg/L | 0.02 mg/L | 103 | 70.0 | 130 | ---- |
| | | barium, dissolved | 7440-39-3 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | beryllium, dissolved | 7440-41-7 | E421 | 0.0404 mg/L | 0.04 mg/L | 101 | 70.0 | 130 | ---- |
| | | bismuth, dissolved | 7440-69-9 | E421 | 0.00889 mg/L | 0.01 mg/L | 88.9 | 70.0 | 130 | ---- |
| | | boron, dissolved | 7440-42-8 | E421 | 0.097 mg/L | 0.1 mg/L | 96.9 | 70.0 | 130 | ---- |
| | | cadmium, dissolved | 7440-43-9 | E421 | 0.00412 mg/L | 0.004 mg/L | 103 | 70.0 | 130 | ---- |
| | | calcium, dissolved | 7440-70-2 | E421 | ND mg/L | 4 mg/L | ND | 70.0 | 130 | ---- |
| | | chromium, dissolved | 7440-47-3 | E421 | 0.0395 mg/L | 0.04 mg/L | 98.8 | 70.0 | 130 | ---- |
| | | cobalt, dissolved | 7440-48-4 | E421 | 0.0192 mg/L | 0.02 mg/L | 95.8 | 70.0 | 130 | ---- |
| | | copper, dissolved | 7440-50-8 | E421 | 0.0187 mg/L | 0.02 mg/L | 93.6 | 70.0 | 130 | ---- |
| | | iron, dissolved | 7439-89-6 | E421 | 1.96 mg/L | 2 mg/L | 97.9 | 70.0 | 130 | ---- |
| | | lead, dissolved | 7439-92-1 | E421 | 0.0189 mg/L | 0.02 mg/L | 94.6 | 70.0 | 130 | ---- |
| | | lithium, dissolved | 7439-93-2 | E421 | 0.0998 mg/L | 0.1 mg/L | 99.8 | 70.0 | 130 | ---- |
| | | magnesium, dissolved | 7439-95-4 | E421 | ND mg/L | 1 mg/L | ND | 70.0 | 130 | ---- |
| | | manganese, dissolved | 7439-96-5 | E421 | 0.0198 mg/L | 0.02 mg/L | 98.9 | 70.0 | 130 | ---- |
| | | molybdenum, dissolved | 7439-98-7 | E421 | 0.0196 mg/L | 0.02 mg/L | 98.1 | 70.0 | 130 | ---- |
| | | nickel, dissolved | 7440-02-0 | E421 | 0.0384 mg/L | 0.04 mg/L | 96.0 | 70.0 | 130 | ---- |
| | | phosphorus, dissolved | 7723-14-0 | E421 | 10.0 mg/L | 10 mg/L | 100 | 70.0 | 130 | ---- |
| | | potassium, dissolved | 7440-09-7 | E421 | 3.93 mg/L | 4 mg/L | 98.3 | 70.0 | 130 | ---- |
| | | selenium, dissolved | 7782-49-2 | E421 | 0.0437 mg/L | 0.04 mg/L | 109 | 70.0 | 130 | ---- |

Sub-Matrix: **Water**

| | | | | | Matrix Spike (MS) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | | Recovery (%) | Recovery Limits (%) | | |
| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | Concentration | Target | MS | Low | High | Qualifier |
| **Dissolved Metals (QCLot: 603753) - continued** | | | | | | | | | | |
| WR2200850-005 | SD_MH-13_2022-08-08 | silicon, dissolved | 7440-21-3 | E421 | 9.78 mg/L | 10 mg/L | 97.8 | 70.0 | 130 | ---- |
| | | silver, dissolved | 7440-22-4 | E421 | 0.00381 mg/L | 0.004 mg/L | 95.2 | 70.0 | 130 | ---- |
| | | sodium, dissolved | 7440-23-5 | E421 | 1.91 mg/L | 2 mg/L | 95.5 | 70.0 | 130 | ---- |
| | | strontium, dissolved | 7440-24-6 | E421 | ND mg/L | 0.02 mg/L | ND | 70.0 | 130 | ---- |
| | | sulfur, dissolved | 7704-34-9 | E421 | 22.0 mg/L | 20 mg/L | 110 | 70.0 | 130 | ---- |
| | | thallium, dissolved | 7440-28-0 | E421 | 0.00370 mg/L | 0.004 mg/L | 92.5 | 70.0 | 130 | ---- |
| | | tin, dissolved | 7440-31-5 | E421 | 0.0189 mg/L | 0.02 mg/L | 94.5 | 70.0 | 130 | ---- |
| | | titanium, dissolved | 7440-32-6 | E421 | 0.0415 mg/L | 0.04 mg/L | 104 | 70.0 | 130 | ---- |
| | | uranium, dissolved | 7440-61-1 | E421 | 0.00402 mg/L | 0.004 mg/L | 100 | 70.0 | 130 | ---- |
| | | vanadium, dissolved | 7440-62-2 | E421 | 0.100 mg/L | 0.1 mg/L | 100 | 70.0 | 130 | ---- |
| | | zinc, dissolved | 7440-66-6 | E421 | 0.392 mg/L | 0.4 mg/L | 98.1 | 70.0 | 130 | ---- |
| | | zirconium, dissolved | 7440-67-7 | E421 | 0.0412 mg/L | 0.04 mg/L | 103 | 70.0 | 130 | ---- |
| **Dissolved Metals (QCLot: 610979)** | | | | | | | | | | |
| WR2200829-003 | Anonymous | mercury, dissolved | 7439-97-6 | E509 | 0.000103 mg/L | 0.0001 mg/L | 103 | 70.0 | 130 | ---- |
| **Speciated Metals (QCLot: 604157)** | | | | | | | | | | |
| VA22B8762-001 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.256 mg/L | 0.25 mg/L | 102 | 85.0 | 115 | ---- |
| **Speciated Metals (QCLot: 605956)** | | | | | | | | | | |
| VA22B8954-022 | Anonymous | chromium, hexavalent [Cr VI], total | 18540-29-9 | E532 | 0.256 mg/L | 0.25 mg/L | 102 | 85.0 | 115 | ---- |

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200850-AB** | Page | : 1 of 4 |
| Client | : **Teck Metals Ltd** | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse YT Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Aug-2022 16:45 |
| PO | : 10289 | Date Analysis Commenced | : 19-Aug-2022 |
| C-O-C number | : ---- | Issue Date | : 23-Aug-2022 14:11 |
| Sampler | : ---- | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 5 | | |
| No. of samples analysed | : 5 | | |



This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Hamideh Moradi | Analyst | Metals, Burnaby, British Columbia |
| Hedy Lai | Team Leader - Inorganics | Inorganics, Saskatoon, Saskatchewan |
| Janice Leung | Supervisor - Organics Instrumentation | Organics, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Metals, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| % | percent |
| mg/kg | milligrams per kilogram |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLDS* | *Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.* |
| *DLM* | *Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).* |

## Analytical Results

Sub-Matrix: **Sediment**

(Matrix: **Soil/Solid**)

| | | | | Client sample ID | SD_MH-04_2022-08-08 | SD_MH-11_2022-08-08 | SD_MH-12_2022-08-08 | SD_MH-13_2022-08-08 | SD_MH-29_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 08-Aug-2022 | 10-Aug-2022 | 09-Aug-2022 | 10-Aug-2022 | 10-Aug-2022 |
| Analyte | CAS Number | Method | LOR | Unit | WR2200850-012 | WR2200850-013 | WR2200850-014 | WR2200850-015 | WR2200850-016 |
| | | | | | Result | Result | Result | Result | Result |
| **Physical Tests** | | | | | | | | | |
| **pH (1:2 soil:water)** | ---- | E108 | 0.10 | pH units | 8.25 | 8.55 | 8.83 | 8.30 | 8.50 |
| **Particle Size** | | | | | | | | | |
| **clay (<0.004mm)** | ---- | EC184E | 1.0 | % | 1.6 | <1.0 | <1.0 | 3.0 | 1.0 |
| **silt (0.063mm - 0.004mm)** | ---- | EC184E | 1.0 | % | 10.3 | 5.2 | 8.9 | 16.4 | 4.8 |
| **sand (2.0mm - 0.063mm)** | ---- | EC184E | 1.0 | % | 72.4 | 76.0 | 74.1 | 67.0 | 81.0 |
| **gravel (>2mm)** | ---- | EC184E | 1.0 | % | 15.7 | 18.8 | 17.0 | 13.6 | 13.2 |
| **Organic / Inorganic Carbon** | | | | | | | | | |
| **carbon, total organic [TOC]** | ---- | EC356 | 0.050 | % | 1.12 | 0.422 | 0.400 | 1.67 | 0.563 |
| **Metals** | | | | | | | | | |
| **aluminum** | 7429-90-5 | E440 | 50 | mg/kg | 15200 | 11700 | 9950 | 7540 | 11400 |
| **antimony** | 7440-36-0 | E440 | 0.10 | mg/kg | 1.60 | 1.13 | 1.76 | 1.25 | 0.79 |
| **arsenic** | 7440-38-2 | E440 | 0.10 | mg/kg | 18.7 | 14.8 | 14.1 | 17.1 | 18.0 |
| **barium** | 7440-39-3 | E440 | 0.50 | mg/kg | 66.8 | 118 | 108 | 350 | 125 |
| **beryllium** | 7440-41-7 | E440 | 0.10 | mg/kg | 0.56 | 0.32 | 0.39 | 0.38 | 0.30 |
| **bismuth** | 7440-69-9 | E440 | 0.20 | mg/kg | 0.21 | <0.20 | <0.20 | <0.20 | <0.20 |
| **boron** | 7440-42-8 | E440 | 5.0 | mg/kg | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 |
| **cadmium** | 7440-43-9 | E440 | 0.020 | mg/kg | 4.51 | 1.82 | 1.09 | 1.68 | 2.66 |
| **calcium** | 7440-70-2 | E440 | 50 | mg/kg | 6100 | 12900 | 8130 | 8550 | 8230 |
| **chromium** | 7440-47-3 | E440 | 0.50 | mg/kg | 28.4 | 18.2 | 21.1 | 19.1 | 17.4 |
| **cobalt** | 7440-48-4 | E440 | 0.10 | mg/kg | 11.5 | 8.04 | 7.03 | 8.84 | 9.06 |
| **copper** | 7440-50-8 | E440 | 0.50 | mg/kg | 18.8 | 13.4 | 15.8 | 18.4 | 9.39 |
| **iron** | 7439-89-6 | E440 | 50 | mg/kg | 28000 | 22100 | 19500 | 25200 | 24100 |
| **lead** | 7439-92-1 | E440 | 0.50 | mg/kg | 158 | 233 | 77.8 | 37.5 | 31.5 |
| **lithium** | 7439-93-2 | E440 | 2.0 | mg/kg | 34.6 | 23.8 | 20.7 | 12.1 | 24.1 |
| **magnesium** | 7439-95-4 | E440 | 20 | mg/kg | 9910 | 7740 | 6620 | 4520 | 8210 |
| **manganese** | 7439-96-5 | E440 | 1.0 | mg/kg | 550 | 862 | 296 | 1170 | 1180 |
| **mercury** | 7439-97-6 | E510 | 0.0050 | mg/kg | 0.0143 | 0.0140 | 0.0101 | 0.0549 | 0.0162 |
| **molybdenum** | 7439-98-7 | E440 | 0.10 | mg/kg | 1.09 | 1.11 | 2.16 | 1.80 | 1.04 |
| **nickel** | 7440-02-0 | E440 | 0.50 | mg/kg | 27.6 | 21.5 | 24.1 | 28.9 | 21.3 |
| **phosphorus** | 7723-14-0 | E440 | 50 | mg/kg | 594 | 796 | 1050 | 1440 | 733 |
| **potassium** | 7440-09-7 | E440 | 100 | mg/kg | 580 | 450 | 540 | 700 | 330 |

## Analytical Results

Sub-Matrix: **Sediment**

(Matrix: **Soil/Solid)**

| | | | | Client sample ID | SD_MH-04_2022-08-08 | SD_MH-11_2022-08-08 | SD_MH-12_2022-08-08 | SD_MH-13_2022-08-08 | SD_MH-29_2022-08-08 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 08-Aug-2022 | 10-Aug-2022 | 09-Aug-2022 | 10-Aug-2022 | 10-Aug-2022 |
| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | **WR2200850-012** | **WR2200850-013** | **WR2200850-014** | **WR2200850-015** | **WR2200850-016** |
| | | | | | Result | Result | Result | Result | Result |
| **Metals** | | | | | | | | | |
| **selenium** | 7782-49-2 | E440 | 0.20 | mg/kg | 0.37 | 0.30 | 0.39 | 1.59 | 0.32 |
| **silver** | 7440-22-4 | E440 | 0.10 | mg/kg | 0.15 | 0.11 | 0.33 | 0.28 | 0.17 |
| **sodium** | 7440-23-5 | E440 | 50 | mg/kg | 68 | <50 | 58 | 52 | <50 |
| **strontium** | 7440-24-6 | E440 | 0.50 | mg/kg | 29.3 | 59.3 | 38.1 | 47.4 | 33.0 |
| **sulfur** | 7704-34-9 | E440 | 1000 | mg/kg | <1000 | <1000 | <1000 | <1000 | <1000 |
| **thallium** | 7440-28-0 | E440 | 0.050 | mg/kg | 0.105 | 0.063 | 0.092 | 0.105 | <0.050 |
| **tin** | 7440-31-5 | E440 | 2.0 | mg/kg | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **titanium** | 7440-32-6 | E440 | 1.0 | mg/kg | 469 | 352 | 409 | 81.1 | 182 |
| **tungsten** | 7440-33-7 | E440 | 0.50 | mg/kg | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **uranium** | 7440-61-1 | E440 | 0.050 | mg/kg | 0.562 | 0.584 | 0.898 | 1.26 | 0.459 |
| **vanadium** | 7440-62-2 | E440 | 0.20 | mg/kg | 30.2 | 25.6 | 36.3 | 29.1 | 20.0 |
| **zinc** | 7440-66-6 | E440 | 2.0 | mg/kg | 358 | 311 | 187 | 188 | 145 |
| **zirconium** | 7440-67-7 | E440 | 1.0 | mg/kg | <2.0 DLM | 2.0 | 2.0 | 1.3 | 1.7 |

Please refer to the General Comments section for an explanation of any qualifiers detected.

# QUALITY CONTROL REPORT



| | | | |
|---|---|---|---|
| **Work Order** | : **WR2200850-AB** | | |
| Client | : Teck Metals Ltd | Laboratory | : Whitehorse - Environmental |
| Contact | : Michelle Unger | Account Manager | : Can Dang |
| Address | : 601 Knighton Road<br>Kimberley BC Canada V1A 3E1 | Address | : #12 151 Industrial Road<br>Whitehorse, Yukon Canada Y1A 2V3 |
| Telephone | : 250 427 8404 | Telephone | : +1 867 668 6689 |
| Project | : Sa Dena Hes | Date Samples Received | : 11-Aug-2022 16:45 |
| PO | : 10289 | Date Analysis Commenced | : 19-Aug-2022 |
| C-O-C number | : ---- | Issue Date | : 23-Aug-2022 14:11 |
| Sampler | : ---- | | |
| Site | : ECA22YT00199 | | |
| Quote number | : VA22-TECK150-001 | | |
| No. of samples received | : 5 | | |
| No. of samples analysed | : 5 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Hamideh Moradi | Analyst | Vancouver Metals, Burnaby, British Columbia |
| Hedy Lai | Team Leader - Inorganics | Saskatoon Inorganics, Saskatoon, Saskatchewan |
| Janice Leung | Supervisor - Organics Instrumentation | Vancouver Organics, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Vancouver Metals, Burnaby, British Columbia |

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Physical Tests (QC Lot: 608356)** | | | | | | | | | | | |
| WR2200850-012 | SD_MH-04_2022-08-08 | pH (1:2 soil:water) | ---- | E108 | 0.10 | pH units | 8.25 | 8.25 | 0.0% | 5% | ---- |
| **Metals (QC Lot: 608354)** | | | | | | | | | | | |
| WR2200850-012 | SD_MH-04_2022-08-08 | mercury | 7439-97-6 | E510 | 0.0050 | mg/kg | 0.0143 | 0.0146 | 0.0002 | Diff <2x LOR | ---- |
| **Metals (QC Lot: 608355)** | | | | | | | | | | | |
| WR2200850-012 | SD_MH-04_2022-08-08 | aluminum | 7429-90-5 | E440 | 50 | mg/kg | 15200 | 15100 | 0.532% | 40% | ---- |
| | | antimony | 7440-36-0 | E440 | 0.10 | mg/kg | 1.60 | 1.51 | 6.07% | 30% | ---- |
| | | arsenic | 7440-38-2 | E440 | 0.10 | mg/kg | 18.7 | 14.7 | 23.7% | 30% | ---- |
| | | barium | 7440-39-3 | E440 | 0.50 | mg/kg | 66.8 | 70.3 | 5.15% | 40% | ---- |
| | | beryllium | 7440-41-7 | E440 | 0.10 | mg/kg | 0.56 | 0.56 | 0.006 | Diff <2x LOR | ---- |
| | | bismuth | 7440-69-9 | E440 | 0.20 | mg/kg | 0.21 | <0.20 | 0.009 | Diff <2x LOR | ---- |
| | | boron | 7440-42-8 | E440 | 5.0 | mg/kg | <5.0 | <5.0 | 0 | Diff <2x LOR | ---- |
| | | cadmium | 7440-43-9 | E440 | 0.020 | mg/kg | 4.51 | 4.41 | 2.16% | 30% | ---- |
| | | calcium | 7440-70-2 | E440 | 50 | mg/kg | 6100 | 6080 | 0.316% | 30% | ---- |
| | | chromium | 7440-47-3 | E440 | 0.50 | mg/kg | 28.4 | 30.0 | 5.45% | 30% | ---- |
| | | cobalt | 7440-48-4 | E440 | 0.10 | mg/kg | 11.5 | 10.2 | 12.4% | 30% | ---- |
| | | copper | 7440-50-8 | E440 | 0.50 | mg/kg | 18.8 | 15.5 | 19.3% | 30% | ---- |
| | | iron | 7439-89-6 | E440 | 50 | mg/kg | 28000 | 25900 | 7.94% | 30% | ---- |
| | | lead | 7439-92-1 | E440 | 0.50 | mg/kg | 158 | 169 | 6.42% | 40% | ---- |
| | | lithium | 7439-93-2 | E440 | 2.0 | mg/kg | 34.6 | 35.5 | 2.58% | 30% | ---- |
| | | magnesium | 7439-95-4 | E440 | 20 | mg/kg | 9910 | 9390 | 5.40% | 30% | ---- |
| | | manganese | 7439-96-5 | E440 | 1.0 | mg/kg | 550 | 470 | 15.5% | 30% | ---- |
| | | molybdenum | 7439-98-7 | E440 | 0.10 | mg/kg | 1.09 | 1.02 | 6.89% | 40% | ---- |
| | | nickel | 7440-02-0 | E440 | 0.50 | mg/kg | 27.6 | 27.5 | 0.0479% | 30% | ---- |
| | | phosphorus | 7723-14-0 | E440 | 50 | mg/kg | 594 | 706 | 17.3% | 30% | ---- |
| | | potassium | 7440-09-7 | E440 | 100 | mg/kg | 580 | 540 | 6.87% | 40% | ---- |
| | | selenium | 7782-49-2 | E440 | 0.20 | mg/kg | 0.37 | 0.37 | 0.001 | Diff <2x LOR | ---- |
| | | silver | 7440-22-4 | E440 | 0.10 | mg/kg | 0.15 | 0.16 | 0.007 | Diff <2x LOR | ---- |
| | | sodium | 7440-23-5 | E440 | 50 | mg/kg | 68 | 56 | 12 | Diff <2x LOR | ---- |
| | | strontium | 7440-24-6 | E440 | 0.50 | mg/kg | 29.3 | 29.6 | 0.733% | 40% | ---- |
| | | sulfur | 7704-34-9 | E440 | 1000 | mg/kg | <1000 | <1000 | 0 | Diff <2x LOR | ---- |
| | | thallium | 7440-28-0 | E440 | 0.050 | mg/kg | 0.105 | 0.104 | 0.002 | Diff <2x LOR | ---- |

Sub-Matrix: **Soil/Solid**

| Laboratory sample ID | Client sample ID | Analyte | CAS Number | Method | LOR | Unit | Original Result | Duplicate Result | RPD(%) or Difference | Duplicate Limits | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Laboratory Duplicate (DUP) Report | | | | | | |
| **Metals (QC Lot: 608355) - continued** | | | | | | | | | | | |
| WR2200850-012 | SD_MH-04_2022-08-08 | tin | 7440-31-5 | E440 | 2.0 | mg/kg | <2.0 | <2.0 | 0 | Diff <2x LOR | ---- |
| | | titanium | 7440-32-6 | E440 | 1.0 | mg/kg | 469 | 496 | 5.61% | 40% | ---- |
| | | tungsten | 7440-33-7 | E440 | 0.50 | mg/kg | <0.50 | <0.50 | 0 | Diff <2x LOR | ---- |
| | | uranium | 7440-61-1 | E440 | 0.050 | mg/kg | 0.562 | 0.615 | 9.10% | 30% | ---- |
| | | vanadium | 7440-62-2 | E440 | 0.20 | mg/kg | 30.2 | 30.0 | 0.920% | 30% | ---- |
| | | zinc | 7440-66-6 | E440 | 2.0 | mg/kg | 358 | 358 | 0.226% | 30% | ---- |
| | | zirconium | 7440-67-7 | E440 | 2.0 | mg/kg | <2.0 | <2.0 | 0 | Diff <2x LOR | ---- |

## *Method Blank (MB) Report*

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

| *Analyte* | *CAS Number* | *Method* | *LOR* | *Unit* | *Result* | *Qualifier* |
|---|---|---|---|---|---|---|
| **Metals (QCLot: 608354)** | | | | | | |
| mercury | 7439-97-6 | E510 | 0.005 | mg/kg | <0.0050 | ---- |
| **Metals (QCLot: 608355)** | | | | | | |
| aluminum | 7429-90-5 | E440 | 50 | mg/kg | <50 | ---- |
| antimony | 7440-36-0 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| arsenic | 7440-38-2 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| barium | 7440-39-3 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| beryllium | 7440-41-7 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| bismuth | 7440-69-9 | E440 | 0.2 | mg/kg | <0.20 | ---- |
| boron | 7440-42-8 | E440 | 5 | mg/kg | <5.0 | ---- |
| cadmium | 7440-43-9 | E440 | 0.02 | mg/kg | <0.020 | ---- |
| calcium | 7440-70-2 | E440 | 50 | mg/kg | <50 | ---- |
| chromium | 7440-47-3 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| cobalt | 7440-48-4 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| copper | 7440-50-8 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| iron | 7439-89-6 | E440 | 50 | mg/kg | <50 | ---- |
| lead | 7439-92-1 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| lithium | 7439-93-2 | E440 | 2 | mg/kg | <2.0 | ---- |
| magnesium | 7439-95-4 | E440 | 20 | mg/kg | <20 | ---- |
| manganese | 7439-96-5 | E440 | 1 | mg/kg | <1.0 | ---- |
| molybdenum | 7439-98-7 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| nickel | 7440-02-0 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| phosphorus | 7723-14-0 | E440 | 50 | mg/kg | <50 | ---- |
| potassium | 7440-09-7 | E440 | 100 | mg/kg | <100 | ---- |
| selenium | 7782-49-2 | E440 | 0.2 | mg/kg | <0.20 | ---- |
| silver | 7440-22-4 | E440 | 0.1 | mg/kg | <0.10 | ---- |
| sodium | 7440-23-5 | E440 | 50 | mg/kg | <50 | ---- |
| strontium | 7440-24-6 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| sulfur | 7704-34-9 | E440 | 1000 | mg/kg | <1000 | ---- |
| thallium | 7440-28-0 | E440 | 0.05 | mg/kg | <0.050 | ---- |
| tin | 7440-31-5 | E440 | 2 | mg/kg | <2.0 | ---- |
| titanium | 7440-32-6 | E440 | 1 | mg/kg | <1.0 | ---- |
| tungsten | 7440-33-7 | E440 | 0.5 | mg/kg | <0.50 | ---- |
| uranium | 7440-61-1 | E440 | 0.05 | mg/kg | <0.050 | ---- |

Sub-Matrix: **Soil/Solid**

| Analyte | CAS Number | Method | LOR | Unit | Result | Qualifier |
|---|---|---|---|---|---|---|
| **Metals (QCLot: 608355) - continued** | | | | | | |
| vanadium | 7440-62-2 | E440 | 0.2 | mg/kg | <0.20 | ---- |
| zinc | 7440-66-6 | E440 | 2 | mg/kg | <2.0 | ---- |
| zirconium | 7440-67-7 | E440 | 1 | mg/kg | <1.0 | ---- |

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

| | | | | | Laboratory Control Sample (LCS) Report | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Recovery (%) | Recovery Limits (%) | | |
| Analyte | CAS Number | Method | LOR | Unit | Concentration | LCS | Low | High | Qualifier |
| **Physical Tests (QCLot: 608356)** | | | | | | | | | |
| pH (1:2 soil:water) | ---- | E108 | ---- | pH units | 6 pH units | 100 | 95.0 | 105 | ---- |
| **Metals (QCLot: 608354)** | | | | | | | | | |
| mercury | 7439-97-6 | E510 | 0.005 | mg/kg | 0.1 mg/kg | 105 | 80.0 | 120 | ---- |
| **Metals (QCLot: 608355)** | | | | | | | | | |
| aluminum | 7429-90-5 | E440 | 50 | mg/kg | 200 mg/kg | 101 | 80.0 | 120 | ---- |
| antimony | 7440-36-0 | E440 | 0.1 | mg/kg | 100 mg/kg | 111 | 80.0 | 120 | ---- |
| arsenic | 7440-38-2 | E440 | 0.1 | mg/kg | 100 mg/kg | 103 | 80.0 | 120 | ---- |
| barium | 7440-39-3 | E440 | 0.5 | mg/kg | 25 mg/kg | 107 | 80.0 | 120 | ---- |
| beryllium | 7440-41-7 | E440 | 0.1 | mg/kg | 10 mg/kg | 102 | 80.0 | 120 | ---- |
| bismuth | 7440-69-9 | E440 | 0.2 | mg/kg | 100 mg/kg | 104 | 80.0 | 120 | ---- |
| boron | 7440-42-8 | E440 | 5 | mg/kg | 100 mg/kg | 101 | 80.0 | 120 | ---- |
| cadmium | 7440-43-9 | E440 | 0.02 | mg/kg | 10 mg/kg | 101 | 80.0 | 120 | ---- |
| calcium | 7440-70-2 | E440 | 50 | mg/kg | 5000 mg/kg | 106 | 80.0 | 120 | ---- |
| chromium | 7440-47-3 | E440 | 0.5 | mg/kg | 25 mg/kg | 103 | 80.0 | 120 | ---- |
| cobalt | 7440-48-4 | E440 | 0.1 | mg/kg | 25 mg/kg | 99.5 | 80.0 | 120 | ---- |
| copper | 7440-50-8 | E440 | 0.5 | mg/kg | 25 mg/kg | 98.0 | 80.0 | 120 | ---- |
| iron | 7439-89-6 | E440 | 50 | mg/kg | 100 mg/kg | 102 | 80.0 | 120 | ---- |
| lead | 7439-92-1 | E440 | 0.5 | mg/kg | 50 mg/kg | 113 | 80.0 | 120 | ---- |
| lithium | 7439-93-2 | E440 | 2 | mg/kg | 25 mg/kg | 96.3 | 80.0 | 120 | ---- |
| magnesium | 7439-95-4 | E440 | 20 | mg/kg | 5000 mg/kg | 106 | 80.0 | 120 | ---- |
| manganese | 7439-96-5 | E440 | 1 | mg/kg | 25 mg/kg | 95.8 | 80.0 | 120 | ---- |
| molybdenum | 7439-98-7 | E440 | 0.1 | mg/kg | 25 mg/kg | 104 | 80.0 | 120 | ---- |
| nickel | 7440-02-0 | E440 | 0.5 | mg/kg | 50 mg/kg | 99.9 | 80.0 | 120 | ---- |
| phosphorus | 7723-14-0 | E440 | 50 | mg/kg | 1000 mg/kg | 104 | 80.0 | 120 | ---- |
| potassium | 7440-09-7 | E440 | 100 | mg/kg | 5000 mg/kg | 98.4 | 80.0 | 120 | ---- |
| selenium | 7782-49-2 | E440 | 0.2 | mg/kg | 100 mg/kg | 104 | 80.0 | 120 | ---- |
| silver | 7440-22-4 | E440 | 0.1 | mg/kg | 10 mg/kg | 86.8 | 80.0 | 120 | ---- |
| sodium | 7440-23-5 | E440 | 50 | mg/kg | 5000 mg/kg | 103 | 80.0 | 120 | ---- |
| strontium | 7440-24-6 | E440 | 0.5 | mg/kg | 25 mg/kg | 96.2 | 80.0 | 120 | ---- |
| sulfur | 7704-34-9 | E440 | 1000 | mg/kg | 5000 mg/kg | 98.5 | 80.0 | 120 | ---- |
| thallium | 7440-28-0 | E440 | 0.05 | mg/kg | 100 mg/kg | 110 | 80.0 | 120 | ---- |
| tin | 7440-31-5 | E440 | 2 | mg/kg | 50 mg/kg | 99.4 | 80.0 | 120 | ---- |
| titanium | 7440-32-6 | E440 | 1 | mg/kg | 25 mg/kg | 95.8 | 80.0 | 120 | ---- |

Sub-Matrix: **Soil/Solid**

| Analyte | CAS Number | Method | LOR | Unit | Laboratory Control Sample (LCS) Report: Spike Concentration | Recovery (%) LCS | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Metals (QCLot: 608355) - continued** | | | | | | | | | |
| tungsten | 7440-33-7 | E440 | 0.5 | mg/kg | 10 mg/kg | 101 | 80.0 | 120 | ---- |
| uranium | 7440-61-1 | E440 | 0.05 | mg/kg | 0.5 mg/kg | 105 | 80.0 | 120 | ---- |
| vanadium | 7440-62-2 | E440 | 0.2 | mg/kg | 50 mg/kg | 103 | 80.0 | 120 | ---- |
| zinc | 7440-66-6 | E440 | 2 | mg/kg | 50 mg/kg | 103 | 80.0 | 120 | ---- |
| zirconium | 7440-67-7 | E440 | 1 | mg/kg | 10 mg/kg | 96.5 | 80.0 | 120 | ---- |

## Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

| Laboratory sample ID | Reference Material ID | Analyte | CAS Number | Method | RM Target Concentration | Recovery (%) RM | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Metals (QCLot: 608354)** | | | | | | | | | |
| | SCP SS-2 | mercury | 7439-97-6 | E510 | 0.059 mg/kg | 102 | 70.0 | 130 | ---- |
| **Metals (QCLot: 608355)** | | | | | | | | | |
| | SCP SS-2 | aluminum | 7429-90-5 | E440 | 9817 mg/kg | 106 | 70.0 | 130 | ---- |
| | SCP SS-2 | antimony | 7440-36-0 | E440 | 3.99 mg/kg | 99.4 | 70.0 | 130 | ---- |
| | SCP SS-2 | arsenic | 7440-38-2 | E440 | 3.73 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | barium | 7440-39-3 | E440 | 105 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | beryllium | 7440-41-7 | E440 | 0.349 mg/kg | 109 | 70.0 | 130 | ---- |
| | SCP SS-2 | boron | 7440-42-8 | E440 | 8.5 mg/kg | 115 | 40.0 | 160 | ---- |
| | SCP SS-2 | cadmium | 7440-43-9 | E440 | 0.91 mg/kg | 103 | 70.0 | 130 | ---- |
| | SCP SS-2 | calcium | 7440-70-2 | E440 | 31082 mg/kg | 111 | 70.0 | 130 | ---- |
| | SCP SS-2 | chromium | 7440-47-3 | E440 | 101 mg/kg | 108 | 70.0 | 130 | ---- |
| | SCP SS-2 | cobalt | 7440-48-4 | E440 | 6.9 mg/kg | 102 | 70.0 | 130 | ---- |
| | SCP SS-2 | copper | 7440-50-8 | E440 | 123 mg/kg | 101 | 70.0 | 130 | ---- |
| | SCP SS-2 | iron | 7439-89-6 | E440 | 23558 mg/kg | 101 | 70.0 | 130 | ---- |
| | SCP SS-2 | lead | 7439-92-1 | E440 | 267 mg/kg | 111 | 70.0 | 130 | ---- |
| | SCP SS-2 | lithium | 7439-93-2 | E440 | 9.5 mg/kg | 99.7 | 70.0 | 130 | ---- |
| | SCP SS-2 | magnesium | 7439-95-4 | E440 | 5509 mg/kg | 101 | 70.0 | 130 | ---- |
| | SCP SS-2 | manganese | 7439-96-5 | E440 | 269 mg/kg | 99.7 | 70.0 | 130 | ---- |
| | SCP SS-2 | molybdenum | 7439-98-7 | E440 | 1.03 mg/kg | 103 | 70.0 | 130 | ---- |
| | SCP SS-2 | nickel | 7440-02-0 | E440 | 26.7 mg/kg | 102 | 70.0 | 130 | ---- |
| | SCP SS-2 | phosphorus | 7723-14-0 | E440 | 752 mg/kg | 97.4 | 70.0 | 130 | ---- |
| | SCP SS-2 | potassium | 7440-09-7 | E440 | 1587 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | sodium | 7440-23-5 | E440 | 797 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | strontium | 7440-24-6 | E440 | 86.1 mg/kg | 103 | 70.0 | 130 | ---- |
| | SCP SS-2 | thallium | 7440-28-0 | E440 | 0.0786 mg/kg | 106 | 40.0 | 160 | ---- |
| | SCP SS-2 | tin | 7440-31-5 | E440 | 10.6 mg/kg | 98.6 | 70.0 | 130 | ---- |
| | SCP SS-2 | titanium | 7440-32-6 | E440 | 839 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | uranium | 7440-61-1 | E440 | 0.52 mg/kg | 105 | 70.0 | 130 | ---- |
| | SCP SS-2 | vanadium | 7440-62-2 | E440 | 32.7 mg/kg | 104 | 70.0 | 130 | ---- |

Sub-Matrix:

| Laboratory sample ID | Reference Material ID | Analyte | CAS Number | Method | Reference Material (RM) Report: RM Target Concentration | Recovery (%) RM | Recovery Limits (%) Low | Recovery Limits (%) High | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Metals (QCLot: 608355) - continued** | | | | | | | | | |
| | SCP SS-2 | zinc | 7440-66-6 | E440 | 297 mg/kg | 104 | 70.0 | 130 | ---- |
| | SCP SS-2 | zirconium | 7440-67-7 | E440 | 5.73 mg/kg | 84.5 | 70.0 | 130 | ---- |

# APPENDIX C:
# QUALITY ASSURANCE AND CONTROL (QAQC) METHODS FOR BENTHIC INVERTEBRATE ANALYSIS (CORDILLERA CONSULTING)

# Methods and QC Report 2022

Project ID: Sa Dena Hes

Client: Ensero Solutions

**Prepared by:**

Cordillera Consulting Inc.
Summerland, BC


Unit 1, 13216 Henry Ave B1202
Summerland, BC, V0H 1Z0
www.cordilleraconsulting.ca

P: 250.494.7553
F: 250.494.7562

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## Sample Reception

On August 19, 2022, Cordillera Consulting received 5 benthic samples from Ensero Solutions. When samples arrived to Cordillera Consulting, exterior packaging was initially inspected for damage or wet spots that would have indicated damage to the interior containers.

