ENVIRONMENTAL DYNAMICS INC.

2195 – 2nd Avenue
Whitehorse, YT Y1A 3T8
P: (867) 393-4882 • F: (867) 393-4883

August 14, 2015

EDI Project No: 15Y0146

Assessment and Abandoned Mines Branch (AAM) K-149
Department of Energy, Mines and Resources, Yukon Government
Room 2C Royal Center, 4114-4th Avenue
PO 2703, Whitehorse, YT, Y1A 2C6

Attention: Erik Pit, Type II Project Manager

RE: Mount Nansen Water Resources Investigations – Monthly Report: July 2015

Trip dates:	July 13 - 15, 2015
EDI field staff:	Lyndsay Doetzel, Dawn Hansen and Danny Skookum
Weather during trip:	Conditions were partly cloudy skies, light winds and daytime high air temperatures ranging from 15 to 20°C.

The following monthly report includes a summary of site conditions and data collected during EDI's July 2015 trip to Mount Nansen as part of the 2015/16 Water Resources Investigations. See Table 1 for a summary of data included in this report.

Table 1. Summary of information provided in this monthly report.

Report Section	Description
Site Conditions	• Summary of weather and general site conditions
Meteorology	• Statement on station status and identification of any data gaps or QA/QC issues
Hydrology	• Discussion of noteworthy hydrology observations • Statement of QA/QC for the data collected this month
Water Quality	• Summary of noteworthy water quality observations • Statement on QA/QC sample results
Program Recommendations	• Program recommendations for meteorological, hydrology and water quality programs
Additional Trip Information	• Project Safety Concerns • Wildlife sightings • Budget and schedule considerations
List of Attachments	• Maps of stations and sites • Site and station photos • Data Tables – hydrology and water quality • Lab Result Reports

SITE CONDITIONS

The July 2015 site trip represents summer conditions at the Mount Nansen site. Water levels continue to recede with low flow or dry conditions at many channels. All snow and ice at the site has now melted. The pit lake was sampled for the second time during the open-water season. Sampling within the pit lake was conducted at a new location away from the west pit wall where precarious overhead rocks were noted during the June 2015 site trip. Active placer mining construction works were observed along Pony Creek upstream of H-PC-DSP/WQ-PC-U, including the construction of multiple earth dams. This work is likely contributing to the dry conditions at the measurement and sampling stations along Pony Creek and Back Creek. Recent rainfall at the site is suspected to be the source of the minimal, localized flow at H-PC-DSP. Dry channel conditions were present at H/WQ-DC-DX+105, WQ-MS-S-08, WQ-LW-SEEP-01 and WQ-ADIT-SEEP - no water quality samples were collected at these sites. Sampling at the DESS sites was not scheduled for the July site trip.

METEOROLOGY

Meteorological data was collected at the ATM-ROAD station throughout the month of July. Northern Avcom informed AAM that the station's modem was deactivated on April 21, 2015 and the system was operational on July 9, 2015; Northern AvCom backed up data at this time. EDI conducted a preliminary QA/QC review of the July 2015 data and all sensors appear to be functioning as expected. Meteorological data will also be summarized and analyzed following the completion of the open-water season, in the October 2015 Monthly Report. This will include data from April 1, 2015 to October 15, 2015 with plots and tables.

HYDROLOGY

Discharge measurements were collected at all stations with suitable conditions. Water levels were generally low across the Mount Nansen Site. At H-VC-R, all flows are contained in the main channel where the continuous logger is installed and the stilling well will remain in its existing location for the 2015 open-water season. The stilling well location is susceptible to ice buildup in the winter and options for better capturing stage data during the winter will be discussed with AAM in the next month.

For the month of July, continuous logger records are available for nine stations: H-PC-DSP, H-DC-B, H-DC-M WP, H-DC-R, H-BC, H-VC-U, H-VC-DBC, H-VC-UMN and H-VC-R. See attached data tables for a summary of conditions and hydrometric monitoring tasks completed at each station and for a summary of discharge measurement results for the July 13 - 15, 2015 period. Quality control and quality assurance for the hydrometric data was conducted on the instantaneous and continuous data. Noteworthy observations are included below.

Noteworthy Observations

- Discharge measurements were collected with an ADV at H-VC-U, H-VC-DBC, H-VC-UMN and H-VC-R with discharge values ranging from 0.076 to 0.104 m^3/s. The July 2015 trip

discharges represent flow conditions lower than the June 2015 trip, when discharges at these stations ranged from 0.085 to 0.146 m^3/s.

- A preliminary review of the discharge patterns along Victoria Creek show that the measured discharge at H-VC-U is greater than the discharge downstream at H-VC-DBC. This anomaly also occurred in July 2014, both site trips in May 2015 and in June 2015. Additionally, in July 2015, the discharge at H-VC-UMN is greater than the discharge downstream at H-VC-R. A more detailed review of the local hydrology along Victoria Creek will be completed at the end of the open-water season (October 2015).
- Discharge measurements were made using salt tracer tests at H-DC-B and H-DC-R, with flowrates of 0.005 and 0.008 m^3/s, respectively. The July 2015 values reported above were calculated using the updated salt analysis tool, and these values were on par with what was expected at the sites.
- No flowing water is present along Back Creek. A small amount of standing water was observed in the vicinity of the stilling well at H-BC which may be from recent rainfall events. No discharge measurements could be collected.
- Fine sediment in the weir pond at H-DC-M has been excavated and moved beyond the banks of the pond. All water is flowing though the weir. Instantaneous discharge measurements have been obtained at this station without issue; however, there is still some concern that the sedimentation is producing channel instability and subsequent rating curve shifts and continuous stage data errors for this open-water season. When developing the rating curve at the end of the open-water season, the data from this station will be critically reviewed in the context of the sediment deposition that has occurred over the season and the continuous record adjusted accordingly. Options for a more permanent solution to control sediment deposition in the weir head pond include the construction of a sediment collection basin upstream of the weir head pond; or operating the station without a rating curve, where the continuous stage record would not be converted to a continuous discharge record but instantaneous discharge measurements would continue to occur during each site visit. In the latter scenario, the continuous stage logger could remain in place and be used to determine peak and low flow timing in Dome Creek.

WATER QUALITY

Water quality samples and data were collected at 16 scheduled sites during the July 2015 trip, including the pit lake site (which was now ice free). Seven sampling sites were dry and no samples were collected (WQ-PC-U, WQ-PC-D, WQ-BC, WQ-LW-SEEP-01, WQ-MS-S-08, WQ-ADIT-SEEP and WQ-DC-DX+105). The WQ-SEEP LC50 was collected during the July 2015 site trip. A drinking water sample for July 2015 was collected from the pumphouse well (WQ-PW).

See attached data tables for a summary of conditions at each site and a record of where samples were collected during each trip. In situ and laboratory results summary tables are also attached. Parameters that exceeded CCME-AL guidelines and/or the Mount Nansen EQS criteria are highlighted. The lab certificates of analysis are also attached. Many results reflect typical conditions for this time of year at Mount Nansen

when there are low water levels. Low water levels can result in higher concentrations of some parameters. Noteworthy observations and comments on sample QA/QC are included in the subsections below.

Noteworthy Observations

- Many sites were dry during the July 2015 trip – no samples could be collected from Back Creek or Pony Creek – likely related to hot and dry conditions as well as potential upstream effects of placer mining earthworks. Several seeps were also dry, likely related to the hot and dry weather conditions.
- Samples from Victoria Creek did not exceed any guidelines or standard criteria for any parameters.
- The total zinc concentration in the July 2015 WQ-SEEP sample continues to be below the CCME-AL guideline with a zinc concentration of 0.0174 mg/L (up slightly from 0.0071 mg/L from the June 2015 sample).
- The WQ-SEEP LC50 result was >100% concentration and there were no rainbow trout mortalities during the 96 hour test.

QA/QC Samples

Travel Blank Sample – all parameters were below detection limits. No contamination is suspected from actual sample transport or storage).