Samples were logged into a proprietary software database (INSTAR1) where the clients assigned sample name was recorded along with a Cordillera Consulting (CC) number for cross-reference. Each sample was checked to ensure that all sites and replicates recorded on field sheets or packing lists were delivered intact and with adequate preservative. Any missing, mislabelled or extra samples were reported to the client immediately to confirm the total numbers and correct names on the sample jars. The client representative was notified of the arrival of the shipment and provided a sample inventory once intake was completed.
See table below for sample inventory:

**Table 1: Summary of sample information including Cordillera Consulting (CC) number**

| Site Code | CC# | Date | Size | # of Jars |
|---|---|---|---|---|
| MH04 | CC230252 | 8/8/2022 | 400µM | 1 |
| MH11 | CC230253 | 8/10/2022 | 400µM | 1 |
| MH12 | CC230254 | 8/9/2022 | 400µM | 1 |
| MH13 | CC230255 | 8/9/2022 | 400µM | 1 |
| MH29 | CC230256 | 8/10/2022 | 400µM | 1 |

## Sample Sorting

- Using a gridded Petri dish, fine forceps and a low power stereo-microscope (Olympus, Nikon, Leica) the sorting technicians removed the invertebrates and sorted them into family/orders.
- The sorting technician kept a running tally of total numbers excluding organisms from Porifera, Nemata, Platyhelminthes, Ostracoda, Copepoda, Cladocera and terrestrial drop-ins such as aphids. These organisms were marked for their presence (given a value of 1) only and left in the sample. They were not included towards the 300-organism subsample count.
- Where specimens are broken or damaged, only heads were counted.
- Subsampling was conducted with the use of a Marchant Box.
- When using the Marchant box, cells were extracted at the same time in the order indicated by a random number table. If the 300$^{th}$ organism was found part way into sorting a cell then the balance of that cell was sorted. If the organism count had not reached 300 by the 50$^{th}$ cell then the entire sample was sorted.
- The total number of cells sorted and the number of organisms removed were recorded manually on a bench sheet and then recorded into INSTAR1
- Organisms were stored in vials containing 80% ethanol and an interior label indicating the site names, date of sampling, site code numbers and portion

subsampled. This information was also recorded on the laboratory bench sheet and on INSTAR1.

- The sorted portion of the debris was preserved and labeled separately from the unsorted portion and was tested for sorting efficiency (Sorting Quality Control – Sorting Efficiency). The unsorted portion was also labeled and preserved in separate jars.

Percent sub-sampled and total countable invertebrates pulled from the samples were summarized in the table below.

**Table 2: Percent sub-sample and invertebrate count for each sample**

| Sample | Date | CC# | 400 micron fraction | |
|---|---|---|---|---|
| | | | % Sampled | # Invertebrates |
| MH04 | 08-Aug-22 | CC230252 | 5% | 380 |
| MH11 | 10-Aug-22 | CC230253 | 26% | 341 |
| MH12 | 09-Aug-22 | CC230254 | 5% | 337 |
| MH13 | 09-Aug-22 | CC230255 | 22% | 338 |
| MH29 | 10-Aug-22 | CC230256 | 28% | 364 |

## Sorting Quality Control - Sorting Efficiency

As a part of Cordillera's laboratory policy, all projects undergo sorting efficiency checks.

- As sorting progresses, 10% of samples were randomly chosen by senior members of the sorting team for resorting.
- All sorters working on a project had at least 1 sample resorted by another sorter.
- An efficiency of 90 % was expected (95% for CABIN samples).
- If 90/95% efficiency was not met, samples from that sorter were resorted.
- To calculated sorting efficiency the following formula was used:

$$\frac{\#Orgamisms\ Missed}{Total\ Organisms\ Found} * 100 = \%OM$$

**Table 3 Summary of sorting efficiency**

| | Total from Sample | Percent Efficiency |
|---|---|---|
| Site - QC, Sample - QC1, CC# - CC230255, Percent sampled = 22%, Sieve size = 400 | | |
| Chironomidae | 3 | |
| Plecoptera | 2 | |

| | | | |
|---|---|---|---|
| Trichoptera | 1 | | |
| **Total:** | **6** | **338** | **98%** |

## Taxonomic Effort

The next procedure was the identification to genus-species level where possible of all the organisms in the sample.

- Identifications were made at the genus/species level for all insect organisms found including Chironomidae (Based on CABIN protocol).
- Non-insect organisms (except those not included in CABIN count) were identified to genus/species where possible and to a minimum of family level with intact and mature specimens.
- The Standard Taxonomic Effort lists compiled by the CABIN manual[1], SAFIT[2], and PNAMP[3] were used as a guide line for what level of identification to achieve where the condition and maturity of the organism enabled.
- Organisms from the same families/order were kept in separate vials with 80% ethanol and an interior label of printed laser paper.
- Chironomidae was identified to genus/species level where possible and was aided by slide mounts. CMC-10 was used to clear and mount the slide.
- Oligochaetes was identified to family/genus level with the aid of slide mounts. CMC-10 was used to clear and mount the slide.
- Other Annelida (leeches, polychaetes) were identified to the family/genus/species level with undamaged, mature specimens.
- Mollusca was identified to family and genus/species where possible
- Decapoda, Amphipoda and Isopoda were identified at family/genus/species level where possible.
- Bryozoans and Nemata remained at the phylum level
- Hydrachnidae and Cnidaria were identified at the family/genus level where possible.
- When requested, reference collections were made containing at least one individual from each taxa listed. Organisms represented will have been identified to the lowest practical level.
- Reference collection specimens were stored in 55 mm glass vials with screw-cap lids with polyseal inserts (museum quality). They were labeled with taxa name, site code, date identified and taxonomist name. The same information was applied to labels on the slide mounts.

Taxonomy Notes: Baetis tricaudatus group has now been renamed to Baetis rhodani group. There has been no change in the determination of the taxa. See Webb 2017 in the taxonomy keys.

## Taxonomists

The taxonomists for this project were certified by the Society of Freshwater Science (SFS) Taxonomic Certification Program at level 2 which is the required certification for CABIN projects:

**Scott Finlayson**: Group 1 General Arthropods (East/West); Group 2 EPT (East/West); Group 3 Chironomidae (East/West); Group 4 Oligochaeta
**Adam Bliss**: Group 1 General Arthropods (East/West); Group 2 EPT (East/West); Group 3 Chironomidae
**Rita Avery:** Group 1 General Arthropods (East/West); Group 2 EPT (East/West)

## Taxonomic QC

Taxonomic QC was performed in house by someone other than the original taxonomist.

- Quality control protocol involved complete, blind re-identification and re-enumeration of at least 10% of samples by a second SFS-certified taxonomist.
- Samples for taxonomic quality control were randomly selected and quality control procedures were conducted as the project progresses through the laboratories.

- The second (QC) taxonomist will calculate and record four types of errors:
    1. Misidentification error
    2. Enumeration error
    3. Questionable taxonomic resolution error
    4. Insufficient taxonomic resolution error

The QC coordinator then calculates the following estimates of taxonomic precision.

1. The percent total identification error rate is calculated as:

$$\frac{Sum\ of\ incorrect\ identifications}{total\ organisms\ counted\ in\ audit} * (100)$$

The average total identification error rate of audited samples did not exceed 5%. All samples that exceed a 5% error rate were re-evaluated to determine whether repeated errors or patterns in error contributed.

2. The percent difference in enumeration (PDE) to quantify the consistency of specimen counts.

$$PDE = \frac{|n_1 - n_2|}{n_1 + n_2} x100$$

3. The percent taxonomic disagreement (PTD) to quantify the shared precision between two sets of identifications.

$$PTD = \left(1 - \left[\frac{a}{N}\right]\right) x100$$

4. Bray Curtis dissimilarity Index to quantify the differences in identifications.

$$BC_{ij} = 1 - \frac{2C_{ij}}{S_j + S_i}$$

## Error Summary

All samples report errors within the acceptable limits for CABIN Laboratory methods (less than 5% error).

**Table 4 Summary of taxonomic error following QC**

| Site | Taxa Identified | % Error | PDE | PTD | Bray - Curtis Dissimilarity index |
|---|---|---|---|---|---|
| Site - 2022, Sample - MH11, CC# - CC230253, Percent sampled = 26%, Sieve size = 400 | 340 | 0.00 | 0.14684288 | 0.58651026 | 0.00440529 |

There will always be disagreements between taxonomists regarding the degree of taxonomic resolution in immature specimens and when laboratories make use of different keys for certain groups (Mollusks is an especially disputed group). It is always possible that some taxa found by the original taxonomist were overlooked in QC.

All of the Taxonomic QC samples that were observed passed testing according to the CABIN misidentification protocols. See the tables below for results from taxonomic QC audit.

## Error Rationale

| Site - 2022, Sample - MH11, CC# - CC230253, Percent sampled = 26%, Sieve size = 400 | Laboratory Count | QC Audit Count | Agreement | Misidentification | Questionable Taxonomic Resolution | Enumeration | Insufficient Taxonomic Resolution | Comments |
|---|---|---|---|---|---|---|---|---|
| Ameletus | 35 | 35 | | | | | | |
| Baetidae | 5 | 6 | No | | | X | | |
| Baetis | 7 | 6 | No | | | X | | |
| Baetis bicaudatus | 7 | 7 | | | | | | |
| Baetis rhodani group | 4 | 4 | | | | | | |
| Capniidae | 1 | 1 | | | | | | |
| Chloroperlidae | 8 | 8 | | | | | | |
| Cinygmula | 17 | 17 | | | | | | |
| Epeorus | 8 | 8 | | | | | | |
| Eukiefferiella | 2 | 2 | | | | | | |
| Heptageniidae | 10 | 10 | | | | | | |
| Lebertia | 2 | 2 | | | | | | |
| Lepidoptera | 1 | 1 | | | | | | |
| Lumbriculus | 2 | 2 | | | | | | |
| Oribatida | 1 | 1 | | | | | | |
| Pagastia | 1 | 1 | | | | | | |
| Perlodidae | 1 | 1 | | | | | | |
| Plecoptera | 5 | 5 | | | | | | |
| Prosimulium | 3 | 3 | | | | | | |
| Prosimulium/Helodon | 2 | 2 | | | | | | |
| Rhyacophila | 25 | 25 | | | | | | |
| Rhyacophila hyalinata group | 2 | 2 | | | | | | |
| Rhyacophila vofixa group | 5 | 5 | | | | | | |
| Simuliidae | 3 | 3 | | | | | | |
| Sweltsa | 6 | 6 | | | | | | |
| Thienemanniella | 1 | 1 | | | | | | |
| Thysanoptera | 1 | 1 | | | | | | |
| Tvetenia | 3 | 3 | | | | | | |
| Wandesia | 3 | 3 | | | | | | |
| Zapada | 4 | 4 | | | | | | |
| Zapada cinctipes | 2 | 2 | | | | | | |
| Zapada columbiana | 142 | 141 | No | | | X | | |
| Zapada oregonensis group | 22 | 22 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Total:** | **341** | **340** | | | | | | |
| | | | | | **0** | **3** | **0** | |
| % Total Misidentification Rate = | misidentifications / total number | x100 = | 0.00 | **Pass** | | | | |

## References


[1] McDermott, H., Paull, T., Strachan, S. (May 2014). Laboratory Methods: Processing, Taxonomy, and Quality Control of Benthic Macroinvertebrate Samples, Environment Canada. ISBN: 978-1-100-25417-3

[2] Southwest Association of Freshwater Invertebrate Taxonomists. (2015). www.safit.org

[3] Pacific Northwest Aquatic Monitoring Partnership (Accessed 2015). www.pnamp.org


## Taxonomic Keys

Below is a reference list of taxonomic keys utilized by taxonomists at Cordillera Consulting. Cordillera taxonomists routinely seek out new literature to ensure the most accurate identification keys are being utilized. This is not reflective of the exhaustive list of resources that we use for identification. A more complete list of taxonomic resources can be found at Southwest Association of Freshwater Invertebrate Taxonomists. (2015).
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# APPENDIX D:

# FISHERIES AND OCEAN CANADA PERMIT – 52 XR 230 2022

Licence Number: XR 230 2022
Valid From: 01-Aug-2022
Expiry Date: 31-Oct-2022

This licence and/or permit is issued under the authority of SECTION 52 OF THE FISHERY (GENERAL) REGULATIONS.

This licence and/or permit authorizes the person(s) listed below, subject to the following terms and conditions, to collect the species and quantity of fish identified below for: Scientific purposes. Non-compliance with any condition of this licence and/or permit may result in the cancellation of this licence and/or permit.

**Licence/Permit Activity Description:**
This licence permits fishing for the purpose of conducting a fish survey to asses the potential impacts of tailings, from the Sa Dena Hes mine on the aquatic system at False canyon located at kilometer 47 of Robert Campbell highway, approximately 75 km north of the community Watson Lake, Yukon.

**Period of Activity:**
Fishing activity will occur over 2 sampling events during August 8-12, 2022.

**Licence Holder:**
FIN: 125707 — ENSERO SOLUTIONS
#3 CALCITE BUSINESS CENTRE, 151 INDUSTRIAL ROAD,
WHITEHORSE YT Y1A 2V3

Contact Number: 867-668-6463
Fax Number: 867-667-4882

**Contact Party:**
FIN: 129075 LYONS, STEPHANIE Contact Number: 604-295-8360

**Individuals or groups assisting with the authorized activity:**

| | | |
|---|---|---|
| FIN: 147173 | WESLEY MOIR | Contact Number: 519-404-0442 |
| FIN: 149238 | BENJAMIN PRINCE | Contact Number: 250-739-9113 |
| FIN: 149328 | DAVID MEEKER | Contact Number: 519-404-0442 |

**Species, Quantity of Fish, Area(s) and Gear:**

| | |
|---|---|
| **Species:** | ARCTIC GRAYLING (Thymallus arcticus); BURBOT (Lota lota); SLIMY SCULPIN (Cottus cognatus); |
| **Gear:** | Electrofishing (Maximum Second per Site: 500 Seconds)<br>Trap, Gee/Minnow (Maximum Second per Site: 24 Hours; Traps Max: 6 Number of Traps; Mesh Type: 1/4 inch mesh) |
| **Licence Area:** | False Canyon Creek (WSC: 25067437536553) |
| **To be Released:** | 600 |
| **Additional Descriptions:** | **Lifestage: All** |

**Reporting Requirements:**

**Sampling Data (Mandatory) Report** **Due Date** 12-Dec-22
See Terms and Conditions: "Reporting" section of this licence for detailed requirements.

**Sampling Notification** **Due Date** 12-Dec-22
See Terms and Conditions: "Notice" section of this licence for detailed requirements.

**Sampling Fish Data Report** **Due Date** 12-Dec-22
See Terms and Conditions: "Reporting" section of this licence for detailed requirements.

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**Terms and Conditions:**

This licence authorizes collections to be made by the licensee and employees, volunteers and students of the licensee provided that all persons, other than minors who are engaged in activities under the authority of this licence, are carrying suitable photo identification to be produced upon request of a Fishery Officer or Guardian.

This license is subject to immediate termination upon written or verbal notice from a representative of the Government of Yukon, Department of Environment, or of Fisheries and Oceans Canada.

**Samplers:** It is the responsibility of the Licence Holder to ensure that the Licence Holder and any Individuals or Groups assisting with the authorized activity are experienced and competent in the fish capture methods authorized in this license.

**Notice:** Prior to commencing sampling, notice must be provided at least 24 hours prior to the start of sampling to:

• Fisheries and Oceans Canada, Yukon Transboundary Rivers Area Licencing Unit Email: yukontransboundary.licence@dfo-mpo.gc.ca
• Fisheries and Oceans Canada, Conservation and Protection Email: Joseph.Humphries@dfo-mpo.gc.ca
• Government of Yukon Fisheries Email: Cameron.Sinclair@yukon.ca
• The Government of Yukon Conservation Officer responsible for any area where sampling is to take place
• The First Nation Government in whose Traditional Territory the activity is taking place

The notice is to include the following information:

i. The Licence Number;

ii. The watercourse or water body on which, and the location where the fishing and/or sampling is to take place;

iii. The dates on which fishing and/or sampling will occur;

iv. The names of all individuals who will be will engaged in fishing and/or sampling

**Release of fish:** All live fish must be released unharmed into the water body or course from which they originated and as near as possible to the location from which they were captured. Exception to this is where fish are authorized to be retained for identification or biological / scientific analysis purposes.

**Disposition of fish:** Any fish captured and retained under the authority of this license are not to enter any commercial markets or establishments. Any fish collected and retained, or incidental mortalities associated with non-lethal sampling, are not to be utilized for human consumption or personal use purposes unless authorized by Fisheries and

Oceans Canada.

**Electrofishing:** Electrofishing is not permitted in the vicinity of spawning fish or their redds. A trained and certified electro fisher operator must be a part of the electrofishing crew conducting fishing.

**Gear:** All gear left unattended must be clearly labelled with the Licence Number and must not interfere with the public right of navigation.

Gee/Minnow Trap: Any fish or fish parts used as bait must be from the drainage basin where the sampling is to occur or must be suitably preserved to remove all risk of the transmission of pathogens.

**Disposition of fish:** Any fish captured and retained under the authority of this license are not to enter any commercial markets or establishments. Any fish collected and retained, or incidental mortalities associated with non-lethal sampling, are not to be utilized for human consumption or personal use purposes unless authorized by Fisheries and Oceans Canada.

**Aquatic Invasive Species:** To prevent the introduction of aquatic invasive species: a) Before leaving an area: Drain water from boat, trailer and gear, remove all plant parts and mud and b) Before entering another water body: Wash all equipment and gear (including waders and boots) with soapy water and dry.

For Further Information:

https://www.dfo-mpo.gc.ca/species-especes/ais-eae/index-eng.html

https://www.dfo-mpo.gc.ca/species-especes/ais-eae/prevention/index-eng.html

**Species at Risk:** Section 32 (1) of Canada's *Species at Risk Act* prohibits killing, harming, harassing, capturing or taking an individual of a wildlife species which is listed on Schedule 1 as an extirpated species, an endangered species or a threatened species. Refer to the Species at Risk Act Public Registry at http://www.sararegistry.gc.ca to determine if species at risk may be in the *Licence Area* and to apply for a permit if required.

**Transport or transplant of live fish and/or eggs/milt**: Live fish and/or eggs (spawn) cannot be transported without a licence granted pursuant to Section 56 of the *Fishery (General) Regulations.*

**Reporting:** Sampling Fish Data and the Sampling Data (Mandatory) reports must be submitted following completion of fishing authorized pursuant to this Licence, in electronic form, and provided by email with an electronic copy of this Licence. If fishing does not take place a report is still required. The reports must include:

a. The Collection Licence number

b. The location(s) of the sampling with GPS coordinates, and a map with fishing locations identified if GPS coordinates were not specifically recorded;

c. Names of all individuals who engaged in fishing and/or sampling;

d. The dates on which the fishing and/or sampling occurred;

e. The number of fish captured, by species;

f. Any fish mortalities observed

If no sampling takes place a "nil report" is required in the form of an email or identified in the Sampling Data (Mandatory) spreadsheet provided.

The reports must be submitted with the templates provided by the Licensing Unit and must be submitted by the date specified in the **Reporting Requirements** section of this Licence and addressed to:

Fisheries and Oceans Canada, Yukon Territory Licensing Unit
Email: yukontransboundary.licence@dfo-mpo.gc.ca

---

By signing on this document, the person(s) listed below, agree to be bound by the terms and conditions that pertain to each person as an individual and to the group as a whole.

| FIN | Licence Holder - Print Name | Signature | Date |
|---|---|---|---|
| **125707** | | | |

Licence Issued: 26 July 2022

Licence Printed: 26 July 2022
Licence Issued By: MICHELLE MADORE, Fisheries and Oceans Canada

# APPENDIX E:
# CABIN FIELD SAMPLING SHEETS

Field Crew: Stephanie Lyons & Benjamin Price Site Code: MH-07

Sampling Date: (DD/MM/YYYY) 08/08/2022

☐ **Occupational Health & Safety: Site Inspection Sheet completed**

## PRIMARY SITE DATA

CABIN Study Name: ______________________ Local Basin Name: ______________________

River/Stream Name: [illegible] Stream Order: (map scale 1:50,000) __________

Select one: ☐ Test Site ☐ Potential Reference Site

### Geographical Description/Notes:

Surrounding Land Use: (check those present) Information Source: Field

☒ Forest ☐ Field/Pasture ☐ Agriculture ☐ Residential/Urban
☐ Logging ☒ Mining ☐ Commercial/Industrial ☐ Other ________

Dominant Surrounding Land Use: (check one) Information Source: Field

☐ Forest ☐ Field/Pasture ☐ Agriculture ☐ Residential/Urban
☐ Logging ☒ Mining ☐ Commercial/Industrial ☐ Other ________

### Location Data

Latitude: __________N Longitude: - __________W (DMS or DD)

Elevation: ________(fasl *or* masl) GPS Datum: ☐ GRS80 (NAD83/WGS84) ☐ Other: ________

### Site Location Map Drawing

Note: Indicate north



CABIN

Field Crew: SL + BP Site Code: MH - 04

Sampling Date: (DD/MM/YYYY) 08/08/2022

**Photos**

☑ Field Sheet ☑ Upstream ☑ Downstream ☑ Across Site ☐ Aerial View
☑ Substrate (exposed) ☐ Substrate (aquatic) ☐ Other ______

## REACH DATA *(represents 6 times bankfull width)*

1. Habitat Types: *(check those present)*
   ☑ Riffle ☐ Rapids ☑ Straight run ☑ Pool/Back Eddy

2. Canopy Coverage: *(stand in middle of stream and look up, check one)*
   ☐ 0 % ☑ 1-25 % ☐ 26-50 % ☐ 51-75 % ☐ 76-100 %

3. Macrophyte Coverage: *(not algae or moss, check one)*
   ☑ 0 % ☐ 1-25 % ☐ 26-50 % ☐ 51-75 % ☐ 76-100 %

4. Streamside Vegetation: *(check those present)*
   ☑ ferns/grasses ☐ shrubs ☑ deciduous trees ☑ coniferous trees

   willow
   poplar
   alder
   spruce
   horse tail

5. Dominant Streamside Vegetation: *(check one)*
   ☐ ferns/grasses ☐ shrubs ☑ deciduous trees ☐ coniferous trees

6. Periphyton Coverage on Substrate: *(benthic algae, not moss, check one)*

   ☑ **1** - Rocks are not slippery, no obvious colour (thin layer < 0.5 mm thick)
   ☐ **2** - Rocks are slightly slippery, yellow-brown to light green colour (0.5-1 mm thick)
   ☐ **3** - Rocks have a noticeable slippery feel (footing is slippery), with patches of thicker green to brown algae (1-5 mm thick)
   ☐ **4** - Rocks are very slippery (algae can be removed with thumbnail), numerous large clumps of green to dark brown algae (5 mm -20 mm thick)
   ☐ **5** - Rocks are mostly obscured by algal mat, extensive green, brown to black algal mass may have long strands (> 20 mm thick)

Note: 1 through 5 represent categories entered into the CABIN database.

## BENTHIC MACROINVERTEBRATE DATA

Habitat sampled: (*check one*) ☑ riffle ☐ rapids ☑ straight run

| 400 µm mesh Kick Net | |
|---|---|
| Person sampling | SL |
| Sampling time (i.e. 3 min.) | 3 min |
| No. of sample jars | 1 |
| Typical depth in kick area (cm) | 15 |

Preservative used: 10% Formalin.

Sampled sieved on site using "Bucket Swirling Method":
☐ YES ☒ NO

If YES, debris collected for QAQC ☐

Note: Indicate if a sampling method other than the recommended 400 µm mesh kick net is used.

Field Crew: SL & BP Site Code: MH-04

Sampling Date: (DD/MM/YYYY) 08/08/2022

**WATER CHEMISTRY DATA** Time: 15:45 (24 hr clock) **Time zone:** PDT

Air Temp: ______ (°C) Water Temp: ______ (°C) pH: ______

Specific Conductance: ______ (µs/cm) DO: ______ (mg/L) Turbidity: ______ (NTU)

Check if water samples were collected for the following analyses:

☑ TSS (Total Suspended Solids)

☑ Nitrogen (i.e. Total, Nitrate, Nitrite, Dissolved, and/or Ammonia)

☐ Phosphorus (Total, Ortho, and/or Dissolved)

☑ Major Ions (i.e. Alkalinity, Hardness, Chloride, and/or Sulphate) ☐ Other ______

Note: Determining alkalinity is recommended, as are other analyses, but not required for CABIN assessments.

## CHANNEL DATA

**Slope** - Indicate how slope was measured: (check one)

☐ **Calculated from map**

Scale: ______ (Note: small scale map recommended if field measurement is not possible - i.e. 1:20,000).

contour interval (vertical distance) ______ (m),

distance between contour intervals (horizontal distance) ______ (m)

slope = vertical distance/horizontal distance = ______

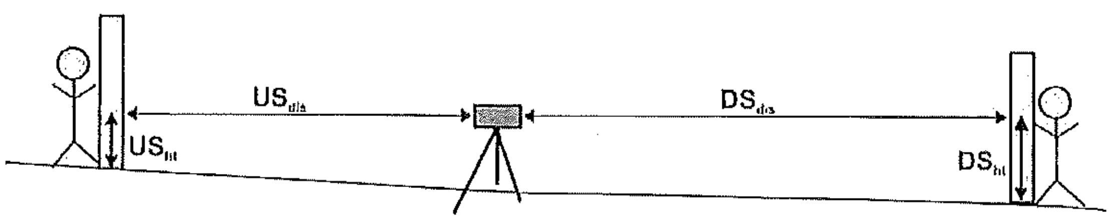
**OR**

☐ **Measured in field**

Circle device used and fill out table according to device:

a. Survey Equipment b. Hand Level & Measuring Tape

| Measurements | Upstream (U/S) | Downstream(D/S) | Calculation |
|---|---|---|---|
| aTop Hairline (T) | | | |
| aMid Hairline (ht) OR bHeight of rod | | | |
| aBottom Hairline (B) | | | |
| bDistance (dis) OR aT-B x 100 | a$US_{dis}$=T-B | a$DS_{dis}$=T-B | $US_{dis}+DS_{dis}$= |
| Change in height (Δht) | | | $DS_{ht}-US_{ht}$= |
| Slope (Δht/total dis) | | | |



Field Crew: SL / BP Site Code: MH - 04

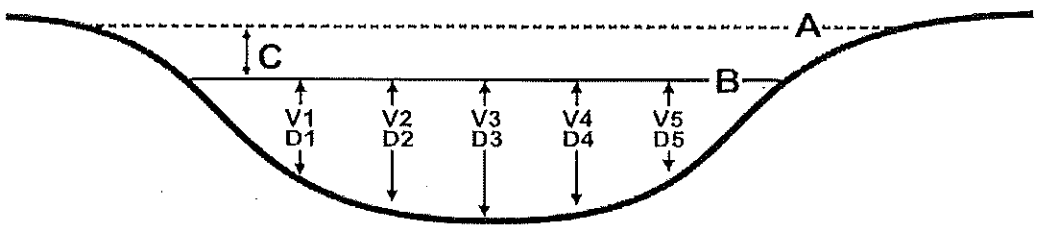
Sampling Date: (DD/MM/YYYY) 08/08/2022

## Widths and Depth

Location at site: at kick area (indicate where in sample reach, ex. d/s of kick area)

A - Bankfull Width: 0.7 (m) B - Wetted Stream Width: ________(m)

C - Bankfull–Wetted Depth (height from water surface to Bankfull): ____________(cm)




Note:
Wetted widths > 5 m, measure a minimum of 5-6 equidistant locations;
Wetted widths < 5 m, measure 3-4 equidistant locations.

## Velocity and Depth

Check appropriate velocity measuring device and fill out the appropriate section in chart below. Distance from shore and depth are required regardless of method:

☐ **Velocity Head Rod (or ruler)**: Velocity Equation (m/s) = $\sqrt{[2(\Delta D/100) * 9.81]}$

☐ **Rotary meters**: Gurley/Price/Mini-Price/Propeller (Refer to specific meter conversion chart for calculation)

☑ **Direct velocity measurements**: ☐ Marsh-McBirney ☐ Sontek or ☐ Other Salt Slug.

| | 1 | 2 | 3 | 4 | 5 | 6 | AVG |
|---|---|---|---|---|---|---|---|
| Distance from Shore (m) | | | | | | | |
| Depth (D) (cm) | | | | | | | |
| **Velocity Head Rod (ruler)** | | | | | | | |
| Flowing water Depth ($D_1$) (cm) | | | | | | | |
| Depth of Stagnation ($D_2$) (cm) | | | | | | | |
| Change in depth ($\Delta D=D_2-D_1$) (cm) | | | | | | | |
| **Rotary meter** | | | | | | | |
| Revolutions | | | | | | | |
| Time (minimum 40 seconds) | | | | | | | |
| **Direct Measurement or calculation** | | | | | | | |
| Velocity (V) (m/s) | | | | | | | |



CABIN

Field Crew: SL & BP Site Code: MH-04

Sampling Date: (DD/MM/YYYY) 08/08/2022

## SUBSTRATE DATA

### Surrounding/Interstitial Material

Circle the substrate size category for the surrounding material.

| Substrate Size Class | Category |
|---|---|
| Organic Cover | 0 |
| < 0.1 cm (fine sand, silt or clay) | 1 |
| 0.1-0.2 cm (coarse sand) | 2 |
| 0.2-1.6 cm (gravel) | 3 |
| 1.6-3.2 cm (small pebble) | 4 |
| 3.2-6.4 cm (large pebble) | 5 |
| 6.4-12.8 cm (small cobble) | 6 |
| 12.8-25.6 cm (cobble) | 7 |
| > 25.6 cm (boulder) | 8 |
| Bedrock | 9 |

### 100 Pebble Count & Substrate Embeddedness

- Measure the intermediate axis (100 rocks) and embeddedness (10 rocks) of substrate in the stream bed.
- Indicate B for bedrock, S for sand/silt/clay (particles < 0.2 cm) and O for organic material.
- Embededness categories (E): Completely embedded = 1, 3/4 embedded, 1/2 embedded, 1/4 embedded, unembedded = 0

| | Diameter (cm) | E | | Diameter (cm) | E | | Diameter (cm) | E | | Diameter (cm) | E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08 | 0 | 26 | 15 | | 51 | 43 | | 76 | 58 | |
| 2 | 59 | | 27 | 18 | | 52 | 4 | | 77 | 43 | |
| 3 | 64 | | 28 | 20 | | 53 | 25 | | 78 | 25 | |
| 4 | 65 | | 29 | 17 | | 54 | 149 | | 79 | 83 | |
| 5 | 34 | | 30 | 63 | 0 | 55 | 60 | | 80 | 60 | 0 |
| 6 | 47 | | 31 | 97 | | 56 | 33 | | 81 | 77 | |
| 7 | 110 | | 32 | 66 | | 57 | 68 | | 82 | 53 | |
| 8 | 53 | | 33 | 44 | | 58 | 38 | | 83 | 30 | |
| 9 | 3 | | 34 | 43 | | 59 | 52 | | 84 | 35 | |
| 10 | 27 | 0 | 35 | 43 | | 60 | 34 | 0 | 85 | 67 | |
| 11 | 32 | | 36 | 63 | | 61 | 40 | | 86 | 105 | |
| 12 | 31 | | 37 | 38 | | 62 | 38 | | 87 | 61 | |
| 13 | 128 | | 38 | 62 | | 63 | 83 | | 88 | 72 | |
| 14 | 31 | | 39 | 54 | | 64 | 83 | | 89 | 53 | |
| 15 | 69 | | 40 | 62 | 3/4 | 65 | 66 | | 90 | 85 | 0 |
| 16 | 29 | | 41 | 81 | | 66 | 155 | | 91 | 73 | |
| 17 | <0.01 | S | 42 | 128 | | 67 | 31 | | 92 | 77 | |
| 18 | 40 | | 43 | 66 | | 68 | 54 | | 93 | 46 | |
| 19 | 88 | | 44 | 74 | | 69 | 53 | | 94 | 58 | |
| 20 | 38 | 1/2 | 45 | 93 | | 70 | 53 | 1/4 | 95 | 76 | |
| 21 | 26 | | 46 | 61 | | 71 | 56 | | 96 | 73 | |
| 22 | 40 | | 47 | 62 | | 72 | 116 | | 97 | 72 | |
| 23 | 36 | | 48 | 58 | | 73 | 47 | | 98 | 41 | |
| 24 | 130 | | 49 | 8 | | 74 | 57 | | 99 | 72 | |
| 25 | 28 | | 50 | 83 | 1/2 | 75 | 26 | | 100 | 41 | 0 |

*Note:* The Wolman D50 (i.e. median diameter), Wolman Dg (i.e. geometric mean diameter) and the % composition of the substrate classes will be calculated automatically in the CABIN database using the 100 pebble data. All 100 pebbles must be measured in order for the CABIN database tool to perform substrate calculations.



CABIN

Field Crew: SL + BP Site Code: MH-04

Sampling Date: (DD/MM/YYYY) 08/08/2022

# SITE INSPECTION

Site Inspected by: ______________________

**Communication Information**

☐ Itinerary left with contact person (include contact numbers)

Contact Person: ______________________ Time checked-in: ________

Form of communication: ☐ radio ☐ cell ☐ satellite ☐ hotel/pay phone ☐ SPOT

Phone number: (    ) ____________

**Vehicle Safety**

☐ Safety equipment (first aid, fire extinguisher, blanket, emergency kit in vehicle)

☐ Equipment and chemicals safely secured for transport

☐ Vehicle parked in safe location; pylons, hazard light, reflective vests if necessary

Notes:

**Shore & Wading Safety**

☐ Wading Task Hazard Analysis read by all field staff

☐ Wading Safe Work Procedures read by all field staff

☐ Instream hazards identified (i.e. log jams, deep pools, slippery rocks)

☐ PFD worn

☐ Appropriate footwear, waders, wading belt

☐ Belay used

Notes:

Field Crew: SL & KV Site Code: MH-11

Sampling Date: (DD/MM/YYYY) 10/08/2028

☐ **Occupational Health & Safety: Site Inspection Sheet completed**

## PRIMARY SITE DATA

CABIN Study Name: ____________ Local Basin Name: ____________

River/Stream Name: ____________ Stream Order: (map scale 1:50,000) ____________

Select one: ☐ Test Site ☐ Potential Reference Site

### Geographical Description/Notes:

Surrounding Land Use: (check those present) Information Source: Field

☒ Forest ☐ Field/Pasture ☐ Agriculture ☐ Residential/Urban

☐ Logging ☒ Mining ☐ Commercial/Industrial ☐ Other ____________

Dominant Surrounding Land Use: (check one) Information Source: Field

☐ Forest ☐ Field/Pasture ☐ Agriculture ☐ Residential/Urban

☐ Logging ☒ Mining ☐ Commercial/Industrial ☐ Other ____________

### Location Data

Latitude: ________N Longitude: - ________W (DMS or DD)

Elevation: ______(fasl *or* masl) GPS Datum: ☐ GRS80 (NAD83/WGS84) ☐ Other: ______

### Site Location Map Drawing

Note: Indicate north



CABIN

Field Crew: SL / BP Site Code: MH - 11

Sampling Date: (DD/MM/YYYY) 10/08/2022

**Photos**

☐ Field Sheet ☑ Upstream ☑ Downstream ☑ Across Site ☐ Aerial View

☐ Substrate (exposed) ☐ Substrate (aquatic) ☐ Other ________

## REACH DATA *(represents 6 times bankfull width)*

1. Habitat Types: *(check those present)*
   ☑ Riffle ☐ Rapids ☐ Straight run ☑ Pool/Back Eddy

2. Canopy Coverage: *(stand in middle of stream and look up, check one)*
   ☐ 0 % ☐ 1-25 % ☑ 26-50 % ☐ 51-75 % ☐ 76-100 %

3. Macrophyte Coverage: *(not algae or moss, check one)*
   ☑ 0 % ☐ 1-25 % ☐ 26-50 % ☐ 51-75 % ☐ 76-100 %

4. Streamside Vegetation: *(check those present)*
   ☑ ferns/grasses ☑ shrubs ☐ deciduous trees ☑ coniferous trees
   willow horsetail spruce

5. Dominant Streamside Vegetation: *(check one)*
   ☐ ferns/grasses ☑ shrubs ☐ deciduous trees ☐ coniferous trees

6. Periphyton Coverage on Substrate: *(benthic algae, not moss, check one)*

   ☐ **1** - Rocks are not slippery, no obvious colour (thin layer < 0.5 mm thick)
   ☑ **2** - Rocks are slightly slippery, yellow-brown to light green colour (0.5-1 mm thick)
   ☐ **3** - Rocks have a noticeable slippery feel (footing is slippery), with patches of thicker green to brown algae (1-5 mm thick)
   ☐ **4** - Rocks are very slippery (algae can be removed with thumbnail), numerous large clumps of green to dark brown algae (5 mm -20 mm thick)
   ☐ **5** - Rocks are mostly obscured by algal mat, extensive green, brown to black algal mass may have long strands (> 20 mm thick)

Note: 1 through 5 represent categories entered into the CABIN database.

## BENTHIC MACROINVERTEBRATE DATA

Habitat sampled: (*check one*) ☐ riffle ☐ rapids ☐ straight run

| 400 µm mesh Kick Net | |
|---|---|
| Person sampling | SL |
| Sampling time (i.e. 3 min.) | 3 min |
| No. of sample jars | 1 |
| Typical depth in kick area (cm) | 35 cm |

Preservative used: 10% Formalin

Sampled sieved on site using "Bucket Swirling Method":
☐ YES ☑ NO

If YES, debris collected for QAQC ☐

Note: Indicate if a sampling method other than the recommended 400 µm mesh kick net is used.

Field Crew: SL / BP Site Code: MH-11

Sampling Date: (DD/MM/YYYY) 10/08/2022

| WATER CHEMISTRY DATA | | |
|---|---|---|
| Time: 10:45 (24 hr clock) | | Time zone: PDT |
| Air Temp: – (°C) | Water Temp: ____ (°C) | pH: ____ |
| Specific Conductance: ____ (µs/cm) | DO: ____ (mg/L) | Turbidity: – (NTU) |

Check if water samples were collected for the following analyses:

- ☑ TSS (Total Suspended Solids)
- ☑ Nitrogen (i.e. Total, Nitrate, Nitrite, Dissolved, and/or Ammonia)
- ☐ Phosphorus (Total, Ortho, and/or Dissolved)
- ☑ Major Ions (i.e. Alkalinity, Hardness, Chloride, and/or Sulphate) ☐ Other ____

Note: Determining alkalinity is recommended, as are other analyses, but not required for CABIN assessments.

## CHANNEL DATA

**Slope** - Indicate how slope was measured: (check one)

☐ **Calculated from map**

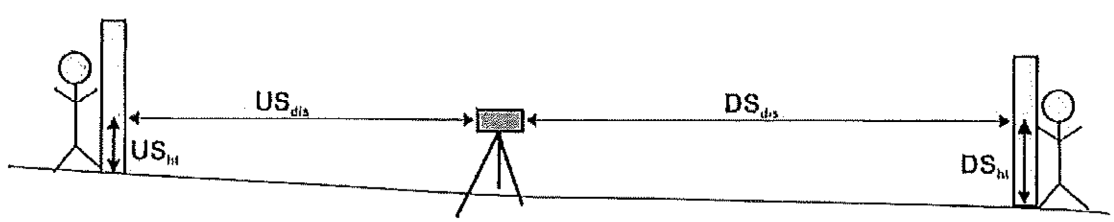
Scale: ____ (Note: small scale map recommended if field measurement is not possible - i.e. 1:20,000).
contour interval (vertical distance) ____ (m),
distance between contour intervals (horizontal distance) ____ (m)
slope = vertical distance/horizontal distance = ____

**OR**

☐ **Measured in field**

Circle device used and fill out table according to device:
a. Survey Equipment b. Hand Level & Measuring Tape

| Measurements | Upstream (U/S) | Downstream(D/S) | Calculation |
|---|---|---|---|
| [a]Top Hairline (T) | | | |
| [a]Mid Hairline (ht) OR<br>[b]Height of rod | | | |
| [a]Bottom Hairline (B) | | | |
| [b]Distance (dis) OR<br>[a]T-B x 100 | [a]$US_{dis}$=T-B | [a]$DS_{dis}$=T-B | $US_{dis}$+$DS_{dis}$= |
| Change in height (Δht) | | | $DS_{ht}$-$US_{ht}$= |
| Slope (Δht/total dis) | | | |






CABIN

Field Crew: ______________________ Site Code: ______________

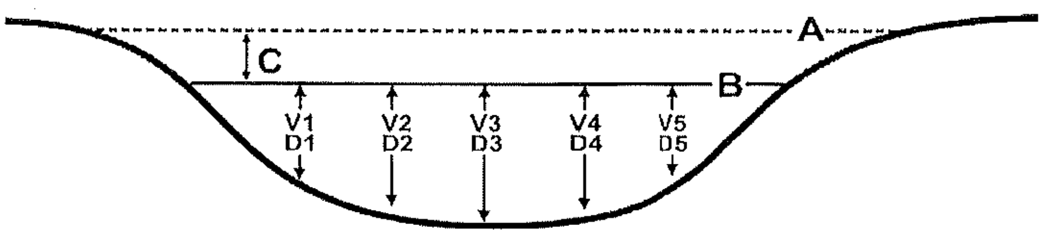
Sampling Date: (DD/MM/YYYY) ______________

## Widths and Depth

Location at site: U/S kick area. (Indicate where in sample reach, ex. d/s of kick area)

A - Bankfull Width: 1.7 (m) B - Wetted Stream Width: ________ (m)

C - Bankfull–Wetted Depth (height from water surface to Bankfull): ________ (cm)




Note:
Wetted widths > 5 m, measure a minimum of 5-6 equidistant locations;
Wetted widths < 5 m, measure 3-4 equidistant locations.

## Velocity and Depth

Check appropriate velocity measuring device and fill out the appropriate section in chart below. Distance from shore and depth are required regardless of method:

☐ **Velocity Head Rod (or ruler)**: Velocity Equation (m/s) = $\sqrt{[2(\Delta D/100) * 9.81]}$

☐ **Rotary meters:** Gurley/Price/Mini-Price/Propeller (Refer to specific meter conversion chart for calculation)

☑ **Direct velocity measurements:** ☐ Marsh-McBirney ☐ Sontek or ☐ Other Salt slug.

| | 1 | 2 | 3 | 4 | 5 | 6 | AVG |
|---|---|---|---|---|---|---|---|
| Distance from Shore (m) | | | | | | | |
| Depth (D) (cm) | | | | | | | |
| **Velocity Head Rod (ruler)** | | | | | | | |
| Flowing water Depth ($D_1$) (cm) | | | | | | | |
| Depth of Stagnation ($D_2$) (cm) | | | | | | | |
| Change in depth ($\Delta D = D_2 - D_1$) (cm) | | | | | | | |
| **Rotary meter** | | | | | | | |
| Revolutions | | | | | | | |
| Time (minimum 40 seconds) | | | | | | | |
| **Direct Measurement or calculation** | | | | | | | |
| Velocity (V) (m/s) | | | | | | | |



CABIN

Field Crew: ______________________ Site Code: ______________

Sampling Date: (DD/MM/YYYY) ______________________

## SUBSTRATE DATA

### Surrounding/Interstitial Material

Circle the substrate size category for the surrounding material.

| Substrate Size Class | Category |
|---|---|
| Organic Cover | 0 |
| < 0.1 cm (fine sand, silt or clay) | 1 |
| 0.1-0.2 cm (coarse sand) | 2 |
| 0.2-1.6 cm (gravel) | 3 |
| 1.6-3.2 cm (small pebble) | 4 |
| 3.2-6.4 cm (large pebble) | 5 |
| 6.4-12.8 cm (small cobble) | 6 |
| 12.8-25.6 cm (cobble) | 7 |
| > 25.6 cm (boulder) | 8 |
| Bedrock | 9 |

### 100 Pebble Count & Substrate Embeddedness

- Measure the intermediate axis (100 rocks) and embeddedness (10 rocks) of substrate in the stream bed.
- Indicate B for bedrock, S for sand/silt/clay (particles < 0.2 cm) and O for organic material.
- Embededness categories (E): Completely embedded = 1, 3/4 embedded, 1/2 embedded, 1/4 embedded, unembedded = 0

| | Diameter (cm) | E | | Diameter (cm) | E | | Diameter (cm) | E | | Diameter (cm) | E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 22 | 0 | 26 | 18 | | 51 | 6 | | 76 | 40 | |
| 2 | 18 | | 27 | ~~[illegible]~~ 91 | | 52 | 78 | | 77 | 11 | |
| 3 | 14 | | 28 | 49 | | 53 | 91 | | 78 | 21 | |
| 4 | 35 | | 29 | 85 | | 54 | 140 | | 79 | 8 | |
| 5 | 9 | | 30 | 111 | 1/2 | 55 | 300 | | 80 | 53 | 3/4 |
| 6 | 21 | | 31 | 75 | | 56 | 19 | | 81 | 29 | |
| 7 | 10 | | 32 | 64 | | 57 | 79 | | 82 | 23 | |
| 8 | 20 | | 33 | 123 | | 58 | 13 | | 83 | 21 | |
| 9 | 12 | | 34 | 11 | | 59 | 5 | | 84 | 20 | |
| 10 | 170 | 1/2 | 35 | 6 | | 60 | 68 | 0 | 85 | 28 | |
| 11 | 23 | | 36 | 12 | | 61 | 41 | 5 | 86 | 9 | |
| 12 | 15 | | 37 | 84 | | 62 | 2 | | 87 | 95 | |
| 13 | 16 | | 38 | 25 | | 63 | ~~[illegible]~~ 160 | | 88 | 18 | |
| 14 | 12 | | 39 | 21 | | 64 | 29 | | 89 | 28 | |
| 15 | 13 | | 40 | 150 | 1/4 | 65 | 46 | | 90 | 18 | 0 |
| 16 | 12 | | 41 | 129 | | 66 | 16 | | 91 | 19 | |
| 17 | 28 | | 42 | 77 | | 67 | 90 | | 92 | 18 | |
| 18 | ~~[illegible]~~ 38 | | 43 | 61 | | 68 | 23 | | 93 | 9 | |
| 19 | 9 | | 44 | 112 | | 69 | 22 | | 94 | 15 | |
| 20 | 27 | 0 | 45 | 146 | | 70 | 118 | 0 | 95 | 34 | |
| 21 | 28 | | 46 | 87 | | 71 | 16 | | 96 | 19 | |
| 22 | 9 | | 47 | 77 | | 72 | 22 | | 97 | 22 | |
| 23 | 6 | | 48 | 21 | | 73 | 32 | | 98 | 20 | |
| 24 | 9 | | 49 | 15 | | 74 | 19 | | 99 | 15 | |
| 25 | 19 | | 50 | 103 | 1/4 | 75 | 20 | | 100 | 31 | 0 |

*Note:* The Wolman D50 (i.e. median diameter), Wolman Dg (i.e. geometric mean diameter) and the % composition of the substrate classes will be calculated automatically in the CABIN database using the 100 pebble data. All 100 pebbles must be measured in order for the CABIN database tool to perform substrate calculations.

Field Crew: ____a / BP____ Site Code: ____MH - 11____

Sampling Date: (DD/MM/YYYY) ____10 /08/2022____

# SITE INSPECTION

Site Inspected by: ______________________

**Communication Information**

☐ Itinerary left with contact person (include contact numbers)

Contact Person: ______________________ Time checked-in: ________

Form of communication: ☐ radio ☐ cell ☐ satellite ☐ hotel/pay phone ☐ SPOT

Phone number: (      ) ____________

**Vehicle Safety**

☐ Safety equipment (first aid, fire extinguisher, blanket, emergency kit in vehicle)

☐ Equipment and chemicals safely secured for transport

☐ Vehicle parked in safe location; pylons, hazard light, reflective vests if necessary

Notes:

**Shore & Wading Safety**

☐ Wading Task Hazard Analysis read by all field staff

☐ Wading Safe Work Procedures read by all field staff

☐ Instream hazards identified (i.e. log jams, deep pools, slippery rocks)

☐ PFD worn

☐ Appropriate footwear, waders, wading belt

☐ Belay used

Notes:



CABIN

Crew: SB & BP    Site Code: MH-12

Sampling Date: (DD/MM/YYYY) 09/08/2022

☐ **Occupational Health & Safety: Site Inspection Sheet completed**

## PRIMARY SITE DATA

CABIN Study Name: ______________ Local Basin Name: ______________

River/Stream Name: ______________ Stream Order: (map scale 1:50,000) ______________

Select one: ☐ Test Site ☐ Potential Reference Site

### Geographical Description/Notes:

Surrounding Land Use: (check those present)    Information Source: Field

☑ Forest ☐ Field/Pasture ☐ Agriculture ☐ Residential/Urban

☐ Logging ☑ Mining ☐ Commercial/Industrial ☐ Other ______

Dominant Surrounding Land Use: (check one)    Information Source: Field

☐ Forest ☐ Field/Pasture ☐ Agriculture ☐ Residential/Urban

☐ Logging ☑ Mining ☐ Commercial/Industrial ☐ Other ______

### Location Data

Latitude: __________N Longitude: - __________W (DMS or DD)

Elevation: ______(fasl *or* masl) GPS Datum: ☐ GRS80 (NAD83/WGS84) ☐ Other: ______

### Site Location Map Drawing

Note: Indicate north

Field Crew: SL / BP    Site Code: MH - 12

Sampling Date: (DD/MM/YYYY) 09 / 08 / 2022

**Photos**

- ☐ Field Sheet ☑ Upstream ☑ Downstream ☑ Across Site ☐ Aerial View
- ☐ Substrate (exposed) ☐ Substrate (aquatic) ☐ Other ______

## REACH DATA *(represents 6 times bankfull width)*

1. Habitat Types: *(check those present)*
   ☑ Riffle ☐ Rapids ☐ Straight run ☐ Pool/Back Eddy

2. Canopy Coverage: *(stand in middle of stream and look up, check one)*
   ☐ 0 % ☑ 1-25 % ☐ 26-50 % ☐ 51-75 % ☐ 76-100 %

3. Macrophyte Coverage: *(not algae or moss, check one)*
   ☑ 0 % ☐ 1-25 % ☐ 26-50 % ☐ 51-75 % ☐ 76-100 %

4. Streamside Vegetation: (*check those present)*
   ☑ ferns/grasses ☑ shrubs ☑ deciduous trees ☐ coniferous trees

5. Dominant Streamside Vegetation: *(check one)*
   ☐ ferns/grasses ☑ shrubs ☐ deciduous trees ☐ coniferous trees

   willow
   horsetail
   sedge

6. Periphyton Coverage on Substrate: *(benthic algae, not moss, check one)*

   - ☑ **1** - Rocks are not slippery, no obvious colour (thin layer < 0.5 mm thick)
   - ☐ **2** - Rocks are slightly slippery, yellow-brown to light green colour (0.5-1 mm thick)
   - ☐ **3** - Rocks have a noticeable slippery feel (footing is slippery), with patches of thicker green to brown algae (1-5 mm thick)
   - ☐ **4** - Rocks are very slippery (algae can be removed with thumbnail), numerous large clumps of green to dark brown algae (5 mm -20 mm thick)
   - ☐ **5** - Rocks are mostly obscured by algal mat, extensive green, brown to black algal mass may have long strands (> 20 mm thick)

Note: 1 through 5 represent categories entered into the CABIN database.

## BENTHIC MACROINVERTEBRATE DATA

Habitat sampled: (*check one*) ☐ riffle ☐ rapids ☐ straight run

| **400 μm mesh Kick Net** | |
|---|---|
| Person sampling | SB |
| Sampling time (i.e. 3 min.) | 3 min |
| No. of sample jars | 1 |
| Typical depth in kick area (cm) | 8 cm |

Preservative used: 10% Formalin

Sampled sieved on site using "Bucket Swirling Method":
☐ YES ☑ NO

If YES, debris collected for QAQC ☐

Note: Indicate if a sampling method other than the recommended 400 μm mesh kick net is used.

Field Crew: SL / BP Site Code: MH-12

Sampling Date: (DD/MM/YYYY) 09/08/2022

**WATER CHEMISTRY DATA** **Time:** 11:45 (24 hr clock) **Time zone:** PDT

Air Temp: — (°C) Water Temp: ______ (°C) pH: ______

Specific Conductance: ______ (µs/cm) DO: ______ (mg/L) Turbidity: — (NTU)

Check if water samples were collected for the following analyses:

- ☑ TSS (Total Suspended Solids)
- ☑ Nitrogen (i.e. Total, Nitrate, Nitrite, Dissolved, and/or Ammonia)
- ☐ Phosphorus (Total, Ortho, and/or Dissolved)
- ☑ Major Ions (i.e. Alkalinity, Hardness, Chloride, and/or Sulphate) ☐ Other______

Note: Determining alkalinity is recommended, as are other analyses, but not required for CABIN assessments.

## CHANNEL DATA

**Slope -** Indicate how slope was measured: (check one)

☐ **Calculated from map**

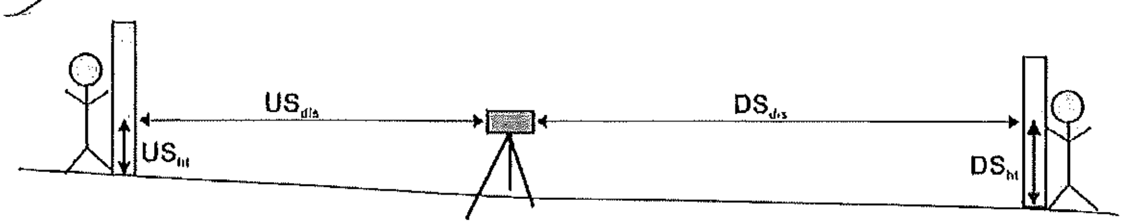
Scale: ______ (Note: small scale map recommended if field measurement is not possible - i.e. 1:20,000).
contour interval (vertical distance) ______ (m),
distance between contour intervals (horizontal distance) ______ (m)
slope = vertical distance/horizontal distance = ______

**OR**

☐ **Measured in field**

Circle device used and fill out table according to device:
a. Survey Equipment b. Hand Level & Measuring Tape

| Measurements | Upstream (U/S) | Downstream(D/S) | Calculation |
|---|---|---|---|
| [a]Top Hairline (T) | | | |
| [a]Mid Hairline (ht) OR [b]Height of rod | | | |
| [a]Bottom Hairline (B) | | | |
| [b]Distance (dis) OR [a]T-B x 100 | [a]$US_{dis}$=T-B | [a]$DS_{dis}$=T-B | $US_{dis}+DS_{dis}$= |
| Change in height (Δht) | | | $DS_{ht}-US_{ht}$= |
| Slope (Δht/total dis) | | | |



Field Crew: SL / BP Site Code: MH-12

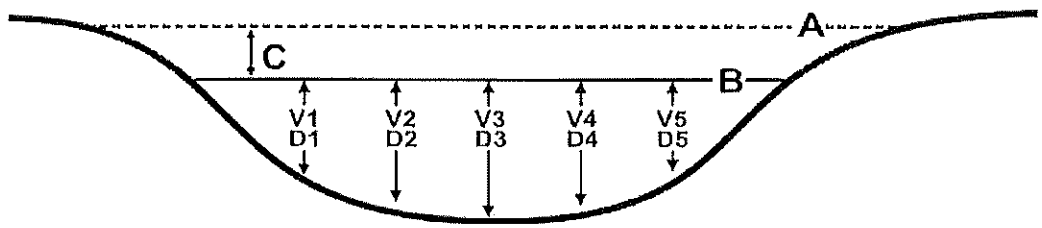
Sampling Date: (DD/MM/YYYY) 09 / 08 / 2022

## Widths and Depth

Location at site: ______________ (Indicate where in sample reach, ex. d/s of kick area)

A - Bankfull Width: 1.60 (m) B - Wetted Stream Width: ________ (m)

C - Bankfull–Wetted Depth (height from water surface to Bankfull): ________ (cm)




Note:
Wetted widths > 5 m, measure a minimum of 5-6 equidistant locations;
Wetted widths < 5 m, measure 3-4 equidistant locations.