Field Blank Sample – all parameters were below detection limits – except for total manganese. This could indicate some degree of field contamination, a potential result of an improperly tightened lid or dust. All other total manganese results are within expected ranges for the conditions observed.

Replicate Sample(s) – the average RPD of the replicate sample set for WQ-VC-UMN-r was 2% with an average difference of 2% for both dissolved and total metals. All parameters had an RPD <20%, indicating data was adequately precise. The average RPD of the replicate sample set for WQ-DC-B-r was 3% with an average difference of 3% for both dissolved and total metals. Only one parameter had an RPD>20% (dissolved iron), indicating either that there is natural variability in the samples or some degree of lab imprecision. Other dissolved iron results for the samples are within expected ranges.

PROGRAM RECOMMENDATIONS

- Ensure that a flat surface is placed below the meteorological station snow sensor prior to snowfall (Northern AvCom may have completed this).
- Need to discuss with AAM and project design team/regulatory submission strategist regarding winter measurements at the H-VC-R station, as ice conditions interfere with accurate measurements at the current stilling well location.

- EDI will attempt to collect concurrent discharge measurements from August to October 2015, using a secondary method where possible (such as volumetric), wherever salt tracer tests are completed, in order to help validate the salt tracer measurements.
- As previously discussed with AAM, the pit lake water quality sampling location has been removed from the current project scope (starting August 2015) due to safety concerns associated with sloughing rock material along the west pit wall. EDI will be removing the EDI boat from the pit lake area.
- Continue to monitor sediment build-up in the weir pond over the course of the open-water season.
- Continue to monitor the WQ-SEEP (regular standard sampling package monthly and LC50 every second month). Conditions appear to be back to normal.
- Continue to monitor the WQ-LW-SEEP-01, WQ-MS-S-08 and WQ-ADIT-SEEP during subsequent summer and fall trips, in order to collect opportunistic samples if flowing (all sites were dry during the May, June and July 2015 trips).

ADDITIONAL TRIP INFORMATION

Any changes to project scope (i.e. additional sites sampled):	All sampling and monitoring was conducted within scope. The pit lake sampling will be removed from the scope for the remainder of the 2015-2016 program due to safety concerns (see additional details in the 'Site Concerns' section below). The July 2015 samples collected will be the last under the project, until further notice from AAM.
Any alterations to sample schedule/budget:	None.
Additional Comments:	Many creeks and seeps had low flows and several sites were dry (Back Creek, Pony Creek).
Wildlife Sightings:	Arctic grayling observed at WQ-VC-UMN and at WQ-VC-DBC.
Site concerns (safety):	Within the Brown McDade pit, the EDI crew reviewed potential hazards with on-site Denison staff (Glen Craig); the sampling location was adjusted for the July sampling event in attempt to make sampling of the pit lake as safe as possible. EDI also drafted a safety memo (dated July 16, 2015) outlining its safety concerns associated with this site, and proposed corrective actions (see attachment #3). AAM has since discussed with EDI and has requested that the pit sampling be removed from the current project scope until further notice.

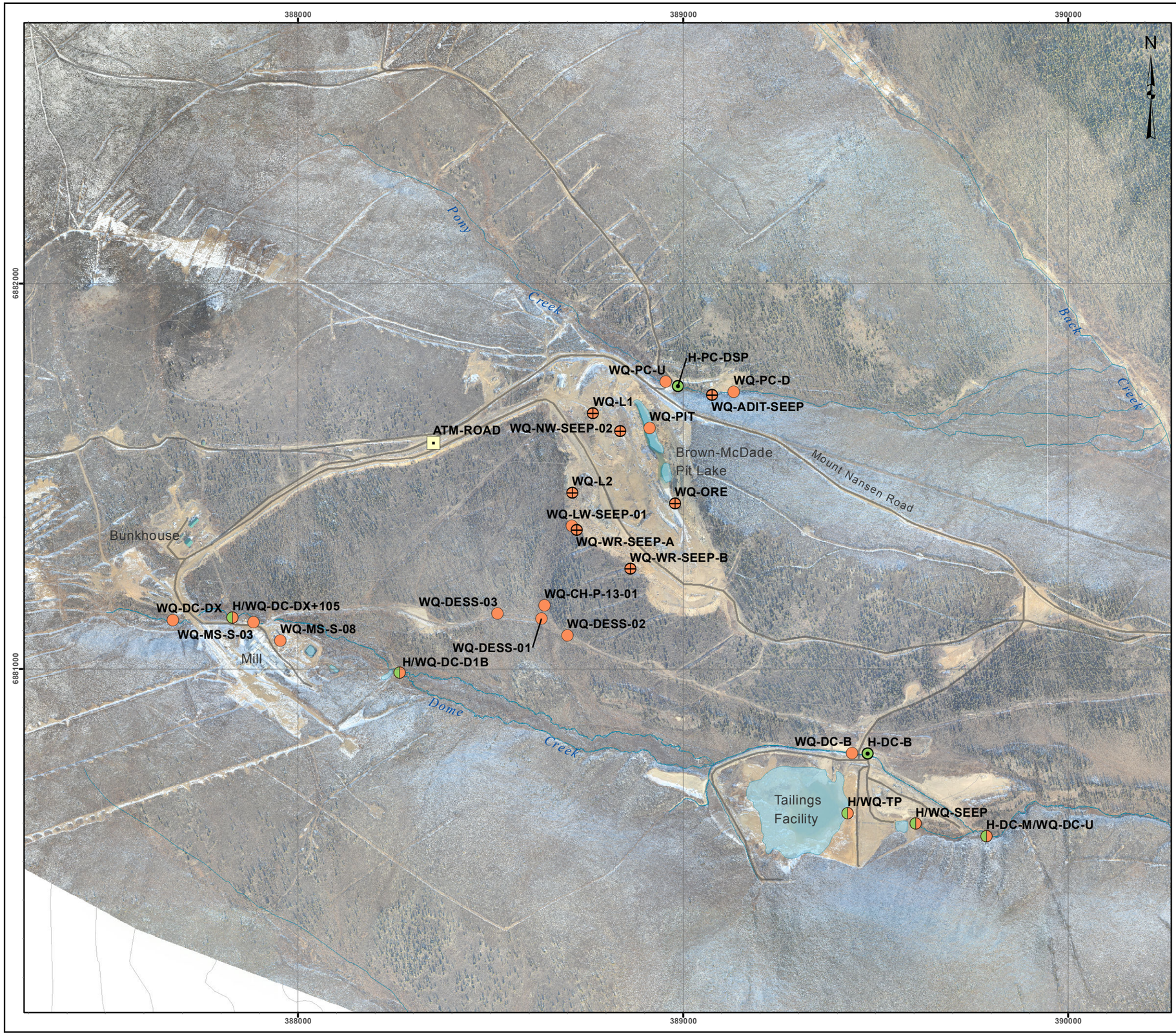
LIST OF ATTACHMENTS

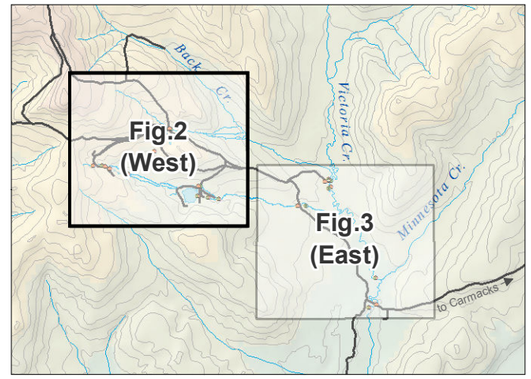
The following information is attached to this monthly report:

1. Maps of Hydrometric Stations and Water Quality Sites
2. Site and Station Photos from the trip
3. Copy of Letter Re: *Safety protocols associated with sampling the Mount Nansen Pit Lake* (dated, July 16, 2015).
4. Data Tables
    a. Hydrology – Site Conditions and Tasks Completed & Summary Table of Discharge Measurements

b. Water Quality – Site Conditions and Samples Collected & Summary Table of In Situ Parameters and Lab Results

5. Water Quality – Copies of Lab Certificate of Analysis (COA) & Yukon Environmental Health Services Bacteriological Results





Legend

- Atmospheric Station (label e.g. ATM-ROAD)
- Hydrometric Station and Water Quality Site (label e.g. H/WQ-VC-UMN)
- Hydrometric Station (label e.g. H-VC-R)
- Water Quality Site (label e.g. WQ-PC-U)
- Temporary Water Quality Site (label e.g. WQ-MS-S-03)
- Unpaved Road/Access

Mount Nansen Site (West): Hydrometric Stations and Water Quality Sites

Notes:

1:50,000 and 1:250,000 Topographic Spatial Data provided by Geomatics - Yukon Government via online source (Corporate Spatial Warehouse) www.geomaticsyukon.ca.