## Velocity and Depth

Check appropriate velocity measuring device and fill out the appropriate section in chart below. Distance from shore and depth are required regardless of method:

☐ **Velocity Head Rod (or ruler)**: Velocity Equation (m/s) = $\sqrt{[2(\Delta D/100) * 9.81]}$

☐ **Rotary meters**: Gurley/Price/Mini-Price/Propeller (Refer to specific meter conversion chart for calculation)

☐ **Direct velocity measurements**: ☐ Marsh-McBirney ☐ Sontek or ☐ Other________

| | 1 | 2 | 3 | 4 | 5 | 6 | AVG |
|---|---|---|---|---|---|---|---|
| Distance from Shore (m) | | | | | | | |
| Depth (D) (cm) | | | | | | | |
| **Velocity Head Rod (ruler)** | | | | | | | |
| Flowing water Depth ($D_1$) (cm) | | | | | | | |
| Depth of Stagnation ($D_2$) (cm) | | | | | | | |
| Change in depth ($\Delta D = D_2 - D_1$) (cm) | | | | | | | |
| **Rotary meter** | | | | | | | |
| Revolutions | | | | | | | |
| Time (minimum 40 seconds) | | | | | | | |
| **Direct Measurement or calculation** | | | | | | | |
| Velocity (V) (m/s) | | | | | | | |

Field Crew: SL / BP  Site Code: MH-12

Sampling Date: (DD/MM/YYYY) 09/08/2022

## SUBSTRATE DATA

### Surrounding/Interstitial Material

Circle the substrate size category for the surrounding material.

| Substrate Size Class | Category |
|---|---|
| Organic Cover | 0 |
| < 0.1 cm (fine sand, silt or clay) | 1 |
| 0.1-0.2 cm (coarse sand) | 2 |
| 0.2-1.6 cm (gravel) | 3 |
| 1.6-3.2 cm (small pebble) | 4 |
| 3.2-6.4 cm (large pebble) | 5 |
| 6.4-12.8 cm (small cobble) | 6 |
| 12.8-25.6 cm (cobble) | 7 |
| > 25.6 cm (boulder) | 8 |
| Bedrock | 9 |

### 100 Pebble Count & Substrate Embeddedness

- Measure the intermediate axis (100 rocks) and embeddedness (10 rocks) of substrate in the stream bed.
- Indicate B for bedrock, S for sand/silt/clay (particles < 0.2 cm) and O for organic material.
- Embededness categories (E): Completely embedded = 1, 3/4 embedded, 1/2 embedded, 1/4 embedded, unembedded = 0

in mm

| | Diameter (cm) | E | | Diameter (cm) | E | | Diameter (cm) | E | | Diameter (cm) | E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | 1/4 | 26 | 36 | | 51 | 29 | | 76 | 45 | |
| 2 | 24 | | 27 | 15 | | 52 | 11 | | 77 | ~~[illegible]~~ 72 | |
| 3 | 9.9 | | 28 | 38 | | 53 | 13 | | 78 | 22 | |
| 4 | 22 | | 29 | 19 | | 54 | 54 | | 79 | 16 | 1/4 |
| 5 | 29 | | 30 | 11 | 1/2 | 55 | 27 | | 80 | 60 | |
| 6 | 20 | | 31 | 83 | | 56 | 17 | | 81 | 51 | |
| 7 | 22 | | 32 | 19 | | 57 | 34 | | 82 | 83 | |
| 8 | 48 | | 33 | 37 | | 58 | 43 | | 83 | 43 | |
| 9 | 155 | | 34 | 46 | | 59 | 27 | | 84 | 23 | |
| 10 | 32 | 0 | 35 | 21 | | 60 | 46 | 0 | 85 | 26 | |
| 11 | 15 | | 36 | 14 | | 61 | 45 | | 86 | 59 | |
| 12 | 27 | | 37 | 20 | | 62 | 46 | | 87 | 43 | |
| 13 | 24 | | 38 | 16 | | 63 | 44 | | 88 | 59 | |
| 14 | 22 | | 39 | 24 | | 64 | 33 | | 89 | 54 | |
| 15 | 8 | | 40 | 38 | 1/4 | 65 | 36 | | 90 | 55 | 1/2 |
| 16 | 44 | | 41 | 57 | | 66 | 51 | | 91 | 28 | |
| 17 | 19 | | 42 | 48 | | 67 | 44 | | 92 | 24 | |
| 18 | 73 | | 43 | 43 | | 68 | 11 | | 93 | 24 | |
| 19 | 24 | | 44 | 13 | | 69 | 19 | | 94 | 22 | |
| 20 | 24 | 1/4 | 45 | 20 | | 70 | 43 | 0 | 95 | 78 | |
| 21 | 31 | | 46 | 20 | | 71 | 38 | | 96 | 50 | |
| 22 | 42 | | 47 | 24 | | 72 | 24 | | 97 | 50 | |
| 23 | 43 | | 48 | 13 | | 73 | 50 | | 98 | 51 | |
| 24 | 19 | | 49 | 13 | | 74 | 46 | | 99 | 41 | 5 |
| 25 | 29 | | 50 | 26 | 1/2 | 75 | 68 | | 100 | 26 | 1/4 |

*Note:* The Wolman D50 (i.e. median diameter), Wolman Dg (i.e. geometric mean diameter) and the % composition of the substrate classes will be calculated automatically in the CABIN database using the 100 pebble data. All 100 pebbles must be measured in order for the CABIN database tool to perform substrate calculations.

Field Crew: SL / BP Site Code: MH-12

Sampling Date: (DD/MM/YYYY) 09 / 08 / 2022

# SITE INSPECTION

Site Inspected by: ______________________

**Communication Information**

☐ Itinerary left with contact person (include contact numbers)

Contact Person: ______________________ Time checked-in: ________

Form of communication: ☐ radio ☐ cell ☐ satellite ☐ hotel/pay phone ☐ SPOT

Phone number: ( ) ____________

**Vehicle Safety**

☐ Safety equipment (first aid, fire extinguisher, blanket, emergency kit in vehicle)

☐ Equipment and chemicals safely secured for transport

☐ Vehicle parked in safe location; pylons, hazard light, reflective vests if necessary

Notes:

**Shore & Wading Safety**

☐ Wading Task Hazard Analysis read by all field staff

☐ Wading Safe Work Procedures read by all field staff

☐ Instream hazards identified (i.e. log jams, deep pools, slippery rocks)

☐ PFD worn

☐ Appropriate footwear, waders, wading belt

☐ Belay used

Notes:

Crew: SB & BP Site Code: 24H-13

…ing Date: (DD/MM/YYYY) 09/08/2020

☐ **Occupational Health & Safety: Site Inspection Sheet completed**

## PRIMARY SITE DATA

CABIN Study Name: ____________ Local Basin Name: ____________

River/Stream Name: False Canyon Ck. Stream Order: (map scale 1:50,000) ____________

Select one: ☐ Test Site ☐ Potential Reference Site

### Geographical Description/Notes:

Surrounding Land Use: (check those present) Information Source: Field

☒ Forest ☐ Field/Pasture ☐ Agriculture ☐ Residential/Urban
☐ Logging ☒ Mining ☐ Commercial/Industrial ☐ Other ________

Dominant Surrounding Land Use: (check one) Information Source: Field

☐ Forest ☐ Field/Pasture ☐ Agriculture ☐ Residential/Urban
☐ Logging ☒ Mining ☐ Commercial/Industrial ☐ Other ________

### Location Data

Latitude: ________N Longitude: - ________W (DMS or DD)

Elevation: ______(fasl *or* masl) GPS Datum: ☐ GRS80 (NAD83/WGS84) ☐ Other: ________

### Site Location Map Drawing

Note: Indicate north



CABIN

Field Crew: SL / BP Site Code: MH - 13

Sampling Date: (DD/MM/YYYY) 09 / 08 / 2022

**Photos**

☐ Field Sheet ☑ Upstream ☑ Downstream ☑ Across Site ☐ Aerial View
☐ Substrate (exposed) ☐ Substrate (aquatic) ☐ Other ______

## REACH DATA *(represents 6 times bankfull width)*

1. Habitat Types: *(check those present)*
   ☐ Riffle ☐ Rapids ☑ Straight run ☑ Pool/Back Eddy

2. Canopy Coverage: *(stand in middle of stream and look up, check one)*
   ☐ 0 % ☐ 1-25 % ☑ 26-50 % ☐ 51-75 % ☐ 76-100 %

3. Macrophyte Coverage: *(not algae or moss, check one)*
   ☑ 0 % ☐ 1-25 % ☐ 26-50 % ☐ 51-75 % ☐ 76-100 %

4. Streamside Vegetation: *(check those present)*
   ☑ ferns/grasses ☑ shrubs ☑ deciduous trees ☑ coniferous trees

   horse tail
   alder
   spruce

5. Dominant Streamside Vegetation: *(check one)*
   ☐ ferns/grasses ☐ shrubs ☐ deciduous trees ☑ coniferous trees

6. Periphyton Coverage on Substrate: *(benthic algae, not moss, check one)*

   ☑ **1** - Rocks are not slippery, no obvious colour (thin layer < 0.5 mm thick)
   ☐ **2** - Rocks are slightly slippery, yellow-brown to light green colour (0.5-1 mm thick)
   ☐ **3** - Rocks have a noticeable slippery feel (footing is slippery), with patches of thicker green to brown algae (1-5 mm thick)
   ☐ **4** - Rocks are very slippery (algae can be removed with thumbnail), numerous large clumps of green to dark brown algae (5 mm -20 mm thick)
   ☐ **5** - Rocks are mostly obscured by algal mat, extensive green, brown to black algal mass may have long strands (> 20 mm thick)

Note: 1 through 5 represent categories entered into the CABIN database.

## BENTHIC MACROINVERTEBRATE DATA

Habitat sampled: (*check one*) ☐ riffle ☐ rapids ☑ straight run

| **400 μm mesh Kick Net** | |
|---|---|
| Person sampling | SL |
| Sampling time (i.e. 3 min.) | 3 min |
| No. of sample jars | 1 |
| Typical depth in kick area (cm) | 60 cm |

Preservative used: 10 % Formalin

Sampled sieved on site using "Bucket Swirling Method":
☐ YES ☑ NO

If YES, debris collected for QAQC ☐

Note: Indicate if a sampling method other than the recommended 400 μm mesh kick net is used.

Field Crew: SL / BP Site Code: MH - 13

Sampling Date: (DD/MM/YYYY) 09/08/2022

**WATER CHEMISTRY DATA** Time: 1330 (24 hr clock) Time zone: PDT

Air Temp: — (°C) Water Temp: ______ (°C) pH: ______

Specific Conductance: ______ (µs/cm) DO: ______ (mg/L) Turbidity: — (NTU)

Check if water samples were collected for the following analyses:

- ☑ TSS (Total Suspended Solids)
- ☑ Nitrogen (i.e. Total, Nitrate, Nitrite, Dissolved, and/or Ammonia)
- ☐ Phosphorus (Total, Ortho, and/or Dissolved)
- ☑ Major Ions (i.e. Alkalinity, Hardness, Chloride, and/or Sulphate) ☐ Other______

Note: Determining alkalinity is recommended, as are other analyses, but not required for CABIN assessments.

## CHANNEL DATA

**Slope -** Indicate how slope was measured: (check one)

☐ **Calculated from map**

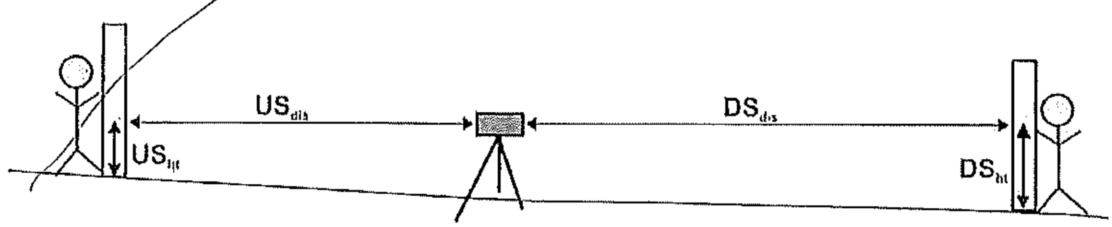
Scale: ______ (Note: small scale map recommended if field measurement is not possible - i.e. 1:20,000).
contour interval (vertical distance) ______ (m),
distance between contour intervals (horizontal distance) ______ (m)
slope = vertical distance/horizontal distance = ______

**OR**

☐ **Measured in field**

Circle device used and fill out table according to device:
a. Survey Equipment b. Hand Level & Measuring Tape

| Measurements | Upstream (U/S) | Downstream(D/S) | Calculation |
|---|---|---|---|
| [a]Top Hairline (T) | | | |
| [a]Mid Hairline (ht) OR [b]Height of rod | | | |
| [a]Bottom Hairline (B) | | | |
| [b]Distance (dis) OR [a]T-B x 100 | [a]$US_{dis}$=T-B | [a]$DS_{dis}$=T-B | $US_{dis}+DS_{dis}=$ |
| Change in height (Δht) | | | $DS_{ht}-US_{ht}=$ |
| Slope (Δht/total dis) | | | |






CABIN

Field Crew: ______________________ Site Code: ____________

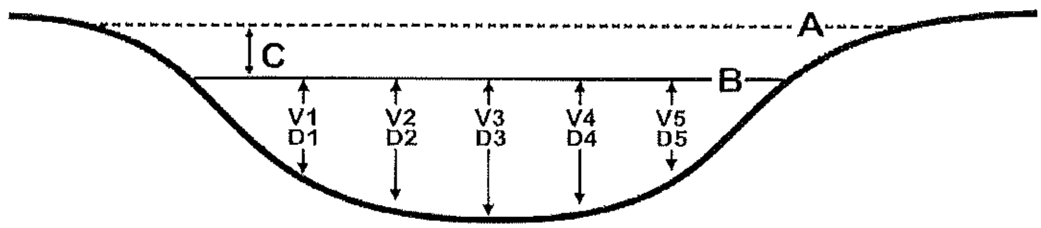
Sampling Date: (DD/MM/YYYY) ______________________

## Widths and Depth

Location at site: ______________________ *(Indicate where in sample reach, ex. d/s of kick area)*

A - Bankfull Width: 3 (m) B - Wetted Stream Width: ________ (m)

C - Bankfull–Wetted Depth (height from water surface to Bankfull): ____________ (cm)




Note:
Wetted widths > 5 m, measure a minimum of 5-6 equidistant locations;
Wetted widths < 5 m, measure 3-4 equidistant locations.

## Velocity and Depth

Check appropriate velocity measuring device and fill out the appropriate section in chart below. Distance from shore and depth are required regardless of method:

☐ **Velocity Head Rod (or ruler)**: Velocity Equation (m/s) = $\sqrt{[2(\Delta D/100) * 9.81]}$

☐ **Rotary meters**: Gurley/Price/Mini-Price/Propeller (Refer to specific meter conversion chart for calculation)

☐ **Direct velocity measurements**: ☐ Marsh-McBirney ☐ Sontek or ☐ Other____________

| | 1 | 2 | 3 | 4 | 5 | 6 | AVG |
|---|---|---|---|---|---|---|---|
| Distance from Shore (m) | | | | | | | |
| Depth (**D**) (cm) | | | | | | | |
| **Velocity Head Rod (ruler)** | | | | | | | |
| Flowing water Depth ($D_1$) (cm) | | | | | | | |
| Depth of Stagnation ($D_2$) (cm) | | | | | | | |
| Change in depth ($\Delta D = D_2 - D_1$) (cm) | | | | | | | |
| **Rotary meter** | | | | | | | |
| Revolutions | | | | | | | |
| Time (minimum 40 seconds) | | | | | | | |
| **Direct Measurement or calculation** | | | | | | | |
| Velocity (**V**) (m/s) | | | | | | | |

in mm

very long narrow rocks "shells"

Field Crew: ______________________ Site Code: ______________

Sampling Date: (DD/MM/YYYY) ______________________

## SUBSTRATE DATA

### Surrounding/Interstitial Material

Circle the substrate size category for the surrounding material.

| Substrate Size Class | Category |
|---|---|
| Organic Cover | 0 |
| < 0.1 cm (fine sand, silt or clay) | 1 |
| 0.1-0.2 cm (coarse sand) | 2 |
| 0.2-1.6 cm (gravel) | 3 |
| 1.6-3.2 cm (small pebble) | 4 |
| 3.2-6.4 cm (large pebble) | 5 |
| 6.4-12.8 cm (small cobble) | 6 |
| 12.8-25.6 cm (cobble) | 7 |
| > 25.6 cm (boulder) | 8 |
| Bedrock | 9 |

### 100 Pebble Count & Substrate Embeddedness

- Measure the intermediate axis (100 rocks) and embeddedness (10 rocks) of substrate in the stream bed.
- Indicate B for bedrock, S for sand/silt/clay (particles < 0.2 cm) and O for organic material.
- Embededness categories (E): Completely embedded = 1, 3/4 embedded, 1/2 embedded, 1/4 embedded, unembedded = 0

| | Diameter (cm) | E | | Diameter (cm) | E | | Diameter (cm) | E | | Diameter (cm) | E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 26 | 0 | 26 | 47 | | 51 | 15 | | 76 | 25 | |
| 2 | 42 | | 27 | 37 | | 52 | 82 | | 77 | 52 | |
| 3 | 47 | | 28 | 32 | | 53 | too long | | 78 | 16 | |
| 4 | 33 | | 29 | 54 | | 54 | 350 | | 79 | 58 | |
| 5 | 29 | | 30 | 130 | 0 | 55 | 13 | | 80 | 58 | 1/4 |
| 6 | 19 | | 31 | 35 | | 56 | 51 | | 81 | 36 | |
| 7 | 37 | | 32 | 20 | | 57 | 17 | | 82 | 60 | |
| 8 | 27 | | 33 | 52 | | 58 | 15 | | 83 | 59 | |
| 9 | 28 | | 34 | 72 | | 59 | 60 | 0 | 84 | ~~74~~ <1 | S |
| 10 | 49 | 0 | 35 | 29 | | 60 | 31 | | 85 | 27 | |
| 11 | 31 | | 36 | 99 | | 61 | 19 | | 86 | 33 | |
| 12 | 48 | | 37 | 39 | | 62 | 66 | | 87 | 23 | |
| 13 | 33 | | 38 | 27 | | 63 | 37 | | 88 | 38 | |
| 14 | 37 | | 39 | 34 | | 64 | 30 | | 89 | 53 | |
| 15 | 110 | | 40 | 72 | 1/2 | 65 | 76 | | 90 | 35 | 0 |
| 16 | 62 | | 41 | 46 | | 66 | 22 | | 91 | 15 | |
| 17 | 33 | | 42 | 40 | | 67 | 25 | | 92 | 32 | |
| 18 | 33 | | 43 | 38 | | 68 | 40 | | 93 | 24 | |
| 19 | 10 | | 44 | ~~[illegible]~~ 1 | S | 69 | 34 | | 94 | 27 | |
| 20 | 27 | 0 | 45 | 28 | | 70 | 26 | 3/4 | 95 | 17 | |
| 21 | 70 | | 46 | 56 | | 71 | 75 | | 96 | 8 | |
| 22 | 123 | | 47 | 56 | | 72 | 15 | | 97 | 42 | |
| 23 | 89 | | 48 | 78 | | 73 | 28 | | 98 | 31 | |
| 24 | 39 | | 49 | 15 | | 74 | 45 | | 99 | 57 | |
| 25 | 115 | | 50 | 41 | 0 | 75 | 33 | | 100 | 25 | 0 |

*Note:* The Wolman D50 (i.e. median diameter), Wolman Dg (i.e. geometric mean diameter) and the % composition of the substrate classes will be calculated automatically in the CABIN database using the 100 pebble data. All 100 pebbles must be measured in order for the CABIN database tool to perform substrate calculations.



CABIN

Field Crew: ______________________________ Site Code: ____________

Sampling Date: (DD/MM/YYYY) ____________________

# SITE INSPECTION

Site Inspected by: __________________________

**Communication Information**

☐ Itinerary left with contact person (include contact numbers)

Contact Person: ______________________ Time checked-in: ______

Form of communication: ☐ radio ☐ cell ☐ satellite ☐ hotel/pay phone ☐ SPOT

Phone number: ( ) __________

**Vehicle Safety**

☐ Safety equipment (first aid, fire extinguisher, blanket, emergency kit in vehicle)

☐ Equipment and chemicals safely secured for transport

☐ Vehicle parked in safe location; pylons, hazard light, reflective vests if necessary

Notes:

**Shore & Wading Safety**

☐ Wading Task Hazard Analysis read by all field staff

☐ Wading Safe Work Procedures read by all field staff

☐ Instream hazards identified (i.e. log jams, deep pools, slippery rocks)

☐ PFD worn

☐ Appropriate footwear, waders, wading belt

☐ Belay used

Notes:

Field Crew: 4L & BX Site Code: MH-29

Sampling Date: (DD/MM/YYYY) 10/08/2008

☐ **Occupational Health & Safety: Site Inspection Sheet completed**

## PRIMARY SITE DATA

CABIN Study Name: ______________ Local Basin Name: ______________

River/Stream Name: ______________ Stream Order: (map scale 1:50,000) ______________

Select one: ☐ Test Site ☒ Potential Reference Site

### Geographical Description/Notes:

Surrounding Land Use: (check those present) Information Source: Field

☑ Forest ☐ Field/Pasture ☐ Agriculture ☐ Residential/Urban

☐ Logging ☑ Mining ☐ Commercial/Industrial ☐ Other ______________

Dominant Surrounding Land Use: (check one) Information Source: Field

☐ Forest ☐ Field/Pasture ☐ Agriculture ☐ Residential/Urban

☐ Logging ☑ Mining ☐ Commercial/Industrial ☐ Other ______________

### Location Data

Latitude: ______________N Longitude: - ______________W (DMS or DD)

Elevation: ________(fasl *or* masl) GPS Datum: ☐ GRS80 (NAD83/WGS84) ☐ Other: ________

### Site Location Map Drawing

Note: Indicate north



CABIN

Field Crew: SL + BP Site Code: MH-29

Sampling Date: (DD/MM/YYYY) 10 Aug 2022

**Photos**

☐ Field Sheet ☑ Upstream ☑ Downstream ☑ Across Site ☐ Aerial View
☐ Substrate (exposed) ☐ Substrate (aquatic) ☐ Other ______

## REACH DATA *(represents 6 times bankfull width)*

1. Habitat Types: *(check those present)*
   ☑ Riffle ☐ Rapids ☑ Straight run ☐ Pool/Back Eddy

2. Canopy Coverage: *(stand in middle of stream and look up, check one)*
   ☐ 0 % ☐ 1-25 % ☑ 26-50 % ☐ 51-75 % ☐ 76-100 %

3. Macrophyte Coverage: *(not algae or moss, check one)*
   ☐ 0 % ☐ 1-25 % ☐ 26-50 % ☐ 51-75 % ☐ 76-100 %

4. Streamside Vegetation: *(check those present)*
   ☑ ferns/grasses ☑ shrubs ☐ deciduous trees ☐ coniferous trees horsetail willow

5. Dominant Streamside Vegetation: *(check one)*
   ☑ ferns/grasses ☐ shrubs ☐ deciduous trees ☐ coniferous trees

6. Periphyton Coverage on Substrate: *(benthic algae, not moss, check one)*

   ☐ 1 - Rocks are not slippery, no obvious colour (thin layer < 0.5 mm thick)
   ☑ 2 - Rocks are slightly slippery, yellow-brown to light green colour (0.5-1 mm thick)
   ☐ 3 - Rocks have a noticeable slippery feel (footing is slippery), with patches of thicker green to brown algae (1-5 mm thick)
   ☐ 4 - Rocks are very slippery (algae can be removed with thumbnail), numerous large clumps of green to dark brown algae (5 mm -20 mm thick)
   ☐ 5 - Rocks are mostly obscured by algal mat, extensive green, brown to black algal mass may have long strands (> 20 mm thick)

Note: 1 through 5 represent categories entered into the CABIN database.

## BENTHIC MACROINVERTEBRATE DATA

Habitat sampled: *(check one)* ☐ riffle ☐ rapids ☐ straight run

| 400 μm mesh Kick Net | |
|---|---|
| Person sampling | SL |
| Sampling time (i.e. 3 min.) | 3 min |
| No. of sample jars | 1 |
| Typical depth in kick area (cm) | 36 |

Preservative used: 10% Formalin

Sampled sieved on site using "Bucket Swirling Method":
☐ YES ☑ NO
If YES, debris collected for QAQC ☐

Note: Indicate if a sampling method other than the recommended 400 μm mesh kick net is used.



CABIN

Field Crew: BP & SL Site Code: MH-29

Sampling Date: (DD/MM/YYYY) 10 Aug 2022

**WATER CHEMISTRY DATA** **Time:** 1200 (24 hr clock) **Time zone:** PDT

Air Temp: — (°C) Water Temp: ____ (°C) pH: ____

Specific Conductance: ____ (µs/cm) DO: ____ (mg/L) Turbidity: — (NTU)

Check if water samples were collected for the following analyses:

- ☑ TSS (Total Suspended Solids)
- ☑ Nitrogen (i.e. Total, Nitrate, Nitrite, Dissolved, and/or Ammonia)
- ☐ Phosphorus (Total, Ortho, and/or Dissolved)
- ☑ Major Ions (i.e. Alkalinity, Hardness, Chloride, and/or Sulphate) ☐ Other____

Note: Determining alkalinity is recommended, as are other analyses, but not required for CABIN assessments.

## CHANNEL DATA

**Slope -** Indicate how slope was measured: (check one)

☐ **Calculated from map**

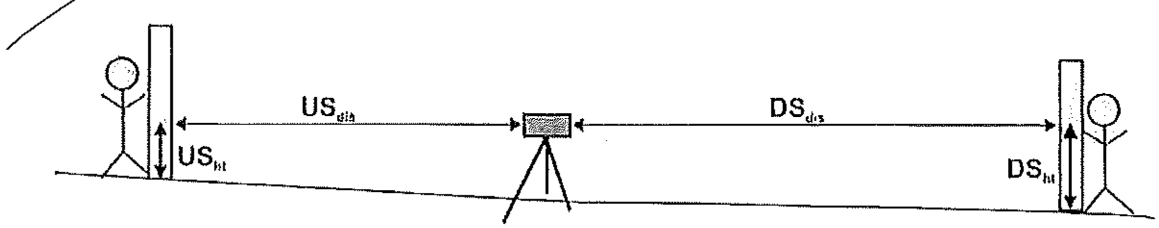
Scale: ____ (Note: small scale map recommended if field measurement is not possible - i.e. 1:20,000).
contour interval (vertical distance) ____ (m),
distance between contour intervals (horizontal distance) ____ (m)
slope = vertical distance/horizontal distance = ____

**OR**

☐ **Measured in field**

Circle device used and fill out table according to device:
a. Survey Equipment b. Hand Level & Measuring Tape

| Measurements | Upstream (U/S) | Downstream(D/S) | Calculation |
|---|---|---|---|
| [a]Top Hairline (T) | | | |
| [a]Mid Hairline (ht) OR [b]Height of rod | | | |
| [a]Bottom Hairline (B) | | | |
| [b]Distance (dis) OR [a]T-B x 100 | [a]$US_{dis}$=T-B | [a]$DS_{dis}$=T-B | $US_{dis}+DS_{dis}$= |
| Change in height (Δht) | | | $DS_{ht}-US_{ht}$= |
| Slope (Δht/total dis) | | | |



Field Crew: BP & SL Site Code: MH-29

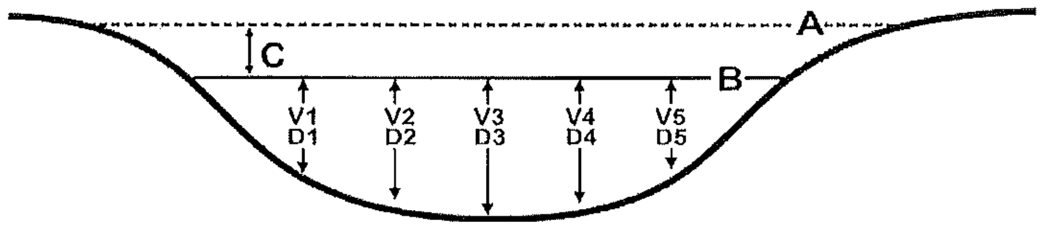
Sampling Date: (DD/MM/YYYY) 10 Aug 2022

## Widths and Depth

Location at site: at kick area (Indicate where in sample reach, ex. d/s of kick area)

A - Bankfull Width: 0.75 (m) B - Wetted Stream Width: ____ (m)

C - Bankfull–Wetted Depth (height from water surface to Bankfull): ____ (cm)




Note:
Wetted widths > 5 m, measure a minimum of 5-6 equidistant locations;
Wetted widths < 5 m, measure 3-4 equidistant locations.

## Velocity and Depth

Check appropriate velocity measuring device and fill out the appropriate section in chart below. Distance from shore and depth are required regardless of method:

☐ **Velocity Head Rod (or ruler)**: Velocity Equation (m/s) = $\sqrt{[2(\Delta D/100) * 9.81]}$

☐ **Rotary meters**: Gurley/Price/Mini-Price/Propeller (Refer to specific meter conversion chart for calculation)

☑ **Direct velocity measurements**: ☐ Marsh-McBirney ☐ Sontek or ☑ Other salt slug

| | 1 | 2 | 3 | 4 | 5 | 6 | AVG |
|---|---|---|---|---|---|---|---|
| Distance from Shore (m) | | | | | | | |
| Depth (D) (cm) | | | | | | | |
| **Velocity Head Rod (ruler)** | | | | | | | |
| Flowing water Depth ($D_1$) (cm) | | | | | | | |
| Depth of Stagnation ($D_2$) (cm) | | | | | | | |
| Change in depth ($\Delta D = D_2 - D_1$) (cm) | | | | | | | |
| **Rotary meter** | | | | | | | |
| Revolutions | | | | | | | |
| Time (minimum 40 seconds) | | | | | | | |
| **Direct Measurement or calculation** | | | | | | | |
| Velocity (V) (m/s) | | | | | | | |



CABIN

Field Crew: BP & SL Site Code: MH-29

Sampling Date: (DD/MM/YYYY) 10/08/2022

## SUBSTRATE DATA

### Surrounding/Interstitial Material

Circle the substrate size category for the surrounding material.

| Substrate Size Class | Category |
|---|---|
| Organic Cover | 0 |
| < 0.1 cm (fine sand, silt or clay) | 1 |
| 0.1-0.2 cm (coarse sand) | 2 |
| 0.2-1.6 cm (gravel) | 3 |
| 1.6-3.2 cm (small pebble) | 4 |
| 3.2-6.4 cm (large pebble) | 5 |
| 6.4-12.8 cm (small cobble) | 6 |
| 12.8-25.6 cm (cobble) | 7 |
| > 25.6 cm (boulder) | 8 |
| Bedrock | 9 |

### 100 Pebble Count & Substrate Embeddedness

- Measure the intermediate axis (100 rocks) and embeddedness (10 rocks) of substrate in the stream bed.
- Indicate B for bedrock, S for sand/silt/clay (particles < 0.2 cm) and O for organic material.
- Embededness categories (E): Completely embedded = 1, 3/4 embedded, 1/2 embedded, 1/4 embedded, unembedded = 0

in mm

| | Diameter (cm) | E | | Diameter (cm) | E | | Diameter (cm) | E | | Diameter (cm) | E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 0 | 26 | 41 | | 51 | 58 | | 76 | 63 | |
| 2 | 46 | | 27 | 107 | | 52 | 27 | | 77 | 51 | |
| 3 | 13 | | 28 | 29 | | 53 | 18 | | 78 | 18 | |
| 4 | 35 | | 29 | 37 | | 54 | 31 | | 79 | 51 | |
| 5 | 46 | | 30 | 92 | 1/4 | 55 | 13 | | 80 | 70 | 1/4 |
| 6 | 43 | | 31 | 18 | | 56 | 34 | | 81 | 62 | |
| 7 | 37 | | 32 | 43 | | 57 | 21 | | 82 | 42 | |
| 8 | 33 | | 33 | 109 | | 58 | 30 | | 83 | 23 | |
| 9 | 250 | | 34 | 107 | | 59 | 12 | | 84 | 61 | |
| 10 | 103 | 0 | 35 | 19 | | 60 | 22 | 0 | 85 | 22 | |
| 11 | 99 | | 36 | 33 | | 61 | 2 | | 86 | 36 | |
| 12 | 27 | | 37 | 37 | | 62 | 27 | | 87 | 4 | |
| 13 | 102 | | 38 | 51 | | 63 | 15 | | 88 | 33 | |
| 14 | 28 | | 39 | 51 | | 64 | 5 | | 89 | 16 | |
| 15 | 69 | | 40 | 102 | 0 | 65 | 103 | | 90 | 46 | 0 |
| 16 | 33 | | 41 | 65 | | 66 | 33 | | 91 | 43 | |
| 17 | 23 | | 42 | 3 | | 67 | 54 | | 92 | 40 | |
| 18 | 24 | | 43 | 27 | | 68 | 8 | | 93 | 37 | |
| 19 | 64 | | 44 | 33 | | 69 | 4 | | 94 | 23 | |
| 20 | 58 | 0 | 45 | 35 | | 70 | 2 | 0 | 95 | 57 | |
| 21 | 20 | | 46 | 27 | | 71 | 4 | | 96 | 66 | |
| 22 | 23 | | 47 | 28 | | 72 | 15 | | 97 | 10 | |
| 23 | 87 | | 48 | 46 | | 73 | 24 | | 98 | 63 | |
| 24 | 25 | | 49 | 4 | | 74 | 10 | | 99 | 19 | |
| 25 | 155 | | 50 | 60 | 1/4 | 75 | 18 | | 100 | 42 | 1/4 |

*Note:* The Wolman D50 (i.e. median diameter), Wolman Dg (i.e. geometric mean diameter) and the % composition of the substrate classes will be calculated automatically in the CABIN database using the 100 pebble data. All 100 pebbles must be measured in order for the CABIN database tool to perform substrate calculations.

Field Crew: BP + SL Site Code: MH-29

Sampling Date: (DD/MM/YYYY) 10/08/22

# SITE INSPECTION

Site Inspected by: ______________________

**Communication Information**

☐ Itinerary left with contact person (include contact numbers)

Contact Person: ______________________ Time checked-in: ________

Form of communication: ☐ radio ☐ cell ☐ satellite ☐ hotel/pay phone ☐ SPOT

Phone number: ( ) ____________

**Vehicle Safety**

☐ Safety equipment (first aid, fire extinguisher, blanket, emergency kit in vehicle)

☐ Equipment and chemicals safely secured for transport

☐ Vehicle parked in safe location; pylons, hazard light, reflective vests if necessary

Notes:

**Shore & Wading Safety**

☐ Wading Task Hazard Analysis read by all field staff

☐ Wading Safe Work Procedures read by all field staff

☐ Instream hazards identified (i.e. log jams, deep pools, slippery rocks)

☐ PFD worn

☐ Appropriate footwear, waders, wading belt

☐ Belay used

Notes:

# APPENDIX F:

# SAMPLING SITE PHOTOS

## PHOTOGRAPHS

Photo 1: MH-04 Downstream, Aug 2022

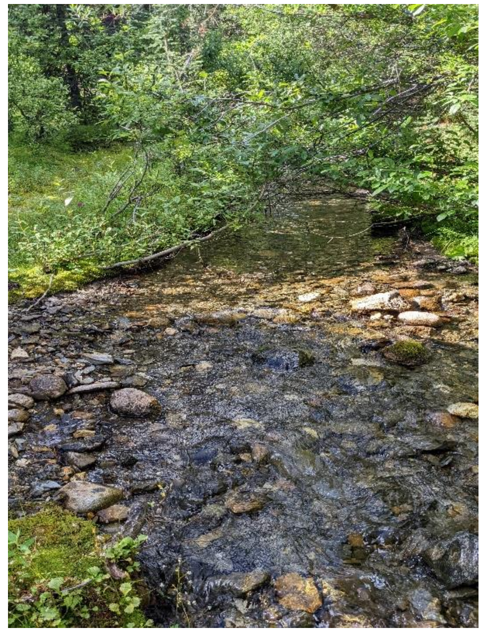


Photo 2: MH-04 Upstream, Aug 2022

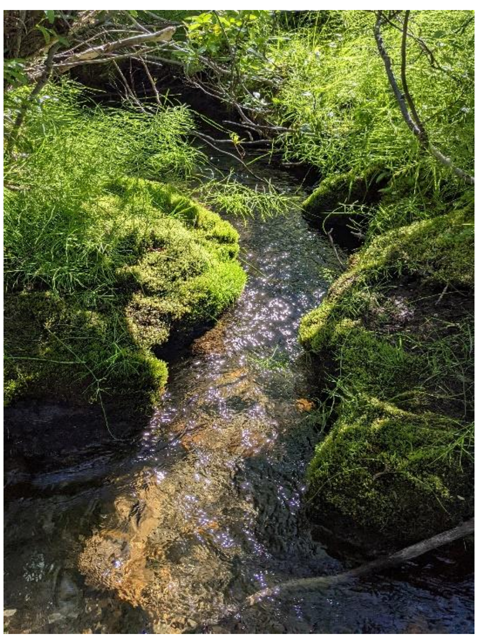


Photo 3: MH-11 Downstream, Aug 2022

Photo 4: MH-04 Upstream, Aug 2022

Photo 5: MH-12 Downstream, Aug 2022

Photo 6: MH-12 Upstream, Aug 2022

Photo 7: MH-13 Downstream, Aug 2022

Photo 8: MH-13 Upstream, Aug 2022

**Photo 9: MH-29 Downstream, Aug 2022**

**Photo 10: MH-29 Upstream, Aug 2022**

# APPENDIX G:

# WATER QUALITY RESULTS

**Water Licence QZ16-051 - 2022 Q3 Quarterly Report**
**Surface Water Quality**

| | | MH-11 | MH-12 | MH-15 | MH-02 | MH-04 | MH-29 | MH-22 | MH-22A | MH-30 | MH-13 | SDH-S2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Upper False Canyon Creek | East Fork Tributary E False Canyon Creek | West Fork Tributary E False Canyon Creek | North Dam Seepage | Lower Camp Creek | Access Creek, u/s of Camp Creek | Burnick 1200 Portal | Burnick 1200 Portal - Discharge Bypass | Waste rock below Main Zone | False Canyon Creek (10 km) | Waste Rock Seep Below Main Zone |
| | Units | 10-Aug-22 | 09-Aug-22 | 09-Aug-22 | 09-Aug-22 | 08-Aug-22 | 09-Aug-22 | 10-Aug-22 | 10-Aug-22 | 09-Aug-22 | 09-Aug-22 | 09-Aug-22 |
| Discharge | L/min | 3680 | - | 7344 | 20 | 1180 | 690 | 40 | Not Sampled - Site Inaccessible | Not Sampled - Site Inaccessible | 13720 | Water not Accessible |
| Temperature - Field | C | 7.1 | 5.6 | 9.2 | 10.8 | 4.2 | 6.4 | 2.7 | | | 9.7 | |
| pH - Field | pH | 8.2 | 8.3 | 7.96 | 7.35 | 8.22 | 8.26 | 7.18 | | | 8.26 | |
| pH - Lab | pH | 8.23 | 8.30 | 8.23 | 7.98 | 8.17 | 8.25 | 7.93 | | | 8.27 | |
| Hardness (Dissolved, CaCO3) | mg/L | 196 | 170 | 199 | 584 | 147 | 182 | 135 | | | 197 | |
| Conductivity - Field | µS/cm | 362.7 | 310.6 | 350.5 | 1067 | 290.4 | 333.9 | 274.2 | | | 348.2 | |
| Conductivity - Lab | µS/cm | 375 | 317 | 360 | 1070 | 297 | 337 | 273 | | | 358 | |
| Total Dissolved Solids | mg/L | 201 | 177 | 196 | 781 | 170 | 193 | 158 | | | 192 | |
| Total Suspended Solids | mg/L | <1.0 | 1.0 | 1.3 | 5.5 | <1.0 | <1.0 | <1.0 | | | 1.7 | |
| Ammonia Nitrogen | mg/L | <0.0050 | 0.0089 | 0.0056 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | | | <0.0050 | |
| NO2-W | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0010 | <0.0010 | <0.0010 | | | <0.0010 | |
| NO3-W | mg/L | 0.0854 | 0.0412 | 0.0076 | <0.0250 | 0.134 | 0.0398 | 0.117 | | | 0.0127 | |
| Sulphate | mg/L | 12.0 | 7.93 | 2.64 | 267 | 14.7 | 2.79 | 33.3 | | | 6.23 | |
| Fluoride_Name | mg/L | - | - | - | - | - | - | - | | | - | |
| Chloride_Name | mg/L | - | - | - | - | - | - | - | | | - | |
| Bromide | mg/L | <0.050 | <0.050 | <0.050 | <0.250 | <0.050 | <0.050 | <0.050 | | | <0.050 | |
| Dissolved Oxygen | mg/L | 8.8 | 9.25 | 9.14 | 6.14 | 10.86 | 8.64 | 10.74 | | | 8.15 | |
| Dissolved Oxygen | % | 82.9 | 73.1 | 79.6 | 56 | 83.3 | 80.2 | 80.5 | | | 86.9 | |
| Redox | mV | 185.1 | 206.5 | 167.5 | 144 | 206.2 | 183.9 | 73.9 | | | 155.2 | |
| Alkalinity (CaCO3) | mg/L | 211 | 162 | 196 | 360 | 142 | 182 | 106 | | | 190 | |
| Total Silver | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | | <0.000010 | |
| Total Aluminum | mg/L | 0.0085 | 0.0093 | 0.0101 | 0.0128 | 0.0048 | 0.0066 | <0.0030 | | | 0.0128 | |
| Total Arsenic | mg/L | 0.00062 | 0.00087 | 0.00048 | 0.00074 | 0.00042 | 0.00082 | 0.00383 | | | 0.00054 | |
| Total Barium | mg/L | 0.0650 | 0.0738 | 0.194 | 0.193 | 0.0210 | 0.0518 | 0.0159 | | | 0.155 | |
| Total Beryllium | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | | | <0.000020 | |
| Total Boron | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | | | <0.010 | |
| Total Bismuth | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | | | <0.000050 | |
| Total Calcium | mg/L | 62.4 | 54.6 | 54.6 | 198 | 52.9 | 63.2 | 44.1 | | | 53.6 | |
| Total Cadmium | mg/L | 0.0000691 | 0.0000410 | 0.0000155 | 0.000104 | 0.000261 | 0.0000609 | 0.00316 | | | 0.0000250 | |
| Total Cobalt | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00100 | <0.00010 | <0.00010 | <0.00010 | | | <0.00010 | |
| Total Chromium III | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | | <0.00050 | |
| Total Chromium VI | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | | <0.00050 | |
| Total Chromium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | | <0.00050 | |
| Total Copper | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00062 | <0.00050 | | | 0.00290 | |
| Total Iron | mg/L | 0.054 | 0.012 | 0.172 | 0.121 | <0.010 | 0.014 | <0.010 | | | 0.247 | |
| Total Mercury | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | | | <0.0000050 | |
| Total Potassium | mg/L | 0.355 | 0.422 | 0.300 | 2.21 | 0.379 | 0.254 | 0.545 | | | 0.293 | |
| Total Lithium | mg/L | 0.0017 | 0.0015 | 0.0012 | <0.0010 | 0.0014 | 0.0016 | 0.0052 | | | 0.0012 | |
| Total Magnesium | mg/L | 7.58 | 5.66 | 12.5 | 17.0 | 3.00 | 5.42 | 5.97 | | | 12.5 | |
| Total Manganese | mg/L | 0.00869 | 0.00163 | 0.0128 | 2.37 | 0.00075 | 0.00395 | 0.00038 | | | 0.0113 | |
| Total Molybdenum | mg/L | 0.000851 | 0.00120 | 0.00182 | 0.00141 | 0.000665 | 0.000655 | 0.00876 | | | 0.00106 | |
| Total Sodium | mg/L | 1.04 | 0.950 | 0.975 | 11.0 | 0.785 | 0.893 | 0.834 | | | 0.875 | |
| Total Nickel | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.00107 | <0.00050 | <0.00050 | 0.00333 | | | <0.00050 | |
| Total Lead | mg/L | 0.000265 | 0.000281 | <0.000050 | 0.000346 | 0.000239 | <0.000050 | 0.000223 | | | 0.000132 | |
| Total Phosphorus | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | | | <0.050 | |
| Total Antimony | mg/L | 0.00015 | 0.00022 | 0.00011 | <0.00010 | 0.00012 | 0.00018 | 0.00231 | | | 0.00012 | |
| Total Selenium | mg/L | 0.000532 | 0.000579 | 0.000427 | 0.000088 | 0.000734 | 0.000497 | 0.0115 | | | 0.000512 | |
| Total Silicon | mg/L | 3.79 | 4.32 | 3.91 | 6.14 | 3.33 | 4.05 | 4.51 | | | 3.38 | |
| Total Tin | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | | <0.00010 | |
| Total Strontium | mg/L | 0.248 | 0.205 | 0.176 | 0.690 | 0.186 | 0.220 | 0.201 | | | 0.202 | |

**Water Licence QZ16-051 - 2022 Q3 Quarterly Report**
**Surface Water Quality**

| | | MH-11 | MH-12 | MH-15 | MH-02 | MH-04 | MH-29 | MH-22 | MH-22A | MH-30 | MH-13 | SDH-S2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Upper False Canyon Creek | East Fork Tributary E False Canyon Creek | West Fork Tributary E False Canyon Creek | North Dam Seepage | Lower Camp Creek | Access Creek, u/s of Camp Creek | Burnick 1200 Portal | Burnick 1200 Portal - Discharge Bypass | Waste rock below Main Zone | False Canyon Creek (10 km) | Waste Rock Seep Below Main Zone |
| | Units | 10-Aug-22 | 09-Aug-22 | 09-Aug-22 | 09-Aug-22 | 08-Aug-22 | 09-Aug-22 | 10-Aug-22 | 10-Aug-22 | 09-Aug-22 | 09-Aug-22 | 09-Aug-22 |
| Total Sulphur | mg/L | 4.38 | 2.69 | 0.89 | 100 | 5.12 | 1.22 | 11.9 | Not Sampled - Site Inaccessible | Not Sampled - Site Inaccessible | 2.32 | Water not Accessible |
| Total Titanium | mg/L | <0.00030 | <0.00030 | 0.00042 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | | | <0.00030 | |
| Total Thallium | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000016 | | | <0.000010 | |
| Total Uranium | mg/L | 0.000952 | 0.000854 | 0.000688 | 0.00140 | 0.000745 | 0.000557 | 0.00286 | | | 0.00116 | |
| Total Vanadium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | | <0.00050 | |
| Total Zinc | mg/L | 0.0058 | <0.0030 | <0.0030 | 0.0145 | 0.0043 | <0.0030 | 0.424 | | | <0.0030 | |
| Total Zirconium | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | | <0.00020 | |
| Dissolved Arsenic | mg/L | 0.00062 | 0.00087 | 0.00046 | 0.00071 | 0.00042 | 0.00081 | 0.00378 | | | 0.00050 | |
| Dissolved Silver | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | | <0.000010 | |
| Dissolved Aluminium | mg/L | 0.0069 | 0.0025 | 0.0029 | 0.0024 | 0.0020 | 0.0022 | <0.0010 | | | 0.0029 | |
| Dissolved Barium | mg/L | 0.0617 | 0.0792 | 0.195 | 0.184 | 0.0204 | 0.0540 | 0.0161 | | | 0.153 | |
| Dissolved Beryllium | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | | | <0.000020 | |
| Dissolved Boron | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | | | <0.010 | |
| Dissolved Bismuth | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | | | <0.000050 | |
| Dissolved Calcium | mg/L | 65.4 | 58.2 | 57.7 | 205 | 53.7 | 63.9 | 44.2 | | | 56.7 | |
| Dissolved Cadmium | mg/L | 0.0000576 | 0.0000416 | 0.0000092 | 0.0000692 | 0.000261 | 0.0000646 | 0.00329 | | | 0.0000149 | |
| Dissolved Cobalt | mg/L | <0.00010 | <0.00010 | <0.00010 | 0.00099 | <0.00010 | <0.00010 | <0.00010 | | | <0.00010 | |
| Dissolved Chromium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | | <0.00050 | |
| Dissolved Copper | mg/L | 0.00034 | 0.00033 | 0.00024 | 0.00038 | 0.00048 | 0.00037 | 0.00037 | | | 0.00048 | |
| Dissolved Iron | mg/L | 0.034 | <0.010 | 0.088 | 0.070 | <0.010 | <0.010 | <0.010 | | | 0.108 | |
| Dissolved Mercury | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | | | <0.0000050 | |
| Dissolved Potassium | mg/L | 0.366 | 0.446 | 0.302 | 2.27 | 0.399 | 0.270 | 0.557 | | | 0.325 | |
| Dissolved Lithium | mg/L | 0.0018 | 0.0015 | 0.0012 | <0.0010 | 0.0015 | 0.0015 | 0.0052 | | | 0.0012 | |
| Dissolved Magnesium | mg/L | 7.84 | 6.01 | 13.3 | 17.6 | 3.09 | 5.52 | 6.08 | | | 13.4 | |
| Dissolved Manganese | mg/L | 0.00745 | 0.00078 | 0.00549 | 2.51 | 0.00046 | 0.00320 | 0.00036 | | | 0.00727 | |
| Dissolved Molybdenum | mg/L | 0.000930 | 0.00124 | 0.00184 | 0.00147 | 0.000715 | 0.000633 | 0.00886 | | | 0.00106 | |
| Dissolved Sodium | mg/L | 1.05 | 1.01 | 0.979 | 11.1 | 0.814 | 0.888 | 0.813 | | | 0.934 | |
| Dissolved Nickel | mg/L | <0.00050 | <0.00050 | <0.00050 | 0.00108 | <0.00050 | <0.00050 | 0.00326 | | | <0.00050 | |
| Dissolved Lead | mg/L | 0.000114 | <0.000050 | <0.000050 | 0.000080 | 0.000134 | <0.000050 | 0.000189 | | | <0.000050 | |
| Dissolved Phosphorus | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | | | <0.050 | |
| Dissolved Antimony | mg/L | 0.00016 | 0.00021 | 0.00010 | 0.00010 | 0.00014 | 0.00017 | 0.00234 | | | 0.00011 | |
| Dissolved Sulphur | mg/L | 4.28 | 2.99 | 0.92 | 92.7 | 5.13 | 1.05 | 11.8 | | | 2.44 | |
| Dissolved Selenium | mg/L | 0.000680 | 0.000668 | 0.000457 | 0.000118 | 0.000874 | 0.000456 | 0.0120 | | | 0.000606 | |
| Dissolved Silicon | mg/L | 3.64 | 4.35 | 3.88 | 5.71 | 3.02 | 4.16 | 4.63 | | | 3.54 | |
| Dissolved Tin | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | | <0.00010 | |
| Dissolved Strontium | mg/L | 0.276 | 0.227 | 0.189 | 0.729 | 0.207 | 0.218 | 0.217 | | | 0.211 | |
| Dissolved Titanium | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | | | <0.00030 | |
| Dissolved Thallium | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000018 | | | <0.000010 | |
| Dissolved Uranium | mg/L | 0.000935 | 0.000910 | 0.000695 | 0.00143 | 0.000765 | 0.000589 | 0.00294 | | | 0.00127 | |
| Dissolved Vanadium | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | | <0.00050 | |
| Dissolved Zinc | mg/L | 0.0049 | 0.0015 | <0.0010 | 0.0134 | 0.0045 | <0.0010 | 0.454 | | | <0.0010 | |
| Dissolved Zirconium | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | | <0.00020 | |

# APPENDIX H:

# CORDILLERA CONSULTING RAW BENTHIC DATA RESULTS

**Project: Sa Dena Hes - ECA22YT000199 - SQ-213**
Ensero Solutions
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

| | | | | | |
|---|---|---|---|---|---|
| **Site:** | 2022 | 2022 | 2022 | 2022 | 2022 |
| **Sample:** | MH04 | MH11 | MH12 | MH13 | MH29 |
| **Sample Collection Date:** | 08-Aug-22 | 10-Aug-22 | 09-Aug-22 | 09-Aug-22 | 10-Aug-22 |
| **CC#:** | CC230252 | CC230253 | CC230254 | CC230255 | CC230256 |
| **Phylum: Arthropoda** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Collembola** | 0 | 0 | 20 | 0 | 11 |
| | | | | | |
| **Subphylum: Hexapoda** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Insecta** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Ephemeroptera** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Ameletidae** | 0 | 0 | 0 | 0 | 0 |
| *Ameletus* | 580 | 135 | 140 | 32 | 114 |
| **\| Family: Baetidae** | 80 | 19 | 20 | 36 | 0 |
| *Baetis* | 2780 | 27 | 200 | 82 | 14 |
| *Baetis rhodani group* | 140 | 15 | 260 | 0 | 0 |
| *Baetis bicaudatus* | 80 | 27 | 1560 | 0 | 4 |
| **\| Family: Ephemerellidae** | 0 | 0 | 0 | 18 | 0 |
| *Drunella coloradensis* | 0 | 0 | 0 | 5 | 0 |
| *Drunella doddsii* | 0 | 0 | 0 | 59 | 0 |
| **\| Family: Heptageniidae** | 40 | 38 | 80 | 77 | 7 |
| *Cinygmula* | 20 | 65 | 320 | 59 | 4 |
| *Epeorus* | 0 | 31 | 20 | 0 | 7 |
| | | | | | |
| **\| Order: Plecoptera** | 40 | 19 | 40 | 5 | 14 |
| **\| Family: Capniidae** | 20 | 4 | 20 | 32 | 4 |
| **\| Family: Chloroperlidae** | 40 | 31 | 160 | 0 | 4 |
| *Haploperla* | 40 | 0 | 20 | 0 | 0 |
| *Sweltsa* | 40 | 23 | 120 | 36 | 39 |
| **\| Family: Leuctridae** | 0 | 0 | 0 | 5 | 32 |
| **\| Family: Nemouridae** | 0 | 0 | 0 | 23 | 4 |
| *Visoka cataractae* | 100 | 0 | 20 | 5 | 18 |
| *Zapada* | 0 | 15 | 80 | 14 | 50 |
| *Zapada oregonensis group* | 0 | 85 | 0 | 14 | 7 |
| *Zapada cinctipes* | 940 | 8 | 20 | 14 | 0 |
| *Zapada columbiana* | 220 | 546 | 1080 | 155 | 518 |
| **\| Family: Perlodidae** | 120 | 4 | 20 | 18 | 0 |
| *Megarcys* | 20 | 0 | 0 | 0 | 4 |
| *Skwala* | 0 | 0 | 20 | 0 | 0 |
| **\| Family: Taeniopterygidae** | 0 | 0 | 0 | 0 | 0 |
| *Taenionema* | 0 | 0 | 20 | 0 | 0 |
| | | | | | |
| **\| Order: Trichoptera** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Apataniidae** | 0 | 0 | 0 | 0 | 0 |
| *Allomyia* | 80 | 0 | 0 | 0 | 0 |
| **\| Family: Hydropsychidae** | 0 | 0 | 0 | 5 | 0 |
| *Parapsyche* | 0 | 0 | 0 | 14 | 0 |
| *Parapsyche elsis* | 0 | 0 | 0 | 14 | 0 |
| **\| Family: Lepidostomatidae** | 0 | 0 | 0 | 0 | 0 |
| *Lepidostoma* | 0 | 0 | 0 | 0 | 21 |
| **\| Family: Limnephilidae** | 160 | 0 | 0 | 0 | 0 |
| *Dicosmoecus* | 0 | 0 | 0 | 5 | 0 |
| **\| Family: Rhyacophilidae** | 0 | 0 | 0 | 0 | 0 |

| Site: | 2022 | 2022 | 2022 | 2022 | 2022 |
|---|---|---|---|---|---|
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| CC#: | CC230252 | CC230253 | CC230254 | CC230255 | CC230256 |
| *Rhyacophila* | 0 | 96 | 60 | 100 | 114 |
| *Rhyacophila hyalinata group* | 0 | 8 | 40 | 0 | 0 |
| *Rhyacophila vofixa group* | 0 | 19 | 220 | 109 | 7 |
| | | | | | |
| **\| Order: Diptera** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Ceratopogonidae** | 0 | 0 | 0 | 0 | 0 |
| *Ceratopogon* | 0 | 0 | 0 | 0 | 7 |
| **\| Family: Chironomidae** | 80 | 0 | 200 | 68 | 11 |
| **\| Subfamily: Chironominae** | 0 | 0 | 0 | 0 | 0 |
| **\| Tribe: Tanytarsini** | 20 | 0 | 0 | 0 | 0 |
| *Micropsectra* | 20 | 0 | 20 | 0 | 0 |
| *Rheotanytarsus* | 0 | 0 | 0 | 5 | 0 |
| *Stempellinella* | 0 | 0 | 0 | 295 | 4 |
| *Tanytarsus* | 0 | 0 | 0 | 5 | 0 |
| **\| Subfamily: Diamesinae** | 0 | 0 | 0 | 0 | 0 |
| **\| Tribe: Diamesini** | 0 | 0 | 0 | 0 | 0 |
| *Diamesa* | 0 | 0 | 40 | 0 | 0 |
| *Pagastia* | 0 | 4 | 160 | 0 | 0 |
| *Pseudodiamesa* | 20 | 0 | 0 | 0 | 0 |
| **\| Subfamily: Orthocladiinae** | 0 | 0 | 40 | 0 | 4 |
| *Brillia* | 0 | 0 | 20 | 0 | 18 |
| *Corynoneura* | 60 | 0 | 0 | 0 | 0 |
| *Eukiefferiella* | 200 | 8 | 60 | 0 | 0 |
| *Heleniella* | 0 | 0 | 0 | 0 | 54 |
| *Hydrobaenus* | 60 | 0 | 20 | 0 | 0 |
| *Limnophyes* | 20 | 0 | 40 | 0 | 4 |
| *Orthocladius complex* | 180 | 0 | 80 | 0 | 0 |
| *Parametriocnemus* | 0 | 0 | 20 | 18 | 0 |
| *Parorthocladius* | 160 | 0 | 240 | 0 | 0 |
| *Platysmittia* | 0 | 0 | 20 | 0 | 0 |
| *Rheocricotopus* | 60 | 0 | 0 | 5 | 0 |
| *Thienemanniella* | 0 | 4 | 0 | 0 | 0 |
| *Tvetenia* | 280 | 12 | 280 | 5 | 32 |
| **\| Subfamily: Tanypodinae** | 0 | 0 | 0 | 0 | 0 |
| **\| Tribe: Pentaneurini** | 0 | 0 | 0 | 0 | 0 |
| *Telmatopelopia* | 0 | 0 | 0 | 0 | 7 |
| **\| Tribe: Procladiini** | 0 | 0 | 0 | 0 | 0 |
| *Procladius* | 0 | 0 | 0 | 0 | 4 |
| **\| Family: Empididae** | 0 | 0 | 0 | 0 | 0 |
| *Neoplasta* | 0 | 0 | 20 | 36 | 4 |
| *Oreogeton* | 240 | 0 | 80 | 5 | 68 |
| **\| Family: Psychodidae** | 0 | 0 | 0 | 0 | 0 |
| *Pericoma/Telmatoscopus* | 0 | 0 | 380 | 0 | 4 |
| **\| Family: Simuliidae** | 0 | 12 | 100 | 0 | 0 |
| *Prosimulium* | 80 | 12 | 0 | 0 | 0 |
| *Prosimulium/Helodon* | 0 | 8 | 220 | 0 | 7 |
| *Simulium* | 0 | 0 | 0 | 0 | 25 |
| **\| Family: Tipulidae** | 0 | 0 | 20 | 0 | 0 |
| **TOTAL** | 1480 | 60 | 2060 | 442 | 253 |
| | | | | | |
| **\| Order: Hemiptera** | 0 | 0 | 0 | 0 | 4 |
| **\| Order: Lepidoptera** | 0 | 4 | 0 | 0 | 0 |
| **\| Order: Thysanoptera** | 0 | 4 | 0 | 0 | 0 |
| | | | | | |
| **Subphylum: Chelicerata** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Arachnida** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Trombidiformes** | 40 | 0 | 0 | 5 | 0 |
| **\| Family: Hydryphantidae** | 0 | 0 | 0 | 0 | 0 |
| *Albertathyas* | 360 | 0 | 0 | 0 | 0 |
| *Wandesia* | 40 | 12 | 0 | 0 | 11 |
| **\| Family: Hygrobatidae** | 0 | 0 | 0 | 0 | 0 |
| *Hygrobates* | 0 | 0 | 0 | 14 | 4 |

| Site: | 2022 | 2022 | 2022 | 2022 | 2022 |
|---|---|---|---|---|---|
| **Sample:** | MH04 | MH11 | MH12 | MH13 | MH29 |
| **Sample Collection Date:** | 08-Aug-22 | 10-Aug-22 | 09-Aug-22 | 09-Aug-22 | 10-Aug-22 |
| **CC#:** | CC230252 | CC230253 | CC230254 | CC230255 | CC230256 |
| **\| Family: Lebertiidae** | 0 | 0 | 0 | 0 | 0 |
| *Lebertia* | 80 | 8 | 80 | 73 | 11 |
| **\| Family: Sperchontidae** | 0 | 0 | 0 | 0 | 0 |
| *Sperchon* | 60 | 0 | 0 | 64 | 4 |
| | | | | | |
| **\| Order: Sarcoptiformes** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Oribatida** | 0 | 4 | 0 | 0 | 7 |
| **\| Family: Hydrozetidae** | 0 | 0 | 0 | 5 | 0 |
| | | | | | |
| **Phylum: Annelida** | 0 | 0 | 0 | 0 | 0 |
| **Subphylum: Clitellata** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Oligochaeta** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Lumbriculida** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Lumbriculidae** | 0 | 0 | 0 | 0 | 0 |
| *Lumbriculus* | 0 | 8 | 0 | 0 | 0 |
| | | | | | |
| **\| Order: Tubificida** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Enchytraeidae** | 0 | 0 | 0 | 0 | 0 |
| *Enchytraeus* | 0 | 0 | 40 | 5 | 14 |
| **Totals:** | **9080** | **1375** | **8800** | **1986** | **1558** |

**Taxa present but not included:**

| | | | | | |
|---|---|---|---|---|---|
| **Phylum: Arthropoda** | 0 | 0 | 0 | 0 | 0 |
| **Subphylum: Crustacea** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Ostracoda** | 20 | 4 | 0 | 5 | 4 |
| **\| Class: Maxillipoda** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Copepoda** | 0 | 4 | 0 | 0 | 0 |
| | | | | | |
| **Phylum: Nemata** | 0 | 0 | 0 | 5 | 4 |
| **Phylum: Platyhelminthes** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Turbellaria** | 20 | 4 | 20 | 5 | 4 |
| **Totals:** | **40** | **12** | **20** | **15** | **12** |

**ND designation of a taxa represents a non-distinct taxa. This adjusts where the associated taxa fall in the metrics for this sample because the individuals are likely represented by Genus or Species level identifications.**