Watercourse, drainage areas and Mount Nansen Road layers digitized / modified by EDI (2011) using orthophotos provided by Yukon Government, Energy, Mines and Resources (2011).

Imagery provided by Yukon Government - Energy, Mines and Resources - Abandoned Mines Branch.

Project data displayed is site specific. Data collected by EDI Environmental Dynamics Inc. (2014/2015) was obtained using Garmin GPS technology.

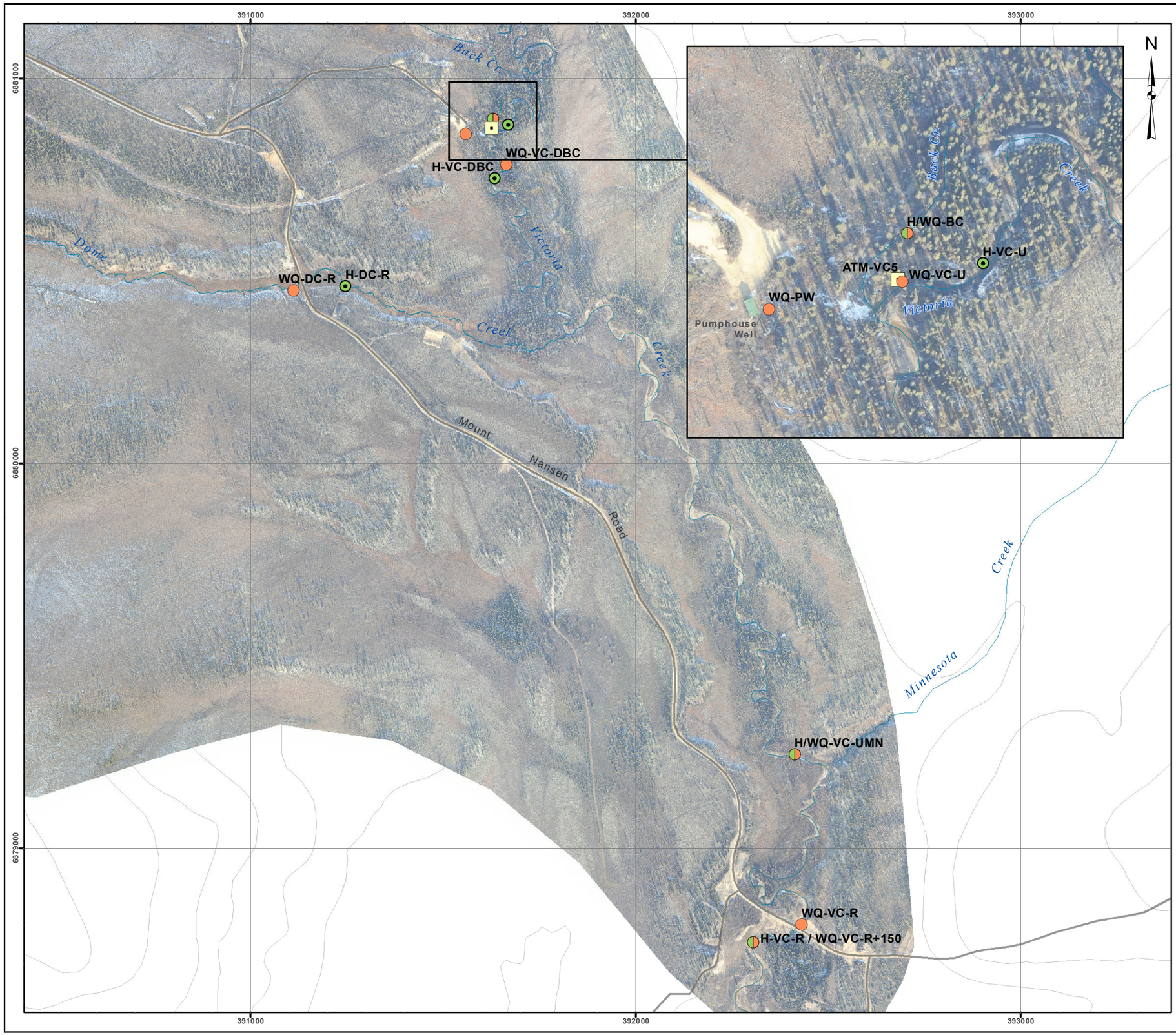
This document is not an official land survey and the spatial data presented is subject to change.

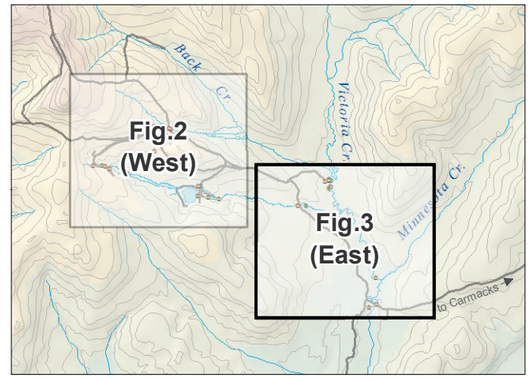
0 50 100 200 300 400 500
Metres

Map Scale = 1:10,000 (printed on 11 x 17)
Map Projection: NAD 1983 UTM Zone 8N

Drawn: LG	Checked: MM / JB	Date: 08/05/2015	**FIGURE 2**

Path: J:\Yukon\Projects\2015\15Y0146_AAM_Mount_Nansen\Mapping\Fig2_WestSites_2015.mxd





Legend

- Atmospheric Station (label e.g. ATM-ROAD)
- Hydrometric Station and Water Quality Site (label e.g. H/WQ-VC-UMN)
- Hydrometric Station (label e.g. H-VC-R)
- Water Quality Site (label e.g. WQ-PC-U)
- Temporary Water Quality Site (label e.g. WQ-MS-S-03)
- Unpaved Road/Access

Mount Nansen Site (East): Hydrometric Stations and Water Quality Sites

Notes:

1:50,000 and 1:250,000 Topographic Spatial Data provided by Geomatics - Yukon Government via online source (Corporate Spatial Warehouse) www.geomaticsyukon.ca.

Watercourse, drainage areas and Mount Nansen Road layers digitized / modified by EDI (2011) using orthophotos provided by Yukon Government, Energy, Mines and Resources (2011).

Imagery provided by Yukon Government - Energy, Mines and Resources - Abandoned Mines Branch.

Project data displayed is site specific. Data collected by EDI Environmental Dynamics Inc. (2014/2015) was obtained using Garmin GPS technology.

This document is not an official land survey and the spatial data presented is subject to change.

0 50 100 200 300 400 500
Metres

Map Scale = 1:10,000 (printed on 11 x 17)
Map Projection: NAD 1983 UTM Zone 8N

Drawn:	Checked:	Date:	
LG	MM / JB	08/05/2015	**FIGURE 3**

Yukon EDI

Path: J:\Yukon\Projects\2015\15Y0146_AAM_Mount_Nansen\Mapping\Fig3_EastSites_2015.mxd

Photo 1. WQ-DC-DX - looking downstream (July 14, 2015).