**Project: Sa Dena Hes - ECA22YT000199 - SQ-213**
Ensero Solutions
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

| **Site:** | 2022 | 2022 | 2022 | 2022 | 2022 |
|---|---|---|---|---|---|
| **Sample:** | MH04 | MH11 | MH12 | MH13 | MH29 |
| **Sample Collection Date:** | 08-Aug-22 | 10-Aug-22 | 09-Aug-22 | 09-Aug-22 | 10-Aug-22 |
| **CC#:** | CC230252 | CC230253 | CC230254 | CC230255 | CC230256 |
| **Phylum: Arthropoda** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Collembola** | 0 | 0 | 20 | 0 | 11 |
| | | | | | |
| **Subphylum: Hexapoda** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Insecta** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Ephemeroptera** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Ameletidae** | 580 | 135 | 140 | 32 | 114 |
| **\| Family: Baetidae** | 3080 | 88 | 2040 | 118 | 18 |
| **\| Family: Ephemerellidae** | 0 | 0 | 0 | 82 | 0 |
| **\| Family: Heptageniidae** | 60 | 134 | 420 | 136 | 18 |
| | | | | | |
| **\| Order: Plecoptera** | 40 | 19 | 40 | 5 | 14 |
| **\| Family: Capniidae** | 20 | 4 | 20 | 32 | 4 |
| **\| Family: Chloroperlidae** | 120 | 54 | 300 | 36 | 43 |
| **\| Family: Leuctridae** | 0 | 0 | 0 | 5 | 32 |
| **\| Family: Nemouridae** | 1260 | 654 | 1200 | 225 | 597 |
| **\| Family: Perlodidae** | 140 | 4 | 40 | 18 | 4 |
| **\| Family: Taeniopterygidae** | 0 | 0 | 20 | 0 | 0 |
| | | | | | |
| **\| Order: Trichoptera** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Apataniidae** | 80 | 0 | 0 | 0 | 0 |
| **\| Family: Hydropsychidae** | 0 | 0 | 0 | 33 | 0 |
| **\| Family: Lepidostomatidae** | 0 | 0 | 0 | 0 | 21 |
| **\| Family: Limnephilidae** | 160 | 0 | 0 | 5 | 0 |
| **\| Family: Rhyacophilidae** | 0 | 123 | 320 | 209 | 121 |
| | | | | | |
| **\| Order: Diptera** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Ceratopogonidae** | 0 | 0 | 0 | 0 | 7 |
| **\| Family: Chironomidae** | 1160 | 28 | 1240 | 401 | 138 |
| **\| Family: Empididae** | 240 | 0 | 100 | 41 | 72 |
| **\| Family: Psychodidae** | 0 | 0 | 380 | 0 | 4 |
| **\| Family: Simuliidae** | 80 | 32 | 320 | 0 | 32 |
| **\| Family: Tipulidae** | 0 | 0 | 20 | 0 | 0 |
| | | | | | |
| **\| Order: Hemiptera** | 0 | 0 | 0 | 0 | 4 |
| **\| Order: Lepidoptera** | 0 | 4 | 0 | 0 | 0 |
| **\| Order: Thysanoptera** | 0 | 4 | 0 | 0 | 0 |
| | | | | | |
| **Subphylum: Chelicerata** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Arachnida** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Trombidiformes** | 40 | 0 | 0 | 5 | 0 |
| **\| Family: Hydryphantidae** | 400 | 12 | 0 | 0 | 11 |
| **\| Family: Hygrobatidae** | 0 | 0 | 0 | 14 | 4 |
| **\| Family: Lebertiidae** | 80 | 8 | 80 | 73 | 11 |
| **\| Family: Sperchontidae** | 60 | 0 | 0 | 64 | 4 |
| | | | | | |
| **\| Order: Sarcoptiformes** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Oribatida** | 0 | 4 | 0 | 0 | 7 |

| | | | | | |
|---|---|---|---|---|---|
| \|  Family: Hydrozetidae | 0 | 0 | 0 | 5 | 0 |
| | | | | | |
| Phylum: Annelida | 0 | 0 | 0 | 0 | 0 |
| Subphylum: Clitellata | 0 | 0 | 0 | 0 | 0 |
| \| Class: Oligochaeta | 0 | 0 | 0 | 0 | 0 |
| \|  Order: Lumbriculida | 0 | 0 | 0 | 0 | 0 |
| \|  Family: Lumbriculidae | 0 | 8 | 0 | 0 | 0 |
| | | | | | |
| \|  Order: Tubificida | 0 | 0 | 0 | 0 | 0 |
| \|  Family: Enchytraeidae | 0 | 0 | 40 | 5 | 14 |
| **Totals:** | **7600** | **1315** | **6740** | **1544** | **1305** |

**Taxa present but not included:**

| | | | | | |
|---|---|---|---|---|---|
| Phylum: Arthropoda | 0 | 0 | 0 | 0 | 0 |
| Subphylum: Crustacea | 0 | 0 | 0 | 0 | 0 |
| \| Class: Ostracoda | 20 | 4 | 0 | 5 | 4 |
| \| Class: Maxillipoda | 0 | 0 | 0 | 0 | 0 |
| \| Class: Copepoda | 0 | 4 | 0 | 0 | 0 |
| | | | | | |
| Phylum: Nemata | 0 | 0 | 0 | 5 | 4 |
| Phylum: Platyhelminthes | 0 | 0 | 0 | 0 | 0 |
| \| Class: Turbellaria | 20 | 4 | 20 | 5 | 4 |
| **Totals:** | **40** | **12** | **20** | **15** | **12** |

**ND designation of a taxa represents a non-distinct taxa.  This adjusts where the associated taxa fall in the metrics for this sample because the individuals are likely represented by Genus or Species level identifications.**

**Project: Sa Dena Hes - ECA22YT000199 - SQ-213**
Ensero Solutions
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

| Site: | 2022 | 2022 | 2022 | 2022 | 2022 |
|---|---|---|---|---|---|
| Sample: | MH04 | MH11 | MH12 | MH13 | MH29 |
| Sample Collection Date: | 08-Aug-22 | 10-Aug-22 | 09-Aug-22 | 09-Aug-22 | 10-Aug-22 |
| CC#: | CC230252 | CC230253 | CC230254 | CC230255 | CC230256 |
| **Richness Measures** | | | | | |
| Species Richness | 34 | 28 | 38 | 35 | 37 |
| EPT Richness | 16 | 16 | 18 | 21 | 16 |
| Ephemeroptera Richness | 6 | 6 | 6 | 7 | 5 |
| Plecoptera Richness | 8 | 7 | 9 | 8 | 8 |
| Trichoptera Richness | 2 | 3 | 3 | 6 | 3 |
| Chironomidae Richness | 12 | 4 | 12 | 6 | 7 |
| Oligochaeta Richness | | 1 | 1 | 1 | 1 |
| Non-Chiro. Non-Olig. Richness | | | | | |
| | | | | | |
| **Abundance Measures** | | | | | |
| Corrected Abundance | 7600 | 1315 | 6740 | 1544 | 1305 |
| EPT Abundance | 5540 | 1215 | 4540 | 936 | 986 |
| | | | | | |
| **Dominance Measures** | | | | | |
| 1st Dominant Taxon | Baetis | Zapada columbiana | Baetis bicaudatus | Stempellinella | Zapada columbiana |
| 1st Dominant Abundance | 2854 | 560 | 1575 | 355 | 532 |
| 2nd Dominant Taxon | Zapada cinctipes | Ameletus | Zapada columbiana | Zapada columbiana | Ameletus |
| 2nd Dominant Abundance | 964 | 135 | 1186 | 175 | 114 |
| 3rd Dominant Taxon | Ameletus | Zapada oregonensis gr | Cinygmula | Rhyacophila vofixa gro | Rhyacophila |
| 3rd Dominant Abundance | 580 | 103 | 395 | 109 | 114 |
| % 1 Dominant Taxon | 37.55% | 42.62% | 23.37% | 23.01% | 40.78% |
| % 2 Dominant Taxon | 12.69% | 10.27% | 17.60% | 11.36% | 8.74% |
| % 3 Dominant Taxon | 7.63% | 7.81% | 5.86% | 7.06% | 8.74% |
| Percent Dominance | 57.88% | 60.70% | 46.84% | 41.43% | 58.26% |
| | | | | | |
| **Community Composition** | | | | | |
| % Ephemeroptera | 48.95% | 27.15% | 38.58% | 23.83% | 11.49% |
| % Plecoptera | 20.79% | 55.89% | 24.04% | 20.79% | 53.18% |
| % Trichoptera | 3.16% | 9.35% | 4.75% | 16.00% | 10.88% |
| % EPT | 72.89% | 92.40% | 67.36% | 60.62% | 75.56% |
| % Diptera | 19.47% | 4.56% | 30.56% | 28.63% | 19.39% |
| % Oligochaeta | | 0.61% | 0.59% | 0.32% | 1.07% |
| % Baetidae | 40.53% | 6.69% | 30.27% | 7.64% | 1.38% |
| % Chironomidae | 15.26% | 2.13% | 18.40% | 25.97% | 10.57% |
| % Odonata | | | | | |
| | | | | | |
| **Functional Group Composition** | | | | | |
| % Predators | 14.30% | 15.71% | 12.59% | 32.40% | 22.17% |
| % Shredder-Herbivores | 17.28% | 51.67% | 19.23% | 17.24% | 52.67% |
| % Collector-Gatherers | 61.05% | 19.09% | 55.78% | 16.73% | 20.11% |
| % Scrapers | 1.84% | 10.19% | 6.23% | 8.81% | 1.38% |
| % Macrophyte-Herbivore | | | | | |
| % Collector-Filterer | 1.05% | 2.43% | 4.75% | 24.11% | 2.79% |
| % Omnivore | 3.42% | 0.61% | 1.42% | 0.71% | |
| % Parasite | | | | | |
| % Piercer-Herbivore | | | | | |
| % Gatherer | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| % Unclassified | 1.05% | 0.30% | | | 0.89% |
| | | | | | |
| **Functional Group Richness** | | | | | |
| Predators Richness | 9 | 9 | 10 | 14 | 14 |
| Shredder-Herbivores Richness | 4 | 5 | 6 | 6 | 7 |
| Collector-Gatherers Richness | 14 | 8 | 17 | 7 | 9 |
| Scrapers Richness | 3 | 2 | 2 | 2 | 2 |
| MH Richness | | | | | |
| CF Richness | 1 | 2 | 1 | 4 | 3 |
| OM Richness | 2 | 1 | 2 | 2 | |
| PA Richness | | | | | |
| Piercer-Herbivore Richness | | | | | |
| Gatherer Richness | | | | | |
| Unclassified | 1 | 1 | | | 2 |
| | | | | | |
| **EPA Functional Group Composition** | | | | | |
| % Predators | | | | | |
| % Parasite | | | | | |
| % Collector-Gatherers | | | | | |
| % Collector-Filterer | | | | | |
| % Macrophyte-Herbivore | | | | | |
| % Xylophage | | | | | |
| % Scraper | | | | | |
| % Shredder | | | | | |
| % Piercer | | | | | |
| % Omnivore | | | | | |
| % Unclassified | | | | | |
| | | | | | |
| **EPA Functional Group Richness** | | | | | |
| Predators | | | | | |
| Parasite | | | | | |
| Collector-Gatherers | | | | | |
| Collector-Filterer | | | | | |
| Macrophyte-Herbivore | | | | | |
| Xylophage | | | | | |
| Scraper | | | | | |
| Shredder | | | | | |
| Piercer | | | | | |
| Omnivore | | | | | |
| Unclassified | | | | | |
| | | | | | |
| **SAFIT Functional Group Composition** | | | | | |
| % Predators | | | | | |
| % Parasite | | | | | |
| % Collector-Gatherers | | | | | |
| % Collector-Filterer | | | | | |
| % Macrophyte-Herbivore | | | | | |
| % Periphyton-Herbivore | | | | | |
| % Scraper | | | | | |
| % Shredder | | | | | |
| % Omnivore | | | | | |
| % Unclassified | | | | | |
| | | | | | |
| **SAFIT Functional Group Richness** | | | | | |
| Predators | | | | | |
| Parasite | | | | | |
| Collector-Gatherers | | | | | |
| Collector-Filterer | | | | | |
| Macrophyte-Herbivore | | | | | |
| Periphyton-Herbivore | | | | | |
| Scraper | | | | | |
| Shredder | | | | | |
| Omnivore | | | | | |
| Unclassified | | | | | |
| | | | | | |
| **EPA Habitat Composition** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| % Clinger | | | | | |
| % Climber | | | | | |
| % Sprawler | | | | | |
| % Burrower | | | | | |
| % Swimmer | | | | | |
| % Diver | | | | | |
| % Skater | | | | | |
| | | | | | |
| **EPA Habitat Richness** | | | | | |
| Clinger | | | | | |
| Climber | | | | | |
| Sprawler | | | | | |
| Burrower | | | | | |
| Swimmer | | | | | |
| Diver | | | | | |
| Skater | | | | | |
| | | | | | |
| **Voltinism Composition** | | | | | |
| % Univoltine | 20.32% | 10.89% | 2.71% | 7.99% | 10.34% |
| % Semivoltine | 5.13% | 44.42% | 21.84% | 14.09% | 45.25% |
| % Multivoltine | 38.61% | 2.62% | 3.00% | 5.63% | 2.99% |
| | | | | | |
| **Voltinism Richness** | | | | | |
| Univoltine | 2 | 2 | 3 | 3 | 2 |
| Semivoltine | 3 | 2 | 3 | 3 | 3 |
| Multivoltine | 2 | 1 | 1 | 2 | 2 |
| | | | | | |
| **Diversity/Evenness Measures** | | | | | |
| Shannon-Weiner H' (log 10) | 1.09 | 0.97 | 1.20 | 1.24 | 1.06 |
| Shannon-Weiner H' (log 2) | 3.61 | 3.22 | 4.00 | 4.12 | 3.52 |
| Shannon-Weiner H' (log e) | 2.50 | 2.23 | 2.77 | 2.86 | 2.44 |
| Simpson's Index (D) | 0.17 | 0.21 | 0.11 | 0.09 | 0.19 |
| Simpson's Index of Diversity (1 - D) | 0.83 | 0.79 | 0.89 | 0.91 | 0.81 |
| Simpson's Reciprocal Index (1/D) | 5.79 | 4.71 | 9.40 | 10.95 | 5.21 |
| | | | | | |
| **Biotic Indices** | | | | | |
| Hilsenhoff Biotic Index | 3.89 | 2.00 | 3.72 | 3.18 | 2.52 |

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Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Site:** | 2022 | | 2022 | | 2022 | | 2022 | | 2022 | |
| **Sample:** | MH04 | | MH11 | | MH12 | | MH13 | | MH29 | |
| **Sample Collection Date:** | 08-Aug-22 | | 10-Aug-22 | | 09-Aug-22 | | 09-Aug-22 | | 10-Aug-22 | |
| **CC#:** | CC230252 | | CC230253 | | CC230254 | | CC230255 | | CC230256 | |
| **Sieve Size:** | 400 | | 400 | | 400 | | 400 | | 400 | |
| **Subsample %:** | 5 | | 26 | | 5 | | 22 | | 28 | |
| **Phylum: Arthropoda** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Order: Collembola** | 0 | | 0 | | 1 | | 0 | | 3 | |
| | | | | | | | | | | |
| **Subphylum: Hexapoda** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Class: Insecta** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Order: Ephemeroptera** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Family: Ameletidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Ameletus* | 29 | | 35 | | 7 | | 7 | | 32 | |
| **\| Family: Baetidae** | 4 | ND | 5 | ND | 1 | ND | 8 | | 0 | |
| *Baetis* | 139 | | 7 | | 10 | | 18 | | 4 | |
| *Baetis rhodani group* | 7 | | 4 | | 13 | | 0 | | 0 | |
| *Baetis bicaudatus* | 4 | | 7 | | 78 | | 0 | | 1 | |
| **\| Family: Ephemerellidae** | 0 | | 0 | | 0 | | 4 | ND | 0 | |
| *Drunella coloradensis* | 0 | | 0 | | 0 | | 1 | | 0 | |
| *Drunella doddsii* | 0 | | 0 | | 0 | | 13 | | 0 | |
| **\| Family: Heptageniidae** | 2 | | 10 | ND | 4 | ND | 17 | | 2 | ND |
| *Cinygmula* | 1 | | 17 | | 16 | | 13 | | 1 | |
| *Epeorus* | 0 | | 8 | | 1 | | 0 | | 2 | |
| | | | | | | | | | | |
| **\| Order: Plecoptera** | 2 | ND | 5 | ND | 2 | ND | 1 | ND | 4 | ND |
| **\| Family: Capniidae** | 1 | | 1 | | 1 | | 7 | | 1 | |
| **\| Family: Chloroperlidae** | 2 | ND | 8 | | 8 | ND | 0 | | 1 | |
| *Haploperla* | 2 | | 0 | | 1 | | 0 | | 0 | |
| *Sweltsa* | 2 | | 6 | | 6 | | 8 | | 11 | |
| **\| Family: Leuctridae** | 0 | | 0 | | 0 | | 1 | | 9 | |
| **\| Family: Nemouridae** | 0 | | 0 | | 0 | | 5 | ND | 1 | ND |
| *Visoka cataractae* | 5 | | 0 | | 1 | | 1 | | 5 | |
| *Zapada* | 0 | | 4 | ND | 4 | ND | 3 | ND | 14 | ND |
| *Zapada oregonensis group* | 0 | | 22 | | 0 | | 3 | | 2 | |
| *Zapada cinctipes* | 47 | | 2 | | 1 | | 3 | | 0 | |
| *Zapada columbiana* | 11 | | 142 | | 54 | | 34 | | 145 | |
| **\| Family: Perlodidae** | 6 | | 1 | | 1 | | 4 | | 0 | |
| *Megarcys* | 1 | | 0 | | 0 | | 0 | | 1 | |
| *Skwala* | 0 | | 0 | | 1 | | 0 | | 0 | |
| **\| Family: Taeniopterygidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Taenionema* | 0 | | 0 | | 1 | | 0 | | 0 | |
| | | | | | | | | | | |
| **\| Order: Trichoptera** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Family: Apataniidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Allomyia* | 4 | | 0 | | 0 | | 0 | | 0 | |
| **\| Family: Hydropsychidae** | 0 | | 0 | | 0 | | 1 | | 0 | |
| *Parapsyche* | 0 | | 0 | | 0 | | 3 | | 0 | |
| *Parapsyche elsis* | 0 | | 0 | | 0 | | 3 | | 0 | |
| **\| Family: Lepidostomatidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Lepidostoma* | 0 | | 0 | | 0 | | 0 | | 6 | |
| **\| Family: Limnephilidae** | 8 | | 0 | | 0 | | 0 | | 0 | |
| *Dicosmoecus* | 0 | | 0 | | 0 | | 1 | | 0 | |
| **\| Family: Rhyacophilidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Rhyacophila* | 0 | | 25 | | 3 | | 22 | | 32 | |
| *Rhyacophila hyalinata group* | 0 | | 2 | | 2 | | 0 | | 0 | |
| *Rhyacophila vofixa group* | 0 | | 5 | | 11 | | 24 | | 2 | |
| | | | | | | | | | | |
| **\| Order: Diptera** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Family: Ceratopogonidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Ceratopogon* | 0 | | 0 | | 0 | | 0 | | 2 | |
| **\| Family: Chironomidae** | 4 | | 0 | | 10 | ND | 15 | ND | 3 | ND |
| **\| Subfamily: Chironominae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Tribe: Tanytarsini** | 1 | | 0 | | 0 | | 0 | | 0 | |
| *Micropsectra* | 1 | | 0 | | 1 | | 0 | | 0 | |
| *Rheotanytarsus* | 0 | | 0 | | 0 | | 1 | | 0 | |
| *Stempellinella* | 0 | | 0 | | 0 | | 65 | | 1 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *Tanytarsus* | 0 | | 0 | | 0 | | 1 | | 0 | |
| **\| Subfamily: Diamesinae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Tribe: Diamesini** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Diamesa* | 0 | | 0 | | 2 | | 0 | | 0 | |
| *Pagastia* | 0 | | 1 | | 8 | | 0 | | 0 | |
| *Pseudodiamesa* | 1 | | 0 | | 0 | | 0 | | 0 | |
| **\| Subfamily: Orthocladiinae** | 0 | | 0 | | 2 | ND | 0 | | 1 | ND |
| *Brillia* | 0 | | 0 | | 1 | | 0 | | 5 | |
| *Corynoneura* | 3 | | 0 | | 0 | | 0 | | 0 | |
| *Eukiefferiella* | 10 | | 2 | | 3 | | 0 | | 0 | |
| *Heleniella* | 0 | | 0 | | 0 | | 0 | | 15 | |
| *Hydrobaenus* | 3 | | 0 | | 1 | | 0 | | 0 | |
| *Limnophyes* | 1 | | 0 | | 2 | | 0 | | 1 | |
| *Orthocladius complex* | 9 | | 0 | | 4 | | 0 | | 0 | |
| *Parametriocnemus* | 0 | | 0 | | 1 | | 4 | | 0 | |
| *Parorthocladius* | 8 | | 0 | | 12 | | 0 | | 0 | |
| *Platysmittia* | 0 | | 0 | | 1 | | 0 | | 0 | |
| *Rheocricotopus* | 3 | | 0 | | 0 | | 1 | | 0 | |
| *Thienemanniella* | 0 | | 1 | | 0 | | 0 | | 0 | |
| *Tvetenia* | 14 | | 3 | | 14 | | 1 | | 9 | |
| **\| Subfamily: Tanypodinae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Tribe: Pentaneurini** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Telmatopelopia* | 0 | | 0 | | 0 | | 0 | | 2 | |
| **\| Tribe: Procladiini** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Procladius* | 0 | | 0 | | 0 | | 0 | | 1 | |
| **\| Family: Empididae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Neoplasta* | 0 | | 0 | | 1 | | 8 | | 1 | |
| *Oreogeton* | 12 | | 0 | | 4 | | 1 | | 19 | |
| **\| Family: Psychodidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Pericoma/Telmatoscopus* | 0 | | 0 | | 19 | | 0 | | 1 | |
| **\| Family: Simuliidae** | 0 | | 3 | ND | 5 | ND | 0 | | 0 | |
| *Prosimulium* | 4 | | 3 | | 0 | | 0 | | 0 | |
| *Prosimulium/Helodon* | 0 | | 2 | | 11 | | 0 | | 2 | |
| *Simulium* | 0 | | 0 | | 0 | | 0 | | 7 | |
| **\| Family: Tipulidae** | 0 | | 0 | | 1 | | 0 | | 0 | |
| | | | | | | | | | | |
| **\| Order: Hemiptera** | 0 | | 0 | | 0 | | 0 | | 1 | |
| **\| Order: Lepidoptera** | 0 | | 1 | | 0 | | 0 | | 0 | |
| **\| Order: Thysanoptera** | 0 | | 1 | | 0 | | 0 | | 0 | |
| | | | | | | | | | | |
| **Subphylum: Chelicerata** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Class: Arachnida** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Order: Trombidiformes** | 2 | ND | 0 | | 0 | | 1 | | 0 | |
| **\| Family: Hydryphantidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Albertathyas* | 18 | | 0 | | 0 | | 0 | | 0 | |
| *Wandesia* | 2 | | 3 | | 0 | | 0 | | 3 | |
| **\| Family: Hygrobatidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Hygrobates* | 0 | | 0 | | 0 | | 3 | | 1 | |
| **\| Family: Lebertiidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Lebertia* | 4 | | 2 | | 4 | | 16 | | 3 | |
| **\| Family: Sperchontidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Sperchon* | 3 | | 0 | | 0 | | 14 | | 1 | |
| | | | | | | | | | | |
| **\| Order: Sarcoptiformes** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Order: Oribatida** | 0 | | 1 | | 0 | | 0 | | 2 | |
| **\| Family: Hydrozetidae** | 0 | | 0 | | 0 | | 1 | | 0 | |
| | | | | | | | | | | |
| **Phylum: Annelida** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **Subphylum: Clitellata** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Class: Oligochaeta** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Order: Lumbriculida** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Family: Lumbriculidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Lumbriculus* | 0 | | 2 | | 0 | | 0 | | 0 | |
| | | | | | | | | | | |
| **\| Order: Tubificida** | 0 | | 0 | | 0 | | 0 | | 0 | |
| **\| Family: Enchytraeidae** | 0 | | 0 | | 0 | | 0 | | 0 | |
| *Enchytraeus* | 0 | | 0 | | 2 | | 1 | | 4 | |
| **Totals:** | **380** | | **341** | | **337** | | **338** | | **364** | |

**Taxa present but not included:**

| | | | | | |
|---|---|---|---|---|---|
| **Phylum: Arthropoda** | 0 | 0 | 0 | 0 | 0 |
| **Subphylum: Crustacea** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Ostracoda** | 1 | 1 | 0 | 1 | 1 |
| **\| Class: Maxillipoda** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Copepoda** | 0 | 1 | 0 | 0 | 0 |
| | | | | | |
| **Phylum: Nemata** | 0 | 0 | 0 | 1 | 1 |
| **Phylum: Platyhelminthes** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Turbellaria** | 1 | 1 | 1 | 1 | 1 |
| **Totals:** | **2** | **3** | **1** | **3** | **3** |

**ND designation of a taxa represents a non-distinct taxa. This adjusts where the associated taxa fall in the metrics for this sample because the individuals are likely represented by Genus or Specie**

**Project: Sa Dena Hes - ECA22YT000199 - SQ-213**
Ensero Solutions
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

| | | | | | |
|---|---|---|---|---|---|
| **Site:** | 2022 | 2022 | 2022 | 2022 | 2022 |
| **Sample:** | MH04 | MH11 | MH12 | MH13 | MH29 |
| **Sample Collection Date:** | 08-Aug-22 | 10-Aug-22 | 09-Aug-22 | 09-Aug-22 | 10-Aug-22 |
| **CC#:** | CC230252 | CC230253 | CC230254 | CC230255 | CC230256 |
| **Sieve Size:** | 400 | 400 | 400 | 400 | 400 |
| **Subsample %:** | 5 | 26 | 5 | 22 | 28 |
| **Phylum: Arthropoda** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Collembola** | 0 | 0 | 1 | 0 | 3 |
| | | | | | |
| **Subphylum: Hexapoda** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Insecta** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Ephemeroptera** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Ameletidae** | 0 | 0 | 0 | 0 | 0 |
| *Ameletus* | 29 | 35 | 7 | 7 | 32 |
| **\| Family: Baetidae** | 4 | 5 | 1 | 8 | 0 |
| *Baetis* | 139 | 7 | 10 | 18 | 4 |
| *Baetis rhodani group* | 7 | 4 | 13 | 0 | 0 |
| *Baetis bicaudatus* | 4 | 7 | 78 | 0 | 1 |
| **\| Family: Ephemerellidae** | 0 | 0 | 0 | 4 | 0 |
| *Drunella coloradensis* | 0 | 0 | 0 | 1 | 0 |
| *Drunella doddsii* | 0 | 0 | 0 | 13 | 0 |
| **\| Family: Heptageniidae** | 2 | 10 | 4 | 17 | 2 |
| *Cinygmula* | 1 | 17 | 16 | 13 | 1 |
| *Epeorus* | 0 | 8 | 1 | 0 | 2 |
| | | | | | |
| **\| Order: Plecoptera** | 2 | 5 | 2 | 1 | 4 |
| **\| Family: Capniidae** | 1 | 1 | 1 | 7 | 1 |
| **\| Family: Chloroperlidae** | 2 | 8 | 8 | 0 | 1 |
| *Haploperla* | 2 | 0 | 1 | 0 | 0 |
| *Sweltsa* | 2 | 6 | 6 | 8 | 11 |
| **\| Family: Leuctridae** | 0 | 0 | 0 | 1 | 9 |
| **\| Family: Nemouridae** | 0 | 0 | 0 | 5 | 1 |
| *Visoka cataractae* | 5 | 0 | 1 | 1 | 5 |
| *Zapada* | 0 | 4 | 4 | 3 | 14 |
| *Zapada oregonensis group* | 0 | 22 | 0 | 3 | 2 |
| *Zapada cinctipes* | 47 | 2 | 1 | 3 | 0 |
| *Zapada columbiana* | 11 | 142 | 54 | 34 | 145 |
| **\| Family: Perlodidae** | 6 | 1 | 1 | 4 | 0 |
| *Megarcys* | 1 | 0 | 0 | 0 | 1 |
| *Skwala* | 0 | 0 | 1 | 0 | 0 |
| **\| Family: Taeniopterygidae** | 0 | 0 | 0 | 0 | 0 |
| *Taenionema* | 0 | 0 | 1 | 0 | 0 |
| | | | | | |
| **\| Order: Trichoptera** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Apataniidae** | 0 | 0 | 0 | 0 | 0 |
| *Allomyia* | 4 | 0 | 0 | 0 | 0 |
| **\| Family: Hydropsychidae** | 0 | 0 | 0 | 1 | 0 |
| *Parapsyche* | 0 | 0 | 0 | 3 | 0 |
| *Parapsyche elsis* | 0 | 0 | 0 | 3 | 0 |
| **\| Family: Lepidostomatidae** | 0 | 0 | 0 | 0 | 0 |
| *Lepidostoma* | 0 | 0 | 0 | 0 | 6 |
| **\| Family: Limnephilidae** | 8 | 0 | 0 | 0 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| *Dicosmoecus* | 0 | 0 | 0 | 1 | 0 |
| **\| Family: Rhyacophilidae** | 0 | 0 | 0 | 0 | 0 |
| *Rhyacophila* | 0 | 25 | 3 | 22 | 32 |
| *Rhyacophila hyalinata group* | 0 | 2 | 2 | 0 | 0 |
| *Rhyacophila vofixa group* | 0 | 5 | 11 | 24 | 2 |
| | | | | | |
| **\| Order: Diptera** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Ceratopogonidae** | 0 | 0 | 0 | 0 | 0 |
| *Ceratopogon* | 0 | 0 | 0 | 0 | 2 |
| **\| Family: Chironomidae** | 4 | 0 | 10 | 15 | 3 |
| **\| Subfamily: Chironominae** | 0 | 0 | 0 | 0 | 0 |
| **\| Tribe: Tanytarsini** | 1 | 0 | 0 | 0 | 0 |
| *Micropsectra* | 1 | 0 | 1 | 0 | 0 |
| *Rheotanytarsus* | 0 | 0 | 0 | 1 | 0 |
| *Stempellinella* | 0 | 0 | 0 | 65 | 1 |
| *Tanytarsus* | 0 | 0 | 0 | 1 | 0 |
| **\| Subfamily: Diamesinae** | 0 | 0 | 0 | 0 | 0 |
| **\| Tribe: Diamesini** | 0 | 0 | 0 | 0 | 0 |
| *Diamesa* | 0 | 0 | 2 | 0 | 0 |
| *Pagastia* | 0 | 1 | 8 | 0 | 0 |
| *Pseudodiamesa* | 1 | 0 | 0 | 0 | 0 |
| **\| Subfamily: Orthocladiinae** | 0 | 0 | 2 | 0 | 1 |
| *Brillia* | 0 | 0 | 1 | 0 | 5 |
| *Corynoneura* | 3 | 0 | 0 | 0 | 0 |
| *Eukiefferiella* | 10 | 2 | 3 | 0 | 0 |
| *Heleniella* | 0 | 0 | 0 | 0 | 15 |
| *Hydrobaenus* | 3 | 0 | 1 | 0 | 0 |
| *Limnophyes* | 1 | 0 | 2 | 0 | 1 |
| *Orthocladius complex* | 9 | 0 | 4 | 0 | 0 |
| *Parametriocnemus* | 0 | 0 | 1 | 4 | 0 |
| *Parorthocladius* | 8 | 0 | 12 | 0 | 0 |
| *Platysmittia* | 0 | 0 | 1 | 0 | 0 |
| *Rheocricotopus* | 3 | 0 | 0 | 1 | 0 |
| *Thienemanniella* | 0 | 1 | 0 | 0 | 0 |
| *Tvetenia* | 14 | 3 | 14 | 1 | 9 |
| **\| Subfamily: Tanypodinae** | 0 | 0 | 0 | 0 | 0 |
| **\| Tribe: Pentaneurini** | 0 | 0 | 0 | 0 | 0 |
| *Telmatopelopia* | 0 | 0 | 0 | 0 | 2 |
| **\| Tribe: Procladiini** | 0 | 0 | 0 | 0 | 0 |
| *Procladius* | 0 | 0 | 0 | 0 | 1 |
| **\| Family: Empididae** | 0 | 0 | 0 | 0 | 0 |
| *Neoplasta* | 0 | 0 | 1 | 8 | 1 |
| *Oreogeton* | 12 | 0 | 4 | 1 | 19 |
| **\| Family: Psychodidae** | 0 | 0 | 0 | 0 | 0 |
| *Pericoma/Telmatoscopus* | 0 | 0 | 19 | 0 | 1 |
| **\| Family: Simuliidae** | 0 | 3 | 5 | 0 | 0 |
| *Prosimulium* | 4 | 3 | 0 | 0 | 0 |
| *Prosimulium/Helodon* | 0 | 2 | 11 | 0 | 2 |
| *Simulium* | 0 | 0 | 0 | 0 | 7 |
| **\| Family: Tipulidae** | 0 | 0 | 1 | 0 | 0 |
| | | | | | |
| **\| Order: Hemiptera** | 0 | 0 | 0 | 0 | 1 |
| **\| Order: Lepidoptera** | 0 | 1 | 0 | 0 | 0 |
| **\| Order: Thysanoptera** | 0 | 1 | 0 | 0 | 0 |
| | | | | | |
| **Subphylum: Chelicerata** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Arachnida** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Trombidiformes** | 2 | 0 | 0 | 1 | 0 |
| **\| Family: Hydryphantidae** | 0 | 0 | 0 | 0 | 0 |
| *Albertathyas* | 18 | 0 | 0 | 0 | 0 |
| *Wandesia* | 2 | 3 | 0 | 0 | 3 |
| **\| Family: Hygrobatidae** | 0 | 0 | 0 | 0 | 0 |
| *Hygrobates* | 0 | 0 | 0 | 3 | 1 |
| **\| Family: Lebertiidae** | 0 | 0 | 0 | 0 | 0 |
| *Lebertia* | 4 | 2 | 4 | 16 | 3 |
| **\| Family: Sperchontidae** | 0 | 0 | 0 | 0 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| *Sperchon* | 3 | 0 | 0 | 14 | 1 |
| **\| Order: Sarcoptiformes** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Oribatida** | 0 | 1 | 0 | 0 | 2 |
| **\| Family: Hydrozetidae** | 0 | 0 | 0 | 1 | 0 |
| **Phylum: Annelida** | 0 | 0 | 0 | 0 | 0 |
| **Subphylum: Clitellata** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Oligochaeta** | 0 | 0 | 0 | 0 | 0 |
| **\| Order: Lumbriculida** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Lumbriculidae** | 0 | 0 | 0 | 0 | 0 |
| *Lumbriculus* | 0 | 2 | 0 | 0 | 0 |
| **\| Order: Tubificida** | 0 | 0 | 0 | 0 | 0 |
| **\| Family: Enchytraeidae** | 0 | 0 | 0 | 0 | 0 |
| *Enchytraeus* | 0 | 0 | 2 | 1 | 4 |
| **Totals:** | **380** | **341** | **337** | **338** | **364** |

**Taxa present but not included:**

| | | | | | |
|---|---|---|---|---|---|
| **Phylum: Arthropoda** | 0 | 0 | 0 | 0 | 0 |
| **Subphylum: Crustacea** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Ostracoda** | 1 | 1 | 0 | 1 | 1 |
| **\| Class: Maxillipoda** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Copepoda** | 0 | 1 | 0 | 0 | 0 |
| **Phylum: Nemata** | 0 | 0 | 0 | 1 | 1 |
| **Phylum: Platyhelminthes** | 0 | 0 | 0 | 0 | 0 |
| **\| Class: Turbellaria** | 1 | 1 | 1 | 1 | 1 |
| **Totals:** | **2** | **3** | **1** | **3** | **3** |

**ND designation of a taxa represents a non-distinct taxa.  This adjusts where the associated taxa fall in the metrics for this sample because the individuals are like**

**Project: Sa Dena Hes - ECA22YT000199 - SQ-213**
Ensero Solutions
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

| Site - 2022, Sample - MH04, CC# - CC230252, Percent sampled = 5%, Sieve size = 400 | | |
|---|---|---|
| Chironomidae | Pupa | 4 |
| Tanytarsini | Juvenile/Dam | 1 |
| Micropsectra | Larvae | 1 |
| Pseudodiamesa | Larvae | 1 |
| Eukiefferiella | Larvae | 10 |
| Hydrobaenus | Larvae | 3 |
| Limnophyes | Larvae | 1 |
| Orthocladius complex | Larvae | 9 |
| Parorthocladius | Larvae | 8 |
| Rheocricotopus | Larvae | 3 |
| Tvetenia | Larvae | 14 |
| Corynoneura | Larvae | 3 |
| Oreogeton | Larvae | 12 |
| Prosimulium | Larvae | 4 |
| Ameletus | Larvae | 29 |
| Baetidae | Juvenile/Dam | 4 |
| Baetis | Larvae | 139 |
| Baetis bicaudatus | Larvae | 4 |
| Heptageniidae | Juvenile/Dam | 2 |
| Cinygmula | Larvae | 1 |
| Plecoptera | Juvenile/Dam | 2 |
| Capniidae | Juvenile/Dam | 1 |
| Chloroperlidae | Juvenile/Dam | 2 |
| Sweltsa | Larvae | 2 |
| Visoka cataractae | Larvae | 5 |
| Zapada cinctipes | Larvae | 47 |
| Zapada columbiana | Larvae | 11 |
| Perlodidae | Juvenile/Dam | 6 |
| Megarcys | Larvae | 1 |
| Allomyia | Larvae | 4 |
| Limnephilidae | Juvenile/Dam | 8 |
| Trombidiformes | Juvenile/Dam | 2 |
| Wandesia | Adult | 2 |
| Lebertia | Adult | 4 |
| Sperchon | Adult | 3 |
| Haploperla | Larvae | 2 |
| Baetis rhodani group | Larvae | 7 |
| Albertathyas | Adult | 18 |
| **Total:** | | **380** |

| Site - 2022, Sample - MH11, CC# - CC230253, Percent sampled = 26%, Sieve size = 400 | | |
|---|---|---|
| Prosimulium/Helodon | Larvae | 2 |

| | | |
|---|---|---|
| Baetis rhodani group | Larvae | 4 |
| Thysanoptera | None | 1 |
| Oribatida | Adult | 1 |
| Lebertia | Adult | 2 |
| Lumbriculus | None | 2 |
| Rhyacophila vofixa group | Larvae | 5 |
| Wandesia | Adult | 3 |
| Rhyacophila hyalinata group | Larvae | 2 |
| Rhyacophila | Larvae | 25 |
| Zapada columbiana | Larvae | 142 |
| Zapada cinctipes | Larvae | 2 |
| Zapada oregonensis group | Larvae | 22 |
| Perlodidae | Juvenile/Dam | 1 |
| Zapada | Larvae | 4 |
| Sweltsa | Larvae | 6 |
| Capniidae | Juvenile/Dam | 1 |
| Chloroperlidae | Juvenile/Dam | 8 |
| Epeorus | Larvae | 8 |
| Lepidoptera | None | 1 |
| Plecoptera | Juvenile/Dam | 5 |
| Cinygmula | Larvae | 17 |
| Heptageniidae | Juvenile/Dam | 10 |
| Baetis bicaudatus | Larvae | 7 |
| Baetis | Larvae | 7 |
| Baetidae | Juvenile/Dam | 5 |
| Ameletus | Larvae | 35 |
| Simuliidae | Pupa | 3 |
| Prosimulium | Larvae | 3 |
| Thienemanniella | Larvae | 1 |
| Tvetenia | Larvae | 3 |
| Pagastia | Larvae | 1 |
| Eukiefferiella | Larvae | 2 |
| **Total:** | | **341** |

| Site - 2022, Sample - MH12, CC# - CC230254, Percent sampled = 5%, Sieve size = 400 | | |
|---|---|---|
| Brillia | Larvae | 1 |
| Eukiefferiella | Larvae | 3 |
| Hydrobaenus | Larvae | 1 |
| Limnophyes | Larvae | 2 |
| Parorthocladius | Larvae | 12 |
| Platysmittia | Larvae | 1 |
| Orthocladius complex | Larvae | 4 |
| Parametriocnemus | Larvae | 1 |
| Orthocladiinae | Juvenile/Dam | 2 |
| Diamesa | Larvae | 2 |
| Pagastia | Larvae | 8 |
| Micropsectra | Larvae | 1 |
| Chironomidae | Adult | 3 |
| Chironomidae | Pupa | 7 |
| Pericoma/Telmatoscopus | Larvae | 19 |
| Simuliidae | Juvenile/Dam | 5 |
| Tvetenia | Larvae | 14 |
| Neoplasta | Larvae | 1 |
| Tipulidae | Juvenile/Dam | 1 |
| Ameletus | Larvae | 7 |
| Oreogeton | Larvae | 4 |
| Heptageniidae | Juvenile/Dam | 4 |

| | | | |
|---|---|---|---|
| Baetidae | Juvenile/Dam | 1 | |
| Baetis | Larvae | 10 | |
| Baetis bicaudatus | Larvae | 78 | |
| Epeorus | Larvae | 1 | |
| Cinygmula | Larvae | 16 | |
| Plecoptera | Juvenile/Dam | 2 | |
| Capniidae | Juvenile/Dam | 1 | |
| Chloroperlidae | Juvenile/Dam | 8 | |
| Sweltsa | Larvae | 6 | |
| Zapada | Larvae | 4 | |
| Visoka cataractae | Larvae | 1 | |
| Zapada cinctipes | Larvae | 1 | |
| Zapada columbiana | Larvae | 54 | |
| Perlodidae | Juvenile/Dam | 1 | |
| Rhyacophila | Larvae | 3 | |
| Skwala | Larvae | 1 | |
| Taenionema | Larvae | 1 | |
| Rhyacophila hyalinata group | Larvae | 2 | |
| Rhyacophila vofixa group | Larvae | 11 | |
| Lebertia | Adult | 4 | |
| Enchytraeus | None | 2 | |
| Collembola | None | 1 | |
| Baetis rhodani group | Larvae | 13 | |
| Prosimulium/Helodon | Larvae | 11 | |
| Haploperla | Larvae | 1 | |
| **Total:** | | **337** | |

| Site - 2022, Sample - MH13, CC# - CC230255, Percent sampled = 22%, Sieve size = 400 | | | |
|---|---|---|---|
| Hydrozetidae | Adult | 1 | |
| Sperchon | Adult | 14 | |
| Enchytraeus | None | 1 | |
| Trombidiformes | Adult | 1 | velvet mite |
| Hygrobates | Adult | 3 | |
| Lebertia | Adult | 16 | |
| Rhyacophila vofixa group | Larvae | 24 | |
| Dicosmoecus | Larvae | 1 | |
| Rhyacophila | Larvae | 22 | |
| Zapada columbiana | Larvae | 34 | |
| Zapada oregonensis group | Larvae | 3 | |
| Hydropsychidae | Juvenile/Dam | 1 | |
| Parapsyche | Larvae | 3 | |
| Parapsyche elsis | Larvae | 3 | |
| Perlodidae | Juvenile/Dam | 4 | |
| Zapada | Larvae | 3 | |
| Zapada cinctipes | Larvae | 3 | |
| Sweltsa | Larvae | 8 | |
| Nemouridae | Juvenile/Dam | 5 | |
| Visoka cataractae | Larvae | 1 | |
| Leuctridae | Juvenile/Dam | 1 | |
| Capniidae | Juvenile/Dam | 7 | |
| Plecoptera | Juvenile/Dam | 1 | |
| Cinygmula | Larvae | 13 | |
| Ephemerellidae | Juvenile/Dam | 4 | |
| Drunella coloradensis | Larvae | 1 | |
| Drunella doddsii | Larvae | 13 | |
| Heptageniidae | Juvenile/Dam | 17 | |
| Baetis | Larvae | 18 | |

| | | | |
|---|---|---|---|
| Baetidae | Juvenile/Dam | 8 | |
| Ameletus | Larvae | 7 | |
| Neoplasta | Larvae | 8 | |
| Oreogeton | Larvae | 1 | |
| Tvetenia | Larvae | 1 | |
| Rheotanytarsus | Larvae | 1 | |
| Stempellinella | Larvae | 65 | |
| Chironomidae | Pupa | 15 | |
| Tanytarsus | Larvae | 1 | |
| Parametriocnemus | Larvae | 4 | |
| Rheocricotopus | Larvae | 1 | |
| **Total:** | | **338** | |

| Site - 2022, Sample - MH29, CC# - CC230256, Percent sampled = 28%, Sieve size = 400 | | | |
|---|---|---|---|
| Limnophyes | Larvae | 1 | |
| Heleniella | Larvae | 15 | |
| Orthocladiinae | Juvenile/Dam | 1 | |
| Brillia | Larvae | 5 | |
| Stempellinella | Larvae | 1 | |
| Ceratopogon | Larvae | 2 | |
| Chironomidae | Pupa | 3 | |
| Procladius | Larvae | 1 | |
| Neoplasta | Larvae | 1 | |
| Tvetenia | Larvae | 9 | |
| Oreogeton | Larvae | 19 | |
| Pericoma/Telmatoscopus | Larvae | 1 | |
| Ameletus | Larvae | 32 | |
| Simulium | Larvae | 7 | |
| Baetis | Larvae | 4 | |
| Baetis bicaudatus | Larvae | 1 | |
| Heptageniidae | Juvenile/Dam | 2 | |
| Cinygmula | Larvae | 1 | |
| Plecoptera | Juvenile/Dam | 4 | |
| Capniidae | Juvenile/Dam | 1 | |
| Epeorus | Larvae | 2 | |
| Hemiptera | None | 1 | lace bug |
| Chloroperlidae | Juvenile/Dam | 1 | |
| Sweltsa | Larvae | 11 | |
| Leuctridae | Juvenile/Dam | 9 | |
| Nemouridae | Juvenile/Dam | 1 | |
| Visoka cataractae | Larvae | 5 | |
| Zapada | Larvae | 14 | |
| Megarcys | Larvae | 1 | |
| Lepidostoma | Larvae | 6 | |
| Zapada columbiana | Larvae | 145 | |
| Zapada oregonensis group | Larvae | 2 | |
| Rhyacophila | Larvae | 32 | |
| Wandesia | Adult | 3 | |
| Hygrobates | Adult | 1 | |
| Rhyacophila vofixa group | Larvae | 2 | |
| Lebertia | Adult | 3 | |
| Sperchon | Adult | 1 | |
| Enchytraeus | None | 4 | |
| Collembola | None | 3 | |
| Oribatida | Adult | 2 | |
| Prosimulium/Helodon | Larvae | 2 | |
| Telmatopelopia | Larvae | 2 | |

| | |
|---|---|
| **Total:** | **364** |

**Project: Sa Dena Hes - ECA22YT000199 - SQ-213**

Ensero Solutions
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

| Client | Project | Site | Sample | Date | CC# | 400 micron fraction | |
|---|---|---|---|---|---|---|---|
| | | | | | | % Sampled | # Invertebrates |
| Ensero Sol | Sa Dena He | 2022 | MH04 | 08-Aug-22 | CC230252 | 5% | 380 |
| Ensero Sol | Sa Dena He | 2022 | MH11 | 10-Aug-22 | CC230253 | 26% | 341 |
| Ensero Sol | Sa Dena He | 2022 | MH12 | 09-Aug-22 | CC230254 | 5% | 337 |
| Ensero Sol | Sa Dena He | 2022 | MH13 | 09-Aug-22 | CC230255 | 22% | 338 |
| Ensero Sol | Sa Dena He | 2022 | MH29 | 10-Aug-22 | CC230256 | 28% | 364 |

**Project: Sa Dena Hes - ECA22YT000199 - SQ-213**
Ensero Solutions
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

| | Functional Feeding Groups | Abbreviation | ITIS Number | Tolerance | Voltinism | Habit |
|---|---|---|---|---|---|---|
| **Phylum: Arthropoda** | Unclassified | | 82696 | | | |
| **\| Order: Collembola** | Collector-Gatherer | CG | 99237 | 10 | | |
| | | | | | | |
| **Subphylum: Hexapoda** | Unclassified | | 563886 | | | |
| **\| Class: Insecta** | Unclassified | | 99208 | | | |
| **\| Order: Ephemeroptera** | Collector-Gatherer | CG | 100502 | | | |
| **\| Family: Ameletidae** | Collector-Gatherer | CG | 568544 | | Unclassified | |
| *Ameletus* | Collector-Gatherer | CG | 100996 | | UV | |
| **\| Family: Baetidae** | Collector-Gatherer | CG | 100755 | 4 | Unclassified | |
| *Baetis* | Collector-Gatherer | CG | 100800 | 5 | MV | |
| *Baetis rhodani group* | Collector-Gatherer | CG | 100800B | 6 | Unclassified | |
| *Baetis bicaudatus* | Collector-Gatherer | CG | 100823 | 4 | Unclassified | |
| **\| Family: Ephemerellidae** | Collector-Gatherer | CG | 101232 | 1 | Unclassified | |
| *Drunella coloradensis* | Predator | P | 101389 | | Unclassified | |
| *Drunella doddsii* | Collector-Gatherer | CG | 698494 | | UV | |
| **\| Family: Heptageniidae** | Scraper | SC | 100504 | 4 | Unclassified | |
| *Cinygmula* | Scraper | SC | 100557 | 4 | Unclassified | |
| *Epeorus* | Scraper | SC | 100626 | | Unclassified | |
| | | | | | | |
| **\| Order: Plecoptera** | Unclassified | | 102467 | | Unclassified | |
| **\| Family: Capniidae** | Shredder-Herbivore | SH | 102643 | 1 | Unclassified | |
| **\| Family: Chloroperlidae** | Predator | P | 103202 | 1 | Unclassified | |
| *Haploperla* | Predator | P | 103260 | 1 | Unclassified | |
| *Sweltsa* | Predator | P | 103273 | 1 | SV | |
| **\| Family: Leuctridae** | Shredder-Herbivore | SH | 102840 | | Unclassified | |
| **\| Family: Nemouridae** | Shredder-Herbivore | SH | 102517 | 2 | Unclassified | |
| *Visoka cataractae* | Shredder-Herbivore | SH | 102615 | | SV | |
| *Zapada* | Shredder-Herbivore | SH | 102591 | 2 | Unclassified | |
| *Zapada oregonensis group* | Shredder-Herbivore | SH | 102591B | 2 | Unclassified | |
| *Zapada cinctipes* | Shredder-Herbivore | SH | 102594 | 2 | UV | |
| *Zapada columbiana* | Shredder-Herbivore | SH | 102596 | 2 | SV | |
| **\| Family: Perlodidae** | Predator | P | 102994 | 2 | Unclassified | |
| *Megarcys* | Predator | P | 103110 | 2 | Unclassified | |
| *Skwala* | Predator | P | 103102 | 2 | UV | |
| **\| Family: Taeniopterygidae** | Shredder-Herbivore | SH | 102788 | 2 | Unclassified | |
| *Taenionema* | Omnivore | OM | 102519 | 2 | Unclassified | |
| | | | | | | |
| **\| Order: Trichoptera** | Unclassified | | 115095 | | | |
| **\| Family: Apataniidae** | Unclassified | | 598182 | | Unclassified | |
| *Allomyia* | Scraper | SC | 116438 | | MV | |
| **\| Family: Hydropsychidae** | Collector-Filterer | CF | 115398 | 4 | Unclassified | |
| *Parapsyche* | Predator | P | 115556 | | Unclassified | |
| *Parapsyche elsis* | Predator | P | 115560 | 1 | | |
| **\| Family: Lepidostomatidae** | Shredder-Herbivore | SH | 116793 | 1 | Unclassified | |
| *Lepidostoma* | Shredder-Herbivore | SH | 116794 | 1 | UV | |
| **\| Family: Limnephilidae** | Collector-Gatherer | CG | 115933 | 4 | Unclassified | |
| *Dicosmoecus* | Omnivore | OM | 116265 | 1 | Unclassified | |
| **\| Family: Rhyacophilidae** | Predator | P | 115096 | | Unclassified | |
| *Rhyacophila* | Predator | P | 115097 | | Unclassified | |
| *Rhyacophila hyalinata group* | Predator | P | 115097H | 1 | Unclassified | |
| *Rhyacophila vofixa group* | Predator | P | 115097S | | Unclassified | |
| | | | | | | |
| **\| Order: Diptera** | Unclassified | | 118831 | | | |
| **\| Family: Ceratopogonidae** | Predator | P | 127076 | 6 | | |
| *Ceratopogon* | Predator | P | 127564 | 6 | | |
| **\| Family: Chironomidae** | Unclassified | | 127917 | 6 | | |
| **\| Subfamily: Chironominae** | Collector-Gatherer | CG | 129228 | 6 | | |
| **\| Tribe: Tanytarsini** | Collector-Gatherer | CG | 129872 | 6 | | |
| *Micropsectra* | Collector-Gatherer | CG | 129890 | 7 | | |
| *Rheotanytarsus* | Collector-Filterer | CF | 129952 | 6 | | |
| *Stempellinella* | Collector-Filterer | CF | 129969 | 4 | | |
| *Tanytarsus* | Collector-Filterer | CF | 129978 | 6 | | |
| **\| Subfamily: Diamesinae** | Collector-Gatherer | CG | 128341 | 2 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **\| Tribe: Diamesini** | Collector-Gatherer | CG | | 128351 | 4 | |
| *Diamesa* | Collector-Gatherer | CG | | 128355 | 5 | |
| *Pagastia* | Collector-Gatherer | CG | | 128401 | 1 | |
| *Pseudodiamesa* | Collector-Gatherer | CG | | 128416 | 6 | |
| **\| Subfamily: Orthocladiinae** | Collector-Gatherer | CG | | 128457 | 5 | |
| *Brillia* | Shredder-Herbivore | SH | | 128477 | 5 | |
| *Corynoneura* | Collector-Gatherer | CG | | 128563 | 7 | |
| *Eukiefferiella* | Omnivore | OM | | 128689 | 8 | |
| *Heleniella* | Collector-Gatherer | CG | | 128730 | 6 | |
| *Hydrobaenus* | Collector-Gatherer | CG | | 128750 | 8 | |
| *Limnophyes* | Collector-Gatherer | CG | | 128776 | 8 | |
| *Orthocladius complex* | Collector-Gatherer | CG | 128874A | | 6 | |
| *Parametriocnemus* | Collector-Gatherer | CG | | 128978 | 5 | |
| *Parorthocladius* | Collector-Gatherer | CG | | 129011 | 6 | |
| *Platysmittia* | Collector-Gatherer | CG | | 129013 | 5 | |
| *Rheocricotopus* | Omnivore | OM | | 129086 | 6 | |
| *Thienemanniella* | Collector-Gatherer | CG | | 129182 | 6 | |
| *Tvetenia* | Collector-Gatherer | CG | | 129197 | 5 | |
| **\| Subfamily: Tanypodinae** | Predator | P | | 127994 | 7 | |
| **\| Tribe: Pentaneurini** | Predator | P | | 128078 | 6 | |
| *Telmatopelopia* | Unclassified | | 127994A | | | |
| **\| Tribe: Procladiini** | Predator | P | | 128270 | 9 | |
| *Procladius* | Predator | P | | 128277 | 9 | |
| **\| Family: Empididae** | Predator | P | | 135830 | 6 | UV |
| *Neoplasta* | Predator | P | | 136352 | 6 | |
| *Oreogeton* | Predator | P | | 136377 | 6 | |
| **\| Family: Psychodidae** | Collector-Gatherer | CG | | 125351 | 10 | |
| *Pericoma/Telmatoscopus* | Collector-Gatherer | CG | 125351A | | 4 | |
| **\| Family: Simuliidae** | Collector-Filterer | CF | | 126640 | 6 | |
| *Prosimulium* | Collector-Filterer | CF | | 126703 | 3 | |
| *Prosimulium/Helodon* | Collector-Filterer | CF | 126640B | | 6 | |
| *Simulium* | Collector-Filterer | CF | | 126774 | 6 | MV |
| **\| Family: Tipulidae** | Shredder-Herbivore | SH | | 118840 | 3 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **\| Order: Hemiptera** | Unclassified | | | 103359 | | |
| **\| Order: Lepidoptera** | Shredder-Herbivore | SH | | 117232 | | |
| **\| Order: Thysanoptera** | Unclassified | | | 103348 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Subphylum: Chelicerata** | Unclassified | | | 82697 | | |
| **\| Class: Arachnida** | Predator | P | | 82708 | 5 | |
| **\| Order: Trombidiformes** | Predator | P | | 82769 | 5 | |
| **\| Family: Hydryphantidae** | Predator | P | | 83212 | 5 | Unclassified |
| *Albertathyas* | Predator | P | 83212A | | | |
| *Wandesia* | Predator | P | | 83172 | 5 | Unclassified |
| **\| Family: Hygrobatidae** | Predator | P | | 83281 | 8 | Unclassified |
| *Hygrobates* | Predator | P | | 83297 | 8 | Unclassified |
| **\| Family: Lebertiidae** | Predator | P | | 83033 | 5 | Unclassified |
| *Lebertia* | Predator | P | | 83034 | 8 | Unclassified |
| **\| Family: Sperchontidae** | Unclassified | | | 895710 | 5 | Unclassified |
| *Sperchon* | Predator | P | | 83006 | 8 | Unclassified |

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|---|---|---|---|---|---|---|
| **\| Order: Sarcoptiformes** | Predator | P | | 83538 | | |
| **\| Order: Oribatida** | Predator | P | | 733326 | 5 | |
| **\| Family: Hydrozetidae** | Predator | P | | 553091 | 5 | MV |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Phylum: Annelida** | Unclassified | | | 64357 | | |
| **Subphylum: Clitellata** | Unclassified | | | 568832 | | |
| **\| Class: Oligochaeta** | Collector-Gatherer | CG | | 68422 | 5 | |
| **\| Order: Lumbriculida** | Collector-Gatherer | CG | | 68439 | 7 | |
| **\| Family: Lumbriculidae** | Collector-Gatherer | CG | | 68440 | 8 | |
| *Lumbriculus* | Collector-Gatherer | CG | | 68441 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **\| Order: Tubificida** | Unclassified | | | 68498 | | |
| **\| Family: Enchytraeidae** | Collector-Gatherer | CG | | 68510 | 10 | |
| *Enchytraeus* | Collector-Gatherer | CG | | 68531 | 10 | |

**Taxa present but not included:**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Phylum: Arthropoda** | Unclassified | | | 82696 | | |
| **Subphylum: Crustacea** | Collector-Gatherer | CG | | 83677 | 8 | |
| **\| Class: Ostracoda** | Collector-Gatherer | CG | | 84195 | 8 | |
| **\| Class: Maxillipoda** | Unclassified | | | 610004 | | |
| **\| Class: Copepoda** | Collector-Gatherer | CG | | 85257 | 8 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Phylum: Nemata** | Shredder-Herbivore | SH | | 563956 | | |
| **Phylum: Platyhelminthes** | Unclassified | | | 53963 | 8 | |
| **\| Class: Turbellaria** | Predator | P | | 53964 | 4 | |