Photo 2. H/WQ-DC-DX+105 – looking downstream (July 14, 2015).

Photo 3. WQ-MS-S-03 – looking downstream (July 14, 2015).

Photo 4. WQ-MS-S-08 – overview of dry conditions (July 14, 2015).

Photo 5. H/WQ-DC-D1b – looking upstream (July 14, 2015).

Photo 6. WQ-DC-B – looking upstream (July 14, 2015).

Photo 7. H-DC-B – looking downstream (July 14, 2015).

Photo 8. H-DC-M WP - looking upstream (July 14, 2015)

Photo 9. WQ-DC-U – looking downstream (July 14, 2015).

Photo 10. WQ-DC-R – looking downstream (July 13, 2015).

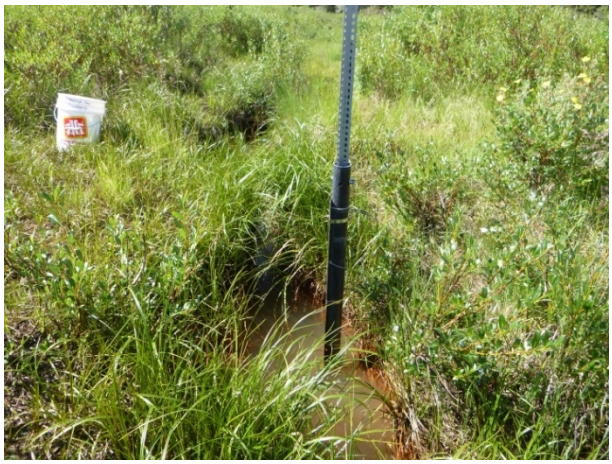


Photo 11. H-DC-R – looking upstream
Photo 12. (July 13, 2015).

Photo 13. WQ-LW-SEEP-01 – dry conditions at site (July 14, 2015).

Photo 14. WQ-CH-P-13-01 – looking upstream (July 14, 2015).

Photo 15. H/WQ-PW – Overview of outlet pipe (July 14, 2015)

Photo 16. H-VC-U – looking upstream (July 13, 2015)

Photo 17. WQ-VC-U – looking upstream (July 13, 2015).

Photo 18. H-VC-DBC – looking upstream (July 13, 2015).

Photo 19. WQ-VC-DBC – overview of sampling site (July 13, 2015)

Photo 20. H/WQ-VC-UMN – looking downstream (July 13, 2015).

Photo 21. WQ-VC-R – looking upstream (July 13, 2015)

Photo 22. H-VC-R – looking upstream

Photo 23. (July 13, 2015)

Photo 24. WQ-PC-U – overview of dry sampling site (July 13, 2015)

Photo 25. H-PC-DSP – looking upstream (July 13, 2015)

Photo 26. WQ-ADIT-SEEP – overview of dry conditions at adit seep (July 14, 2015)

Photo 27. WQ-PC-D – looking downstream. Dry channel conditions (July 13, 2015)

Photo 28. H/WQ-BC. Looking downstream at dry channel conditions – no flow (July 13, 2015)

Photo 29. H/WQ-SEEP - Overview (July 14, 2015)

Photo 30. H/WQ-TP. Overview of dry conditions at staff gauges (July 14, 2015)

Photo 31. WQ-PIT – Overview of sampling location in Pit Lake (July 14, 2015)

Measurement ID	Hydrometric Identifier (HID)	Measurement Date	Measurement Time	Discharge Measurement Method	Discharge (m^3/s)	Discharge Data Flag	Surveyed Water Elevation (m)	Survey Data Flag	Comments
333	ATM-VC5	13/07/2015	18:05	N					Data downloaded from logger.
328	H-BC	13/07/2015	18:47	N	0.000	X		N	No flowing water at site. Small amount of standing water adjacent to base of stilling well. BM2 is loose; pushed deeper and stabilized. Well is loose.
323	H-DC-B	14/07/2015	10:00	SS	0.005		1.937		Low water level. Vegetative debris around well cleared away. Logger pulled from well and accumulated sediment cleared out with logger rod. Logger redeployed and installed in well.
322	H-DC-D1b	14/07/2015	15:15	V	0.002				Low water level. Water goes to ground downstream of measurement site and is not visible/detectable.
321	H-DC-DX+105	14/07/2015	15:45	N	0.000	X		N	Site is dry.
324	H-DC-M WP	14/07/2015	8:54	V	0.005		2.223		No sedimentation issues in pond currently, all water is flowing through weir notch.
325	H-DC-R	13/07/2015	16:21	SS	0.008		0.511		Moderate to low flow level. Volumetric discharge estimate not possible due to submerged culvert. Completed salt tracer for discharge estimate.
320	H-PC-DSP	13/07/2015	12:35	V	0.000		2.250		Suspect that ponded water is from rainfall. No flow at upstream water quality site (WQ-PC-U). Very low flow at staff gauge. Small pool of water at base of staff gauge. Volumetric measurement collected, flow rate <0.001 m^3/s.
332	H-PW	14/07/2015	11:39	V	0.028				Flow rate appears normal.
331	H-SEEP	14/07/2015	9:45	V	0.002				15 minute power outage prior to arrival. Denison provided access through locked door to seepage pond shack 40 minutes later. Discharge appears to be less than usual. Denison managing flow rate to ensure seepage pond does not drop too low or too fast. Seep pump (in shack) liters/min = 134.780 at 08:40 am.
334	H-TP	14/07/2015	9:28	N		X			Two staff gauges are dry and have approximately 2.5 m of dry shore behind them before water surface. Third (lowest) staff gauge not visible.
327	H-VC-DBC	13/07/2015	17:28	ADV-MID	0.085		1.711		Low water level. Arctic grayling observed in creek while conducting ADV survey.
330	H-VC-R	13/07/2015	13:17	ADV-MID	0.076		2.1025		Low flow in channel.
326	H-VC-U	13/07/2015	18:34	ADV-MID	0.090		2.008		Height of logger rod within stilling well corrected.
329	H-VC-UMN	13/07/2015	14:55	ADV-MID	0.104		1.557	O	Low water level.

Discharge Measurement Method Legend

Measurement Method ID	Measurement Method	Measurement Description
ADV-MID	Mid Section Method - Acoustic Doppler Velocimeter	Cross-sectional velocity using an ADV, mid-section method.
SS	Brine Salt Slug Tracer	Salt dilution gauging using a brine salt slug.
V	Volumetric	Volumetric measurement obtained by filling a graduated contained at a culvert, pipe outlet or weir.
W	Weir	Measurement obtained by a rated structure (v-notch weir).
N	None	No measurement could be obtained.
SD	Dry Salt Slug Tracer	Salt dilution gauging using a dry salt slug.
HWM	High Water Mark - Indirect Method	Indirect method using high water mark in the slope-area calculation for estimating high discharges.
ADCP	Acoustic Doppler Current Profiler	Cross-sectional velocity using an ADCP, mid-section method.
SC	Constant Rate Salt Tracer	Salt dilution gauging using the constant rate method.
CM-MID	Mid Section Method - Current Meter	Cross-sectional velocity using a velocimeter (Swoffer or Pygmy AA)

Hydrometric Stations

Hydrometric ID	Hydrometric Stations
ATM-VC5	Atmospheric Barologger (5) at Victoria Creek
H-BC	Back Creek
H-DC-B	Diversion Channel at Bridge
H-DC-D1B	Dome Creek at D1b
H-DC-DX	Dome Creek at DX
H-DC-DX+105	Dome Creek at DX+105
H-DC-M-WP	Middle Dome Creek at Weir Pond
H-DC-R	Dome Creek at Road
H-PC-DSP	Pony Creek Downstream of Pit
H-SEEP	Seepage Pond Outflow
H-TP	Tailings Pond
H-VC-DBC	Victoria Creek Downstream of Back Creek
H-VC-R	Victoria Creek at Road
H-VC-U	Upper Victoria Creek
H-VC-UMN	Victoria Creek Upstream of Minnesota Creek

Discharge Data Flag Legend

Discharge Data Flag	Discharge Data Flag Description
E	Estimated value
B	Backwater effects (ice related)
F	Instrument malfunction
M	Manual measurement
A	Automated measurement (logged)
ML	Missing length data
MD	Missing depth data
MW	Missing width data
O	Outside of measurement reporting range
P	Potential Place Mining Interference with Flow
S	Suspect data
X	Poor channel conditions for discharge measurement
MI	Missing Data
SH-L	Data logger Shift
SH-SG	Staff Gauge Shift
UR	Under review

Survey Data Flag Legend

Survey Flag	Survey Flag Description
S	Suspect data
MI	Missing data
UR	Under review
F	Instrument Malfunction
O	Outside measurement Accuracy (+/-0.003 m)
N	No survey conducted

Water Quality Site	Sample Collected? (Y/N)	Measurement Date	Comments
WQ-ADIT-SEEP	N	14-Jul-15	Seep is dry; no sample collected.
WQ-BC	N	13-Jul-15	Site has no flowing water; no sample collected
WQ-CH-P-13-01	Y	14-Jul-15	Water level low.
WQ-DC-B	Y	14-Jul-15	Water level low.
WQ-DC-D1b	Y	14-Jul-15	Water level low.
WQ-DC-DX	Y	14-Jul-15	Water level extremely low; sample collected, but under challenging conditions. Water appears clear, but large amounts of sediment stirred up during sampling (unavoidable).
WQ-DC-DX+105	N	14-Jul-15	Site dry; no sample collected.
WQ-DC-R	Y	13-Jul-15	Low flow.
WQ-DC-U	Y	14-Jul-15	Water level low.
WQ-DESS-01	N	16-Jun-15	Not scheduled for this time of year.
WQ-DESS-02	N	16-Jun-15	Not scheduled for this time of year.
WQ-DESS-03	N	16-Jun-15	Not scheduled for this time of year.
WQ-LW-SEEP-01	N	14-Jul-15	Site dry; no sample collected.
WQ-MS-S-03	Y	14-Jul-15	Water level low.
WQ-MS-S-08	N	14-Jul-15	No water or evidence of water present; no sample collected.
WQ-PC-D	N	13-Jul-15	Dry, no sample collected.
WQ-PC-U	N	13-Jul-15	Some pooled water due to recent precipitation, however, no flowing water; no sample collected.
WQ-PIT-1	Y	14-Jul-15	Top sample collected from surface (0.3 m). Sample no longer collected in deepest part of pit lake due to safety concerns with falling rocks.
WQ-PIT-2	Y	14-Jul-15	Middle sample collected at 1.5 m. Sample no longer collected in deepest part of pit lake due to safety concerns with falling rocks.
WQ-PIT-3	Y	14-Jul-15	Bottom sample collected at 3.0 m. Sample no longer collected in deepest part of pit lake due to safety concerns with falling rocks

Water Quality Site	Sample Collected? (Y/N)	Measurement Date	Comments
WQ-PW	Y	14-Jul-15	Conditions normal.
WQ-SEEP	Y	14-Jul-15	Conditions normal, LC50 samples collected.
WQ-TP	Y	14-Jul-15	Water level very low.
WQ-VC-DBC	Y	13-Jul-15	Water level low.
WQ-VC-R	Y	13-Jul-15	Water level low.
WQ-VC-R+150	N	15-Jun-15	This is the winter/early spring sampling location - samples are collected from WQ-VC-R during the open water season.
WQ-VC-U	Y	13-Jul-15	Water level low.
WQ-VC-UMN	Y	13-Jul-15	Water level low.
QA/QC Samples			
Replicate 1	Y	14-Jul-15	Collected from WQ-DC-B-r
Replicate 2	Y	13-Jul-15	Collected from WQ-VC-UMN-r
Field Blank	Y	14-Jul-15	Sample bottles filled with deionized water supplied by ALS; samples were filtered and preserved as instructed. Collected field blank at WQ-DC-B.
Travel Blank	Y	-	Samples provided by lab and were transported to and from site.

Summary of Water Quality Results for the July 13-14, 2015 Trip.