**Project: Sa Dena Hes - ECA22YT000199 - SQ-213**
Ensero Solutions
Taxonomist: Scott Finlayson
[scottfinlayson@cordilleraconsulting.ca](mailto:scottfinlayson@cordilleraconsulting.ca)
250-494-7553

| Phylum | Sub Phylum | Class | Order | Family | Subfamily | Tribe | Taxonomy | ITIS Code | Voltinism | Functional Feedin Group | EPA Habitat | Maturity | Name | ND | Site | Sample | Date | CC# | Count | Percent Sampled | Seive Size | Season | Reach | Site | Transect | Parent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arthropoda | Hexapoda | Insecta | Plecoptera | Chloroperlidae | | | Haploperla | 103260 | Unclassified | P | | Larvae | Haploperla | | 2022 | MH04 | 08-Aug-22 | CC230252 | 2 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis | 100800B | Unclassified | CG | | Larvae | Baetis rhodani group | | 2022 | MH04 | 08-Aug-22 | CC230252 | 7 | 5 | 400 | | | | | |
| Arthropoda | Chelicerata | Arachnida | Trombidiform | Hydryphantidae | | | Albertathyas | 83212A | | P | | Adult | Albertathyas | | 2022 | MH04 | 08-Aug-22 | CC230252 | 18 | 5 | 400 | | | | | |
| Arthropoda | Chelicerata | Arachnida | Trombidiform | Sperchontidae | | | Sperchon | 83006 | Unclassified | P | | Adult | Sperchon | | 2022 | MH04 | 08-Aug-22 | CC230252 | 3 | 5 | 400 | | | | | |
| Arthropoda | Chelicerata | Arachnida | Trombidiform | Lebertiidae | | | Lebertia | 83034 | Unclassified | P | | Adult | Lebertia | | 2022 | MH04 | 08-Aug-22 | CC230252 | 4 | 5 | 400 | | | | | |
| Arthropoda | Chelicerata | Arachnida | Trombidiformes | | | | | 82769 | | P | | Juvenile/Damaged | Trombidiformes | ND | 2022 | MH04 | 08-Aug-22 | CC230252 | 2 | 5 | 400 | | | | | |
| Arthropoda | Chelicerata | Arachnida | Trombidiform | Hydryphantidae | | | Wandesia | 83172 | Unclassified | P | | Adult | Wandesia | | 2022 | MH04 | 08-Aug-22 | CC230252 | 2 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Apataniidae | | | Allomyia | 116438 | MV | SC | | Larvae | Allomyia | | 2022 | MH04 | 08-Aug-22 | CC230252 | 4 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Limnephilidae | | | | 115933 | Unclassified | CG | | Juvenile/Damaged | Limnephilidae | | 2022 | MH04 | 08-Aug-22 | CC230252 | 8 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Perlodidae | | | | 102994 | Unclassified | P | | Juvenile/Damaged | Perlodidae | | 2022 | MH04 | 08-Aug-22 | CC230252 | 6 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Perlodidae | | | Megarcys | 103110 | Unclassified | P | | Larvae | Megarcys | | 2022 | MH04 | 08-Aug-22 | CC230252 | 1 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada cinctipes | 102594 | UV | SH | | Larvae | Zapada cinctipes | | 2022 | MH04 | 08-Aug-22 | CC230252 | 47 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada columbiana | 102596 | SV | SH | | Larvae | Zapada columbiana | | 2022 | MH04 | 08-Aug-22 | CC230252 | 11 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Chloroperlidae | | | Sweltsa | 103273 | SV | P | | Larvae | Sweltsa | | 2022 | MH04 | 08-Aug-22 | CC230252 | 2 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Visoka cataractae | 102615 | SV | SH | | Larvae | Visoka cataractae | | 2022 | MH04 | 08-Aug-22 | CC230252 | 5 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Capniidae | | | | 102643 | Unclassified | SH | | Juvenile/Damaged | Capniidae | | 2022 | MH04 | 08-Aug-22 | CC230252 | 1 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Chloroperlidae | | | | 103202 | Unclassified | P | | Juvenile/Damaged | Chloroperlidae | ND | 2022 | MH04 | 08-Aug-22 | CC230252 | 2 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | | | | | 102467 | Unclassified | | | Juvenile/Damaged | Plecoptera | ND | 2022 | MH04 | 08-Aug-22 | CC230252 | 2 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | | 100504 | Unclassified | SC | | Juvenile/Damaged | Heptageniidae | | 2022 | MH04 | 08-Aug-22 | CC230252 | 2 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | Cinygmula | 100557 | Unclassified | SC | | Larvae | Cinygmula | | 2022 | MH04 | 08-Aug-22 | CC230252 | 1 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis | 100800 | MV | CG | | Larvae | Baetis | | 2022 | MH04 | 08-Aug-22 | CC230252 | 139 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis bicaudatus | 100823 | Unclassified | CG | | Larvae | Baetis bicaudatus | | 2022 | MH04 | 08-Aug-22 | CC230252 | 4 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Ameletidae | | | Ameletus | 100996 | UV | CG | | Larvae | Ameletus | | 2022 | MH04 | 08-Aug-22 | CC230252 | 29 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | | 100755 | Unclassified | CG | | Juvenile/Damaged | Baetidae | ND | 2022 | MH04 | 08-Aug-22 | CC230252 | 4 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Simuliidae | | | Prosimulium | 126703 | | CF | | Larvae | Prosimulium | | 2022 | MH04 | 08-Aug-22 | CC230252 | 4 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Corynoneura | 128563 | | CG | | Larvae | Corynoneura | | 2022 | MH04 | 08-Aug-22 | CC230252 | 3 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Empididae | | | Oreogeton | 136377 | | P | | Larvae | Oreogeton | | 2022 | MH04 | 08-Aug-22 | CC230252 | 12 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Parorthocladius | 129011 | | CG | | Larvae | Parorthocladius | | 2022 | MH04 | 08-Aug-22 | CC230252 | 8 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Rheocricotopus | 129086 | | OM | | Larvae | Rheocricotopus | | 2022 | MH04 | 08-Aug-22 | CC230252 | 3 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Tvetenia | 129197 | | CG | | Larvae | Tvetenia | | 2022 | MH04 | 08-Aug-22 | CC230252 | 14 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Eukiefferiella | 128689 | | OM | | Larvae | Eukiefferiella | | 2022 | MH04 | 08-Aug-22 | CC230252 | 10 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Hydrobaenus | 128750 | | CG | | Larvae | Hydrobaenus | | 2022 | MH04 | 08-Aug-22 | CC230252 | 3 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Limnophyes | 128776 | | CG | | Larvae | Limnophyes | | 2022 | MH04 | 08-Aug-22 | CC230252 | 1 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Orthocladius complex | 128874A | | CG | | Larvae | Orthocladius complex | | 2022 | MH04 | 08-Aug-22 | CC230252 | 9 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Diamesinae | Diamesini | Pseudodiamesa | 128416 | | CG | | Larvae | Pseudodiamesa | | 2022 | MH04 | 08-Aug-22 | CC230252 | 1 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Chironominae | Tanytarsini | Micropsectra | 129890 | | CG | | Larvae | Micropsectra | | 2022 | MH04 | 08-Aug-22 | CC230252 | 1 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | | | | 127917 | | | | Pupa | Chironomidae | | 2022 | MH04 | 08-Aug-22 | CC230252 | 4 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Chironominae | Tanytarsini | | 129872 | | CG | | Juvenile/Damaged | Tanytarsini | | 2022 | MH04 | 08-Aug-22 | CC230252 | 1 | 5 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Diamesinae | Diamesini | Pagastia | 128401 | | CG | | Larvae | Pagastia | | 2022 | MH11 | 10-Aug-22 | CC230253 | 1 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Eukiefferiella | 128689 | | OM | | Larvae | Eukiefferiella | | 2022 | MH11 | 10-Aug-22 | CC230253 | 2 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Tvetenia | 129197 | | CG | | Larvae | Tvetenia | | 2022 | MH11 | 10-Aug-22 | CC230253 | 3 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Thienemanniella | 129182 | | CG | | Larvae | Thienemanniella | | 2022 | MH11 | 10-Aug-22 | CC230253 | 1 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Simuliidae | | | | 126640 | | CF | | Pupa | Simuliidae | ND | 2022 | MH11 | 10-Aug-22 | CC230253 | 3 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Diptera | Simuliidae | | | Prosimulium | 126703 | | CF | | Larvae | Prosimulium | | 2022 | MH11 | 10-Aug-22 | CC230253 | 3 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Ameletidae | | | Ameletus | 100996 | UV | CG | | Larvae | Ameletus | | 2022 | MH11 | 10-Aug-22 | CC230253 | 35 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | | 100755 | Unclassified | CG | | Juvenile/Damaged | Baetidae | ND | 2022 | MH11 | 10-Aug-22 | CC230253 | 5 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis | 100800 | MV | CG | | Larvae | Baetis | | 2022 | MH11 | 10-Aug-22 | CC230253 | 7 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis bicaudatus | 100823 | Unclassified | CG | | Larvae | Baetis bicaudatus | | 2022 | MH11 | 10-Aug-22 | CC230253 | 7 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | | 100504 | Unclassified | SC | | Juvenile/Damaged | Heptageniidae | ND | 2022 | MH11 | 10-Aug-22 | CC230253 | 10 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | Cinygmula | 100557 | Unclassified | SC | | Larvae | Cinygmula | | 2022 | MH11 | 10-Aug-22 | CC230253 | 17 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | Epeorus | 100626 | Unclassified | SC | | Larvae | Epeorus | | 2022 | MH11 | 10-Aug-22 | CC230253 | 8 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Lepidoptera | | | | | 117232 | | SH | | None | Lepidoptera | | 2022 | MH11 | 10-Aug-22 | CC230253 | 1 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | | | | | 102467 | Unclassified | | | Juvenile/Damaged | Plecoptera | ND | 2022 | MH11 | 10-Aug-22 | CC230253 | 5 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Chloroperlidae | | | | 103202 | Unclassified | P | | Juvenile/Damaged | Chloroperlidae | | 2022 | MH11 | 10-Aug-22 | CC230253 | 8 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Capniidae | | | | 102643 | Unclassified | SH | | Juvenile/Damaged | Capniidae | | 2022 | MH11 | 10-Aug-22 | CC230253 | 1 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Chloroperlidae | | | Sweltsa | 103273 | SV | P | | Larvae | Sweltsa | | 2022 | MH11 | 10-Aug-22 | CC230253 | 6 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada | 102591 | Unclassified | SH | | Larvae | Zapada | ND | 2022 | MH11 | 10-Aug-22 | CC230253 | 4 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada cinctipes | 102594 | UV | SH | | Larvae | Zapada cinctipes | | 2022 | MH11 | 10-Aug-22 | CC230253 | 2 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada columbiana | 102596 | SV | SH | | Larvae | Zapada columbiana | | 2022 | MH11 | 10-Aug-22 | CC230253 | 142 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada | 102591B | Unclassified | SH | | Larvae | Zapada oregonensis group | | 2022 | MH11 | 10-Aug-22 | CC230253 | 22 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Perlodidae | | | | 102994 | Unclassified | P | | Juvenile/Damaged | Perlodidae | | 2022 | MH11 | 10-Aug-22 | CC230253 | 1 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Rhyacophilidae | | | Rhyacophila | 115097H | Unclassified | P | | Larvae | Rhyacophila hyalinata group | | 2022 | MH11 | 10-Aug-22 | CC230253 | 2 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Rhyacophilidae | | | Rhyacophila | 115097 | Unclassified | P | | Larvae | Rhyacophila | | 2022 | MH11 | 10-Aug-22 | CC230253 | 25 | 26 | 400 | | | | | |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Rhyacophilidae | | | Rhyacophila | 115097S | Unclassified | P | | Larvae | Rhyacophila vofixa group | | 2022 | MH11 | 10-Aug-22 | CC230253 | 5 | 26 | 400 | | | | | |
| Arthropoda | Chelicerata | Arachnida | Trombidiform | Hydryphantidae | | | Wandesia | 83172 | Unclassified | P | | Adult | Wandesia | | 2022 | MH11 | 10-Aug-22 | CC230253 | 3 | 26 | 400 | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arthropoda | Chelicerata | Arachnida | Trombidiform | Lebertiidae | | | Lebertia | 83034 | Unclassified | P | Adult | Lebertia | | 2022 | MH11 | 10-Aug-22 | CC230253 | 2 | 26 | 400 |
| Annelida | Clitellata | Oligochaeta | Lumbriculida | Lumbriculidae | | | Lumbriculus | 68441 | | CG | None | Lumbriculus | | 2022 | MH11 | 10-Aug-22 | CC230253 | 2 | 26 | 400 |
| Arthropoda | Hexapoda | Insecta | Thysanoptera | | | | | 103348 | | | None | Thysanoptera | | 2022 | MH11 | 10-Aug-22 | CC230253 | 1 | 26 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis | 100800B | Unclassified | CG | Larvae | Baetis rhodani group | | 2022 | MH11 | 10-Aug-22 | CC230253 | 4 | 26 | 400 |
| Arthropoda | Chelicerata | Arachnida | Sarcoptiformes | | | | | 733326 | | P | Adult | Oribatida | | 2022 | MH11 | 10-Aug-22 | CC230253 | 1 | 26 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Simuliidae | | | Prosimulium/Helodon | 126640B | | CF | Larvae | Prosimulium/Helodon | | 2022 | MH11 | 10-Aug-22 | CC230253 | 2 | 26 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Chironominae | Tanytarsini | Micropsectra | 129890 | | CG | Larvae | Micropsectra | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | | | | 127917 | | | Pupa | Chironomidae | ND | 2022 | MH12 | 09-Aug-22 | CC230254 | 7 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | | | | 127917 | | | Adult | Chironomidae | ND | 2022 | MH12 | 09-Aug-22 | CC230254 | 3 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | | 128457 | | CG | Juvenile/Damaged | Orthocladiinae | ND | 2022 | MH12 | 09-Aug-22 | CC230254 | 2 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Parametriocnemus | 128978 | | CG | Larvae | Parametriocnemus | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Orthocladius complex | 128874A | | CG | Larvae | Orthocladius complex | | 2022 | MH12 | 09-Aug-22 | CC230254 | 4 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Parorthocladius | 129011 | | CG | Larvae | Parorthocladius | | 2022 | MH12 | 09-Aug-22 | CC230254 | 12 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Limnophyes | 128776 | | CG | Larvae | Limnophyes | | 2022 | MH12 | 09-Aug-22 | CC230254 | 2 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Hydrobaenus | 128750 | | CG | Larvae | Hydrobaenus | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Diamesinae | Diamesini | Diamesa | 128355 | | CG | Larvae | Diamesa | | 2022 | MH12 | 09-Aug-22 | CC230254 | 2 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Diamesinae | Diamesini | Pagastia | 128401 | | CG | Larvae | Pagastia | | 2022 | MH12 | 09-Aug-22 | CC230254 | 8 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Brillia | 128477 | | SH | Larvae | Brillia | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Eukiefferiella | 128689 | | OM | Larvae | Eukiefferiella | | 2022 | MH12 | 09-Aug-22 | CC230254 | 3 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Tvetenia | 129197 | | CG | Larvae | Tvetenia | | 2022 | MH12 | 09-Aug-22 | CC230254 | 14 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Platysmittia | 129013 | | CG | Larvae | Platysmittia | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Empididae | | | Oreogeton | 136377 | | P | Larvae | Oreogeton | | 2022 | MH12 | 09-Aug-22 | CC230254 | 4 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Empididae | | | Neoplasta | 136352 | | P | Larvae | Neoplasta | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Tipulidae | | | | 118840 | | SH | Juvenile/Damaged | Tipulidae | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Ameletidae | | | Ameletus | 100996 | UV | CG | Larvae | Ameletus | | 2022 | MH12 | 09-Aug-22 | CC230254 | 7 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Psychodidae | | | Pericoma/Telmatoscopus | 125351A | | CG | Larvae | Pericoma/Telmatoscopus | | 2022 | MH12 | 09-Aug-22 | CC230254 | 19 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Simuliidae | | | | 126640 | | CF | Juvenile/Damaged | Simuliidae | ND | 2022 | MH12 | 09-Aug-22 | CC230254 | 5 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | | 100755 | Unclassified | CG | Juvenile/Damaged | Baetidae | ND | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis | 100800 | MV | CG | Larvae | Baetis | | 2022 | MH12 | 09-Aug-22 | CC230254 | 10 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis bicaudatus | 100823 | Unclassified | CG | Larvae | Baetis bicaudatus | | 2022 | MH12 | 09-Aug-22 | CC230254 | 78 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | Cinygmula | 100557 | Unclassified | SC | Larvae | Cinygmula | | 2022 | MH12 | 09-Aug-22 | CC230254 | 16 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | | | | | 102467 | Unclassified | | Juvenile/Damaged | Plecoptera | ND | 2022 | MH12 | 09-Aug-22 | CC230254 | 2 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | | 100504 | Unclassified | SC | Juvenile/Damaged | Heptageniidae | ND | 2022 | MH12 | 09-Aug-22 | CC230254 | 4 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Chloroperlidae | | | | 103202 | Unclassified | P | Juvenile/Damaged | Chloroperlidae | ND | 2022 | MH12 | 09-Aug-22 | CC230254 | 8 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | Epeorus | 100626 | Unclassified | SC | Larvae | Epeorus | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Capniidae | | | | 102643 | Unclassified | SH | Juvenile/Damaged | Capniidae | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Chloroperlidae | | | Sweltsa | 103273 | SV | P | Larvae | Sweltsa | | 2022 | MH12 | 09-Aug-22 | CC230254 | 6 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada | 102591 | Unclassified | SH | Larvae | Zapada | ND | 2022 | MH12 | 09-Aug-22 | CC230254 | 4 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Visoka cataractae | 102615 | SV | SH | Larvae | Visoka cataractae | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada cinctipes | 102594 | UV | SH | Larvae | Zapada cinctipes | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada columbiana | 102596 | SV | SH | Larvae | Zapada columbiana | | 2022 | MH12 | 09-Aug-22 | CC230254 | 54 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Perlodidae | | | Skwala | 103102 | UV | P | Larvae | Skwala | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Taeniopterygidae | | | Taenionema | 102519 | Unclassified | OM | Larvae | Taenionema | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Perlodidae | | | | 102994 | Unclassified | P | Juvenile/Damaged | Perlodidae | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Rhyacophilidae | | | Rhyacophila | 115097H | Unclassified | P | Larvae | Rhyacophila hyalinata group | | 2022 | MH12 | 09-Aug-22 | CC230254 | 2 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Rhyacophilidae | | | Rhyacophila | 115097S | Unclassified | P | Larvae | Rhyacophila vofixa group | | 2022 | MH12 | 09-Aug-22 | CC230254 | 11 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Rhyacophilidae | | | Rhyacophila | 115097 | Unclassified | P | Larvae | Rhyacophila | | 2022 | MH12 | 09-Aug-22 | CC230254 | 3 | 5 | 400 |
| Arthropoda | Chelicerata | Arachnida | Trombidiform | Lebertiidae | | | Lebertia | 83034 | Unclassified | P | Adult | Lebertia | | 2022 | MH12 | 09-Aug-22 | CC230254 | 4 | 5 | 400 |
| Arthropoda | | | Collembola | | | | | 99237 | | CG | None | Collembola | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Chloroperlidae | | | Haploperla | 103260 | Unclassified | P | Larvae | Haploperla | | 2022 | MH12 | 09-Aug-22 | CC230254 | 1 | 5 | 400 |
| Annelida | Clitellata | Oligochaeta | Tubificida | Enchytraeidae | | | Enchytraeus | 68531 | | CG | None | Enchytraeus | | 2022 | MH12 | 09-Aug-22 | CC230254 | 2 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Simuliidae | | | Prosimulium/Helodon | 126640B | | CF | Larvae | Prosimulium/Helodon | | 2022 | MH12 | 09-Aug-22 | CC230254 | 11 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis | 100800B | Unclassified | CG | Larvae | Baetis rhodani group | | 2022 | MH12 | 09-Aug-22 | CC230254 | 13 | 5 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | | | | 127917 | | | Pupa | Chironomidae | ND | 2022 | MH13 | 09-Aug-22 | CC230255 | 15 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Chironominae | Tanytarsini | Tanytarsus | 129978 | | CF | Larvae | Tanytarsus | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Chironominae | Tanytarsini | Rheotanytarsus | 129952 | | CF | Larvae | Rheotanytarsus | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Chironominae | Tanytarsini | Stempellinella | 129969 | | CF | Larvae | Stempellinella | | 2022 | MH13 | 09-Aug-22 | CC230255 | 65 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Parametriocnemus | 128978 | | CG | Larvae | Parametriocnemus | | 2022 | MH13 | 09-Aug-22 | CC230255 | 4 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Rheocricotopus | 129086 | | OM | Larvae | Rheocricotopus | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Tvetenia | 129197 | | CG | Larvae | Tvetenia | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Empididae | | | Neoplasta | 136352 | | P | Larvae | Neoplasta | | 2022 | MH13 | 09-Aug-22 | CC230255 | 8 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Empididae | | | Oreogeton | 136377 | | P | Larvae | Oreogeton | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Ameletidae | | | Ameletus | 100996 | UV | CG | Larvae | Ameletus | | 2022 | MH13 | 09-Aug-22 | CC230255 | 7 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis | 100800 | MV | CG | Larvae | Baetis | | 2022 | MH13 | 09-Aug-22 | CC230255 | 18 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | | 100755 | Unclassified | CG | Juvenile/Damaged | Baetidae | | 2022 | MH13 | 09-Aug-22 | CC230255 | 8 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Ephemerellidae | | | | 101232 | Unclassified | CG | Juvenile/Damaged | Ephemerellidae | ND | 2022 | MH13 | 09-Aug-22 | CC230255 | 4 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Ephemerellidae | | | Drunella coloradensis | 101389 | Unclassified | P | Larvae | Drunella coloradensis | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Ephemerellidae | | | Drunella doddsii | 698494 | UV | CG | Larvae | Drunella doddsii | | 2022 | MH13 | 09-Aug-22 | CC230255 | 13 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | | 100504 | Unclassified | SC | Juvenile/Damaged | Heptageniidae | | 2022 | MH13 | 09-Aug-22 | CC230255 | 17 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | Cinygmula | 100557 | Unclassified | SC | Larvae | Cinygmula | | 2022 | MH13 | 09-Aug-22 | CC230255 | 13 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | | | | | 102467 | Unclassified | | Juvenile/Damaged | Plecoptera | ND | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Capniidae | | | | 102643 | Unclassified | SH | Juvenile/Damaged | Capniidae | | 2022 | MH13 | 09-Aug-22 | CC230255 | 7 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | | 102517 | Unclassified | SH | Juvenile/Damaged | Nemouridae | ND | 2022 | MH13 | 09-Aug-22 | CC230255 | 5 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Visoka cataractae | 102615 | SV | SH | Larvae | Visoka cataractae | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Chloroperlidae | | | Sweltsa | 103273 | SV | P | Larvae | Sweltsa | | 2022 | MH13 | 09-Aug-22 | CC230255 | 8 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Leuctridae | | | | 102840 | Unclassified | SH | Juvenile/Damaged | Leuctridae | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada cinctipes | 102594 | UV | SH | Larvae | Zapada cinctipes | | 2022 | MH13 | 09-Aug-22 | CC230255 | 3 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada | 102591 | Unclassified | SH | Larvae | Zapada | ND | 2022 | MH13 | 09-Aug-22 | CC230255 | 3 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada | 102591B | Unclassified | SH | Larvae | Zapada oregonensis group | | 2022 | MH13 | 09-Aug-22 | CC230255 | 3 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada columbiana | 102596 | SV | SH | Larvae | Zapada columbiana | | 2022 | MH13 | 09-Aug-22 | CC230255 | 34 | 22 | 400 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arthropoda | Hexapoda | Insecta | Plecoptera | Perlodidae | | | | 102994 | Unclassified | P | Juvenile/Damaged | Perlodidae | | 2022 | MH13 | 09-Aug-22 | CC230255 | 4 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Limnephilidae | | | Dicosmoecus | 116265 | Unclassified | OM | Larvae | Dicosmoecus | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Rhyacophilidae | | | Rhyacophila | 115097 | Unclassified | P | Larvae | Rhyacophila | | 2022 | MH13 | 09-Aug-22 | CC230255 | 22 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Hydropsychidae | | | | 115398 | Unclassified | CF | Juvenile/Damaged | Hydropsychidae | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Hydropsychidae | | | Parapsyche | 115556 | Unclassified | P | Larvae | Parapsyche | | 2022 | MH13 | 09-Aug-22 | CC230255 | 3 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Hydropsychidae | | | Parapsyche elsis | 115560 | | P | Larvae | Parapsyche elsis | | 2022 | MH13 | 09-Aug-22 | CC230255 | 3 | 22 | 400 |
| Arthropoda | Chelicerata | Arachnida | Trombidiformes | | | | | 82769 | | P | Adult | Trombidiformes | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Rhyacophilidae | | | Rhyacophila | 115097S | Unclassified | P | Larvae | Rhyacophila vofixa group | | 2022 | MH13 | 09-Aug-22 | CC230255 | 24 | 22 | 400 |
| Arthropoda | Chelicerata | Arachnida | Trombidiforme | Sperchontidae | | | Sperchon | 83006 | Unclassified | P | Adult | Sperchon | | 2022 | MH13 | 09-Aug-22 | CC230255 | 14 | 22 | 400 |
| Annelida | Clitellata | Oligochaeta | Tubificida | Enchytraeidae | | | Enchytraeus | 68531 | | CG | None | Enchytraeus | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Chelicerata | Arachnida | Trombidiforme | Hygrobatidae | | | Hygrobates | 83297 | Unclassified | P | Adult | Hygrobates | | 2022 | MH13 | 09-Aug-22 | CC230255 | 3 | 22 | 400 |
| Arthropoda | Chelicerata | Arachnida | Trombidiforme | Lebertiidae | | | Lebertia | 83034 | Unclassified | P | Adult | Lebertia | | 2022 | MH13 | 09-Aug-22 | CC230255 | 16 | 22 | 400 |
| Arthropoda | Chelicerata | Arachnida | Sarcoptiforme | Hydrozetidae | | | | 553091 | MV | P | Adult | Hydrozetidae | | 2022 | MH13 | 09-Aug-22 | CC230255 | 1 | 22 | 400 |
| Arthropoda | Chelicerata | Arachnida | Sarcoptiformes | | | | | 733326 | | P | Adult | Oribatida | | 2022 | MH29 | 10-Aug-22 | CC230256 | 2 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Simuliidae | | | Prosimulium/Helodon | 126640B | | CF | Larvae | Prosimulium/Helodon | | 2022 | MH29 | 10-Aug-22 | CC230256 | 2 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Tanypodinae | Pentaneurini | Telmatopelopia | 127994A | | | Larvae | Telmatopelopia | | 2022 | MH29 | 10-Aug-22 | CC230256 | 2 | 28 | 400 |
| Annelida | Clitellata | Oligochaeta | Tubificida | Enchytraeidae | | | Enchytraeus | 68531 | | CG | None | Enchytraeus | | 2022 | MH29 | 10-Aug-22 | CC230256 | 4 | 28 | 400 |
| Arthropoda | | | Collembola | | | | | 99237 | | CG | None | Collembola | | 2022 | MH29 | 10-Aug-22 | CC230256 | 3 | 28 | 400 |
| Arthropoda | Chelicerata | Arachnida | Trombidiforme | Hydryphantidae | | | Wandesia | 83172 | Unclassified | P | Adult | Wandesia | | 2022 | MH29 | 10-Aug-22 | CC230256 | 3 | 28 | 400 |
| Arthropoda | Chelicerata | Arachnida | Trombidiforme | Hygrobatidae | | | Hygrobates | 83297 | Unclassified | P | Adult | Hygrobates | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Chelicerata | Arachnida | Trombidiforme | Lebertiidae | | | Lebertia | 83034 | Unclassified | P | Adult | Lebertia | | 2022 | MH29 | 10-Aug-22 | CC230256 | 3 | 28 | 400 |
| Arthropoda | Chelicerata | Arachnida | Trombidiforme | Sperchontidae | | | Sperchon | 83006 | Unclassified | P | Adult | Sperchon | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Rhyacophilidae | | | Rhyacophila | 115097S | Unclassified | P | Larvae | Rhyacophila vofixa group | | 2022 | MH29 | 10-Aug-22 | CC230256 | 2 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Rhyacophilidae | | | Rhyacophila | 115097 | Unclassified | P | Larvae | Rhyacophila | | 2022 | MH29 | 10-Aug-22 | CC230256 | 32 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Trichoptera | Lepidostomatidae | | | Lepidostoma | 116794 | UV | SH | Larvae | Lepidostoma | | 2022 | MH29 | 10-Aug-22 | CC230256 | 6 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Perlodidae | | | Megarcys | 103110 | Unclassified | P | Larvae | Megarcys | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada | 102591B | Unclassified | SH | Larvae | Zapada oregonensis group | | 2022 | MH29 | 10-Aug-22 | CC230256 | 2 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada columbiana | 102596 | SV | SH | Larvae | Zapada columbiana | | 2022 | MH29 | 10-Aug-22 | CC230256 | 145 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Zapada | 102591 | Unclassified | SH | Larvae | Zapada | ND | 2022 | MH29 | 10-Aug-22 | CC230256 | 14 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | Visoka cataractae | 102615 | SV | SH | Larvae | Visoka cataractae | | 2022 | MH29 | 10-Aug-22 | CC230256 | 5 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Leuctridae | | | | 102840 | Unclassified | SH | Juvenile/Damaged | Leuctridae | | 2022 | MH29 | 10-Aug-22 | CC230256 | 9 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Nemouridae | | | | 102517 | Unclassified | SH | Juvenile/Damaged | Nemouridae | ND | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | | | | | 102467 | Unclassified | | Juvenile/Damaged | Plecoptera | ND | 2022 | MH29 | 10-Aug-22 | CC230256 | 4 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Capniidae | | | | 102643 | Unclassified | SH | Juvenile/Damaged | Capniidae | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Chloroperlidae | | | | 103202 | Unclassified | P | Juvenile/Damaged | Chloroperlidae | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Plecoptera | Chloroperlidae | | | Sweltsa | 103273 | SV | P | Larvae | Sweltsa | | 2022 | MH29 | 10-Aug-22 | CC230256 | 11 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | Epeorus | 100626 | Unclassified | SC | Larvae | Epeorus | | 2022 | MH29 | 10-Aug-22 | CC230256 | 2 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Hemiptera | | | | | 103359 | | | None | Hemiptera | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | Cinygmula | 100557 | Unclassified | SC | Larvae | Cinygmula | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis | 100800 | MV | CG | Larvae | Baetis | | 2022 | MH29 | 10-Aug-22 | CC230256 | 4 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Heptageniidae | | | | 100504 | Unclassified | SC | Juvenile/Damaged | Heptageniidae | ND | 2022 | MH29 | 10-Aug-22 | CC230256 | 2 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Baetidae | | | Baetis bicaudatus | 100823 | Unclassified | CG | Larvae | Baetis bicaudatus | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Ephemeropter | Ameletidae | | | Ameletus | 100996 | UV | CG | Larvae | Ameletus | | 2022 | MH29 | 10-Aug-22 | CC230256 | 32 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Simuliidae | | | Simulium | 126774 | MV | CF | Larvae | Simulium | | 2022 | MH29 | 10-Aug-22 | CC230256 | 7 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Tanypodinae | Procladiini | Procladius | 128277 | | P | Larvae | Procladius | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Empididae | | | Neoplasta | 136352 | | P | Larvae | Neoplasta | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Empididae | | | Oreogeton | 136377 | | P | Larvae | Oreogeton | | 2022 | MH29 | 10-Aug-22 | CC230256 | 19 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Psychodidae | | | Pericoma/Telmatoscopus | 125351A | | CG | Larvae | Pericoma/Telmatoscopus | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Tvetenia | 129197 | | CG | Larvae | Tvetenia | | 2022 | MH29 | 10-Aug-22 | CC230256 | 9 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Heleniella | 128730 | | CG | Larvae | Heleniella | | 2022 | MH29 | 10-Aug-22 | CC230256 | 15 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Limnophyes | 128776 | | CG | Larvae | Limnophyes | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | | 128457 | | CG | Juvenile/Damaged | Orthocladiinae | ND | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Orthocladiinae | | Brillia | 128477 | | SH | Larvae | Brillia | | 2022 | MH29 | 10-Aug-22 | CC230256 | 5 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | Chironominae | Tanytarsini | Stempellinella | 129969 | | CF | Larvae | Stempellinella | | 2022 | MH29 | 10-Aug-22 | CC230256 | 1 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Ceratopogonidae | | | Ceratopogon | 127564 | | P | Larvae | Ceratopogon | | 2022 | MH29 | 10-Aug-22 | CC230256 | 2 | 28 | 400 |
| Arthropoda | Hexapoda | Insecta | Diptera | Chironomidae | | | | 127917 | | | Pupa | Chironomidae | ND | 2022 | MH29 | 10-Aug-22 | CC230256 | 3 | 28 | 400 |

**ND designation of a taxa represents a non-distinct taxa. This adjusts where the associated taxa fall in the metrics for this sample because the individuals are likely represented by Genus or Species level identifications.**

**Project: Sa Dena Hes - ECA22YT000199 - SQ-213**

Ensero Solutions
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

| | | Total from Sample | Percent Efficiency |
|---|---|---|---|
| Site - QC, Sample - QC1, CC# - CC230255, Percent sampled = 22%, Sieve size = 400 | | | |
| Chironomidae | 3 | | |
| Plecoptera | 2 | | |
| Trichoptera | 1 | | |
| **Total:** | **6** | **338** | **98%** |