Analyte	Units	CCME-WATER-F-AL	Mount Nansen Effluent Discharge Standards	Sample ID/Site ID Date Sampled Detection Limit	WQ-VC-U 6/16/2015 9:45:00 AM	WQ-VC-U 7/13/2015 6:00:00 PM	WQ-VC-DBC 7/13/2015 5:45:00 PM	WQ-VC-UMN 7/13/2015 2:45:00 PM	WQ-VC-UMN-r 7/13/2015 2:50:00 PM	QA/QC WQ-VC-UMN-r Replicate Analysis	WQ-VC-R 7/13/2015 1:00:00 PM	WQ-DC-DX 7/14/2015 4:10:00 PM	WQ-MS-S-03 7/14/2015 3:40:00 PM	WQ-DC-D1B 7/14/2015 3:00:00 PM	WQ-DC-B 7/14/2015 9:45:00 AM	WQ-DC-B-r 7/14/2015 9:55:00 AM	QA/QC WQ-DC-B-r Replicate Analysis	WQ-SEEP 7/14/2015 9:00:00 AM	WQ-TP 7/14/2015 9:25:00 AM	WQ-DC-U 7/14/2015 8:35:00 AM	WQ-CH-P-13-01 7/14/2015 11:10:00 AM	WQ-DC-R 7/13/2015 4:00:00 PM	WQ-PIT-1 (TOP) Depth: 0.3 m 7/14/2015 1:40:00 PM	WQ-PIT-2 (MIDDLE) Depth 1.5 m 7/14/2015 1:45:00 PM	WQ-PIT-3 (BOTTOM) Depth: 3.0 m 7/14/2015 2:00:00 PM
Temperature (in-situ)	°C	-	-	-	4.0	10.4	10.3	11.1	-	-	11.2	4.2	3.7	10.8	9.5	-	-	8.3	14.9	6.3	1.5	11.9	13.0	13.0	12.9
Specific Conductivity (in-situ)	µS/cm	-	-	-	202.3	217.2	221.8	301.3	-	-	283.5	726.4	1207	1554.0	1444.0	-	-	1673.0	1352.0	1451.0	1817.0	1231.0	1553.0	1554.0	2303.0
pH (in-situ)	pH	6.5 - 9.0	6.0 - 8.5	-	7.51	7.55	7.59	7.72	-	-	7.85	7.14	7.06	7.94	7.78	-	-	6.87	8.1	7.77	6.11	7.44	7.98	7.99	6.85
Dissolved Oxygen (in-situ)	mg/L	-	-	-	11.59	9.13	9.88	10.18	-	-	10.35	4.94	5.08	10.89	11.6	-	-	7.96	7.47	10.81	10.8	8.74	9.47	9.5	5.56
Turbidity (In-situ)	NTU	-	-	-	0.14	0.02	0.52	0.40	-	-	0.69	3.82	27.20	9.27	11.57	-	-	27.00	3.54	6.79	0.36	28.30	0.98	0.82	0.78
Colour, True	CU	15	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conductivity	µS/cm	-	-	2	196	222	224	303	305	1%	283	606	1270	1560	1490	1450	3%	1660	1390	1450	1970	1250	1560	1560	1590
Hardness (as CaCO3)	mg/L	-	-	0.5	100	115	116	155	155	0%	145	333	783	987	886	885	0%	935	790	857	1160	730	948	955	955
pH (lab)	pH	6.5 - 9.0	6.0 - 8.5	0.1	8.02	8.07	8.03	8.09	8.11	0%	8.12	7.80	7.91	8.28	8.22	8.20	0%	7.56	7.98	8.20	6.07	8.01	8.21	8.22	8.19
Total Suspended Solids	mg/L	-	50	3	<3.0	<3.0	<3.0	<3.0	<3.0	<DL	<3.0	3.3	4.7	<3.0	10	<3.0	<DL	21.3	<3.0	6.7	<3.0	6	<3.0	<3.0	<3.0
Total Dissolved Solids	mg/L	-	-	1	111	120	122	174	174	0%	163	398	928	1220	1080	1110	3%	1320	1120	1140	1490	941	1240	1270	1280
Alkalinity, Bicarbonate (as CaCO3)	mg/L	-	-	1	91.9	95.1	96.5	98.5	98.3	0%	92.6	134	277	263	207	198	4%	230	62	209	2.9	172	152	150	152
Alkalinity, Carbonate (as CaCO3)	mg/L	-	-	1	<1.0	<1.0	<1.0	<1.0	<1.0	<DL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<DL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	-	-	1	<1.0	<1.0	<1.0	<1.0	<1.0	<DL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<DL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (as CaCO3)	mg/L	-	-	1	91.9	95.1	96.5	98.5	98.3	0%	92.6	134	277	263	207	198	4%	230	62	209	2.9	172	152	150	152
Ammonia, Total (as N)	mg/L	0.75	-	0.005	0.0058	<0.0050	<0.0050	0.0058	0.0057	<2xDL	0.0065	<0.0050	0.0188	0.284	0.125	0.125	0%	4.4	0.0119	1.21	0.0052	0.508	<0.0050	<0.0050	<0.0050
Chloride (Cl)	mg/L	120	-	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<DL	<0.50	<0.50	<1.0	<2.5	<1.0	<1.0	<DL	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<2.5	<2.5
Fluoride (F)	mg/L	0.12	-	0.02	0.046	0.052	0.053	0.053	0.052	<2xDL	0.056	0.059	0.254	0.23	0.118	0.138	16%	0.25	0.35	0.26	0.082	0.15	0.264	0.41	0.34
Nitrate (as N)	mg/L	13	-	0.005	0.0674	0.0432	0.0415	0.0538	0.0544	1%	0.0537	<0.0050	<0.010	0.163	0.068	0.071	4%	0.26	<0.025	0.414	0.067	0.747	0.033	<0.025	<0.025
Nitrite (as N)	mg/L	0.06	-	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<DL	<0.0010	<0.0010	<0.0020	<0.0050	0.0021	0.003	<2xDL	0.0158	<0.0050	0.0148	<0.0020	0.0242	<0.0020	<0.0050	<0.0050
Sulfate (SO4)	mg/L	-	-	0.3	17.6	19.7	20	55.9	55.7	0%	51.6	186	480	720	650	682	5%	783	761	688	1070	556	801	831	842
Cyanide, Weak Acid Diss	mg/L	-	0.1	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<DL	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<DL	0.0261	<0.0050	<0.0050	<0.0050	<0.0050	-	-	-
Cyanide, Total	mg/L	-	0.3	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<DL	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<DL	0.157	<0.0050	<0.0050	<0.0050	<0.0050	-	-	-
Cyanate	mg/L	-	-	0.2	<0.20	<0.20	<0.20	0.22	0.26	<2xDL	0.2	0.2	<0.20	0.32	<0.20	<0.20	<DL	0.72	0.25	<0.20	<0.20	0.53	-	-	-
Thiocyanate (SCN)	mg/L	-	-	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<DL	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<DL	4.41	<0.50	<0.50	<0.50	<0.50	-	-	-
Aluminum (Al)-Total	mg/L	0.1	-	0.003	0.0109	0.0105	0.0125	0.0185	0.0173	7%	0.0301	0.037	0.0744	0.0338	0.0332	0.0329	1%	0.0183	0.0259	0.0265	0.255	0.0228	0.0136	0.0133	0.011
Antimony (Sb)-Total	mg/L	-	0.15	0.0001	0.0001	<0.00010	0.0001	0.00041	0.0004	<2xDL	0.00038	0.00043	0.0165	0.00502	0.00137	0.00138	1%	0.00049	0.0401	0.00075	0.00013	0.00088	0.0033	0.00322	0.00333
Arsenic (As)-Total	mg/L	0.005	-	0.0001	0.0003	0.00032	0.00033	0.00206	0.00212	3%	0.002	0.0126	0.112	0.0278	0.00699	0.0073	4%	0.058	0.113	0.0271	0.0006	0.019	0.0105	0.00994	0.0107
Barium (Ba)-Total	mg/L	-	1.0	0.00005	0.0703	0.0794	0.0805	0.0769	0.0775	1%	0.0758	0.066	0.0153	0.0314	0.0422	0.0442	5%	0.0675	0.0108	0.0547	0.0161	0.0633	0.0155	0.0153	0.0156
Beryllium (Be)-Total	mg/L	-	-	0.00002	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<DL	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<DL	<0.000020	<0.000020	<0.000020	0.000057	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Total	mg/L	-	-	0.00005	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<DL	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<DL	<0.000050	0.000127	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	mg/L	-	-	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<DL	<0.010	<0.010	<0.010	0.051	0.02	0.019	<2xDL	0.071	0.091	0.034	<0.010	0.03	<0.010	<0.010	<0.010
Cadmium (Cd)-Total *(Lab Result)*	mg/L	0.00009	0.02	0.000005	0.000013	0.0000138	0.0000134	0.000015	0.0000195	<2xDL	0.0000191	0.0000148	0.00251	0.000314	0.0000169	0.0000206	<2xDL	0.000411	0.000455	0.0000493	0.0157	0.0000498	0.00156	0.00149	0.00158
Cadmium (Cd)-Total (Hardness Adjusted Guideline)	*mg/L*	-	-	-	*0.000158*	*0.000178*	*0.000179*	*0.000228*	*0.000228*	-	*0.000216*	*0.000370*	*0.000370*	*0.000370*	*0.000370*	*0.000370*	-	*0.000370*	*0.000370*	*0.000370*	*0.000370*	*0.000370*	*0.000370*	*0.000370*	*0.000370*
Calcium (Ca)-Total	mg/L	-	-	0.05	25.8	29.1	30.1	40.6	41	1%	37.9	91.9	195	220	197	205	4%	279	229	222	280	188	268	261	267
Chromium (Cr)-Total	mg/L	0.0089	0.04	0.0001	0.00013	<0.00010	0.0001	0.00012	0.00011	<2xDL	0.00017	0.00016	0.00014	0.00013	0.00015	0.00016	<2xDL	0.00046	0.00016	0.00022	0.00019	0.00028	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Total	mg/L	-	-	0.0001	<0.00010	<0.00010	<0.00010	0.00012	0.00012	<2xDL	0.00013	0.0049	0.00113	0.00045	0.0005	0.00052	4%	0.00935	0.0004	0.00268	0.00025	0.00235	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total *(Lab Result)*	mg/L	0.002	0.2	0.0005	0.00103	0.00102	0.00104	0.0011	0.0011	<2xDL	0.00118	0.00057	0.00145	0.0009	<0.00050	0.00052	<DL	0.00254	0.0221	0.00097	0.00124	0.0011	0.00167	0.00162	0.00181
Copper (Cu)-Total (Hardness Adjusted Guideline)	*mg/L*	-	-	-	*0.00236*	*0.00266*	*0.00268*	*0.00344*	*0.00344*	-	*0.00325*	*0.00400*	*0.00400*	*0.00400*	*0.00400*	*0.00400*	-	*0.00400*	*0.00400*	*0.00400*	*0.00400*	*0.00400*	*0.00400*	*0.00400*	*0.00400*
Iron (Fe)-Total	mg/L	0.3	1.0	0.01	0.027	0.016	0.018	0.053	0.051	4%	0.139	1.76	2.16	1.18	1.95	2.01	3%	9.13	0.17	2.55	0.065	3.59	0.023	0.022	0.024
Lead (Pb)-Total *(Lab Result)*	mg/L	0.001	0.1	0.00005	<0.000050	<0.000050	<0.000050	0.000077	0.00009	<2xDL	0.000093	0.000079	0.00492	0.000185	<0.000050	0.000051	<DL	0.000078	0.00930	<0.000050	0.000074	0.000168	0.000384	0.00034	0.000396
Lead (Pb)-Total (Hardness Adjusted Guideline)	*mg/L*	-	-	-	*0.00318*	*0.00380*	*0.00384*	*0.00556*	*0.00556*	-	*0.00511*	*0.00700*	*0.00700*	*0.00700*	*0.00700*	*0.00700*	-	*0.00700*	*0.00700*	*0.00700*	*0.00700*	*0.00700*	*0.00700*	*0.00700*	*0.00700*
Lithium (Li)-Total	mg/L	-	-	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<DL	<0.0010	<0.0010	0.0107	0.0074	0.0034	0.0032	<2xDL	0.0013	0.0092	0.0021	0.0022	0.0017	0.0079	0.0075	0.0068
Magnesium (Mg)-Total	mg/L	-	-	0.1	8.64	9.28	9.53	12.5	12.8	2%	11.7	23.4	65.9	104	89.4	90.3	1%	58.8	48.5	72.3	107	60	74.4	72.8	75.8
Manganese (Mn)-Total	mg/L	-	0.5	0.0001	0.0397	0.0411	0.0416	0.0377	0.0366	3%	0.0268	4.5	1.39	1.43	0.688	0.717	4%	7.14	0.0542	2.68	0.738	1.98	0.0216	0.0219	0.0279
Mercury (Hg)-Total	mg/L	0.000026	0.005	0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<DL	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<DL	<0.0000050	0.0000074	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total	mg/L	0.0073	-	0.00005	0.000429	0.000458	0.000484	0.000468	0.000445	5%	0.00043	0.000236	0.000348	0.000255	0.000378	0.000366	3%	0.000942	0.00166	0.000552	<0.000050	0.000436	0.000192	0.000176	0.000166
Nickel (Ni)-Total *(Lab Result)*	mg/L	0.025	0.3	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<DL	<0.00050	0.00117	0.00227	0.00083	0.0009	0.00092	<2xDL	0.00356	0.00061	0.00143	0.0117	0.00137	<0.00050	<0.00050	<0.00050
Nickel (Ni)-Total (Hardness Adjusted Guideline)	*mg/L*	-	-	-	*0.09558*	*0.10629*	*0.10699*	*0.13335*	*0.13335*	-	*0.12676*	*0.15000*	*0.15000*	*0.15000*	*0.15000*	*0.15000*	-	*0.15000*	*0.15000*	*0.15000*	*0.15000*	*0.15000*	*0.15000*	*0.15000*	*0.15000*
Phosphorus (P)-Total	mg/L	-	-	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<DL	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<DL	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Total	mg/L	-	-	0.1	0.66	0.74	0.75	0.96	0.99	3%	0.94	4.84	3.56	4.33	3.08	2.98	3%	6.61	15.1	3.83	0.3	3.47	3.36	3.24	3.37
Selenium (Se)-Total	mg/L	0.001	-	0.00005	<0.000050	<0.000050	0.000052	<0.000050	<0.000050	<DL	<0.000050	0.000061	<0.000050	0.000064	0.000061	0.000061	<2xDL	0.000205	0.000064	0.00009	<0.000050	0.000106	<0.000050	<0.000050	<0.000050
Silicon (Si)-Total	mg/L	-	-	0.05	5.51	5.85	5.93	5.95	6.04	2%	6.03	5.37	6.51	5.97	5.53	5.51	0%	7.53	1.64	5.7	6.11	5.81	2.99	2.91	2.98
Silver (Ag)-Total	mg/L	0.0001	0.1	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<DL	<0.000010	<0.000010	0.000083	<0.000010	<0.000010	<0.000010	<DL	0.00003	0.000226	<0.000010	<0.000010	<0.000010	0.000012	0.000012	0.000013
Sodium (Na)-Total	mg/L	-	-	0.05	2.55	2.8	2.85	4.14	4.13	0%	3.93	4.53	4.98	7.98	9.82	10.1	3%	41	19	19.4	6.86	18.5	10.7	10.6	10.2
Strontium (Sr)-Total	mg/L	-	-	0.0002	0.283	0.318	0.323	0.344	0.342	1%	0.317	0.265	0.465	0.616	0.66	0.687	4%	0.814	0.609	0.719	0.672	0.615	0.938	0.937	0.937
Sulfur (S)-Total	mg/L	-	-	0.5	5.85	7	7.08	19.6	19.7	1%	18.2	68.2	166	244	220	239	8%	270	254	233	390	193	262	257	266
Thallium (Tl)-Total	mg/L	0.0008	-	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<DL	<0.000010	0.000032	0.000107	0.000026	<0.000010	<0.000010	<DL	<0.000010	0.000266	<0.000010	<0.000010	<0.000010	0.000073	0.00007	0.000073
Tin (Sn)-Total	mg/L	-	-	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<DL	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<DL	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L	-	-	0.0003	<0.00030	<0.00030	0.0003	0.00052	0.00049	<2xDL	0.00081	0.0019	0.00444	<0.0030	<0.0030	<0.0030	<DL	<0.0030	<0.00030	<0.0030	<0.0012	<0.0030	<0.00030	<0.00030	<0.00030
Uranium (U)-Total	mg/L	0.015	-	0.00001	0.000617	0.000676	0.000691	0.000774	0.000763	1%	0.000701	0.000489	0.00446	0.00277	0.0029	0.00301	4%	0.00173	0.00102	0.00211	0.000011	0.00155	0.0039	0.00385	0.00398
Vanadium (V)-Total	mg/L	-	-	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<DL	<0.00050	0.00052	<0.00050	<0.00050	0.00051	0.00054	<2xDL	0.00189	<0.00050	0.0006	<0.00050	0.00066	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	0.03	0.3	0.003	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<DL	<0.0030	<0.0030	0.972	0.132	0.0056	0.006	<2xDL	0.0174	0.0248	0.0033	5.63	0.0043	0.149	0.146	0.159
Dissolved Metals Filtration Location	-	-	-	-	FIELD	FIELD	FIELD	FIELD	FIELD	-	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	-	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved	mg/L	0.1	-	0.001	0.0066	0.0063	0.0071	0.005	0.0055	10%	0.0092	0.0055	0.0012	0.0034	0.0056	0.0056	0%	0.0084	0.0054	0.0078	0.249	0.0072	0.0021	0.0021	0.0022
Antimony (Sb)-Dissolved	mg/L	-	-	0.0001	<0.00010	<0.00010	0.00011	0.00038	0.00039	<2xDL	0.00037	0.00031	0.0155	0.00497	0.00135	0.00135	0%	0.00041	0.0388	0.00072	0.00012	0.0008	0.00318	0.00318	0.0033
Arsenic (As)-Dissolved	mg/L	0.005	0.15	0.0001	0.00028	0.00032	0.00033	0.00191	0.0019	1%	0.00182	0.00258	0.066	0.018	0.00448	0.00445	1%	0.0395	0.09	0.0205	0.00055	0.00806	0.00984	0.0101	0.0101
Barium (Ba)-Dissolved	mg/L	-	-	0.00005	0.0708	0.0801	0.0802	0.0772	0.0771	0%	0.0752	0.0693	0.0126	0.0301	0.0413	0.0421	2%	0.0618	0.0106	0.0527	0.0156	0.0592	0.0151	0.0157	0.0156
Beryllium (Be)-Dissolved	mg/L	-	-	0.00002	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<DL	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<DL	<0.000020	<0.000020	<0.000020	0.000054	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved	mg/L	-	-	0.00005	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<DL	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<DL	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	mg/L	-	-	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<DL	<0.010	<0.010	<0.010	0.046	0.016	0.016	<2xDL	0.059	0.084	0.028	<0.010	0.025	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved *(Lab Result)*	mg/L	0.00009	-	0.000005	0.0000141	0.0000135	0.0000121	0.0000164	0.0000159	<2xDL	0.0000142	0.0000092	0.000838	0.000133	0.0000136	0.0000126	<2xDL	0.000333	0.00024	0.0000428	0.0161	0.0000319	0.00145	0.00149	0.00152
Cadmium (Cd)-Diss. (Hardness Adjusted Guideline)	*mg/L*	-	-	-	*0.000158*	*0.000178*	*0.000179*	*0.000228*	*0.000228*	-	*0.000216*	*0.000370*	*0.000370*	*0.000370*	*0.000370*	*0.000370*	-	*0.000370*	*0.000370*	*0.000370*	*0.000370*	*0.000370*	*0.000370*	*0.000370*	*0.000370*
Calcium (Ca)-Dissolved	mg/L	-	-	0.05	25.8	30.3	30.7	41.2	41.2	0%	38.4	94.1	203	226	203	207	2%	279	236	223	288	193	260	261	260
Chromium (Cr)-Dissolved	mg/L	0.0089	-	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<DL	0.00012	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<DL	0.00031	<0.00010	0.00014	<0.00010	0.00022	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Dissolved	mg/L	-	-	0.0001	<0.00010	<0.00010	<0.00010	0.00011	0.00011	<2xDL	0.00013	0.00554	0.00099	0.00041	0.00049	0.00048	<2xDL	0.0083	0.00036	0.00252	0.00026	0.00224	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved *(Lab Result)*	mg/L	0.002	-	0.0002	0.00101	0.00097	0.00099	0.00102	0.00099	3%	0.00119	0.00033	<0.00020	0.00067	0.00036	0.00036	<2xDL	0.00174	0.0163	0.00074	0.00121	0.00103	0.00139	0.00141	0.00137
Copper (Cu)-Diss. (Hardness Adjusted Guideline)	*mg/L*	-	-	-	*0.00236*	*0.00266*	*0.00268*	*0.00344*	*0.00344*	-	*0.00325*	*0.00400*	*0.00400*	*0.00400*	*0.00400*	*0.00400*	-	*0.00400*	*0.00400*	*0.00400*	*0.00400*	*0.00400*	*0.00400*	*0.00400*	*0.00400*
Iron (Fe)-Dissolved	mg/L	0.3	-	0.01	0.017	<0.010	<0.010	0.01	<0.010	<DL	0.079	0.214	1.06	0.095	0.427	0.339	23%	6.53	<0.010	1.23	0.054	0.947	<0.010	<0.010	<0.010
Lead (Pb)-Dissolved *(Lab Result)*	mg/L	0.001	-	0.00005	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<DL	<0.000050	<0.000050	0.000095	<0.000050	<0.000050	<0.000050	<DL	<0.000050	0.000404	<0.000050	<0.000050	<0.000050	0.000052	0.00005	<0.000050
Lead (Pb)-Diss. (Hardness Adjusted Guideline)	*mg/L*	-	-	-	*0.00318*	*0.00380*	*0.00384*	*0.00556*	*0.00556*	-	*0.00511*	*0.00700*	*0.00700*	*0.00700*	*0.00700*	*0.00700*	-	*0.00700*	*0.00700*	*0.00700*	*0.00700*	*0.00700*	*0.00700*	*0.00700*	*0.00700*
Lithium (Li)-Dissolved	mg/L	-	-	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<DL	<0.0010	<0.0010	0.0102	0.0076	0.0033	0.0029	<2xDL	0.0011	0.0093	0.0018	0.0021	0.0015	0.0067	0.0069	0.0061
Magnesium (Mg)-Dissolved	mg/L	-	-	0.1	8.67	9.52	9.58	12.6	12.8	2%	12	23.9	67.1	103	92	89.4	3%	57.6	48.8	72.8	108	60.5	72.2	73.8	74.4
Manganese (Mn)-Dissolved	mg/L	-	-	0.0001	0.0369	0.0388	0.0372	0.0334	0.0309	8%	0.0245	4.96	1.32	1.37	0.691	0.697	1%	6.54	0.0345	2.58	0.752	1.91	0.0198	0.0193	0.0231
Mercury (Hg)-Dissolved	mg/L	0.000026	-	0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<DL	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<DL	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved	mg/L	0.0073	-	0.00005	0.000405	0.000434	0.000426	0.000399	0.00041	3%	0.000402	0.000215	0.000312	0.00023	0.000342	0.000353	3%	0.000806	0.00159	0.0005	<0.000050	0.00042	0.000154	0.000152	0.000151
Nickel (Ni)-Dissolved *(Lab Result)*	mg/L	0.025	-	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<DL	0.00067	0.00121	0.00205	0.0008	0.00077	0.00096	<2xDL	0.0031	<0.00050	0.00129	0.0116	0.00181	<0.00050	<0.00050	<0.00050
Nickel (Ni)-Diss. (Hardness Adjusted Guideline)	*mg/L*	-	-	-	*0.09558*	*0.10629*	*0.10699*	*0.13335*	*0.13335*	-	*0.12676*	*0.15000*	*0.15000*	*0.15000*	*0.15000*	*0.15000*	-	*0.15000*	*0.15000*	*0.15000*	*0.15000*	*0.15000*	*0.15000*	*0.15000*	*0.15000*
Phosphorus (P)-Dissolved	mg/L	-	-	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<DL	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<DL	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved	mg/L	-	-	0.1	0.66	0.76	0.74	0.96	0.99	3%	0.96	4.94	3.59	4.45	3.08	2.99	3%	6.6	15.4	3.89	0.32	3.61	3.2	3.24	3.21
Selenium (Se)-Dissolved	mg/L	0.001	-	0.00005	0.000051	<0.000050	<0.000050	<0.000050	0.000055	<DL	0.000052	0.000052	<0.000050	0.000074	0.000061	0.000054	<2xDL	0.000219	0.000051	0.000108	<0.000050	0.000101	<0.000050	<0.000050	<0.000050
Silicon (Si)-Dissolved	mg/L	-	-	0.05	5.53	5.87	5.9	5.8	5.88	1%	6.04	5.25	6.41	5.85	5.61	5.34	5%	7.29	1.63	5.5	6.26	5.64	2.86	2.92	2.83
Silver (Ag)-Dissolved	mg/L	0.0001	-	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<DL	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<DL	<0.000010	0.000028	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	-	-	0.05	2.49	2.8	2.81	4.04	4.03	0%	3.84	4.29	4.87	7.71	9.79	9.76	0%	36.5	18.5	18.8	6.71	17.8	10.3	9.49	9.57
Strontium (Sr)-Dissolved	mg/L	-	-	0.0002	0.275	0.309	0.313	0.329	0.328	0%	0.307	0.255	0.452	0.6	0.664	0.672	1%	0.776	0.595	0.691	0.659	0.591	0.898	0.916	0.902
Sulfur (S)-Dissolved	mg/L	-	-	0.5	5.8	6.91	7	19.5	19.2	2%	17.9	66.4	165	238	223	230	3%	259	253	225	384	190	253	256	254
Thallium (Tl)-Dissolved	mg/L	0.0008	-	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<DL	<0.000010	0.000034	0.000095	0.000027	<0.000010	<0.000010	<DL	<0.000010	0.000263	<0.000010	<0.000010	<0.000010	0.000068	0.00007	0.000072
Tin (Sn)-Dissolved	mg/L	-	-	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<DL	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<DL	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	mg/L	-	-	0.0003	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<DL	<0.00030	<0.00030	<0.00030	<0.00030	0.00033	<0.00030	<DL	0.00087	<0.00030	<0.00030	<0.00030	0.00031	<0.00030	<0.00030	<0.00030
Uranium (U)-Dissolved	mg/L	0.015	-	0.00001	0.000611	0.000636	0.000668	0.000713	0.000714	0%	0.000661	0.000495	0.00437	0.00263	0.00286	0.00294	3%	0.00162	0.000967	0.00204	<0.000010	0.0015	0.00373	0.00376	0.00375
Vanadium (V)-Dissolved	mg/L	-	-	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<DL	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<DL	0.00118	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved	mg/L	0.03	-	0.001	<0.0010	<0.0010	0.0014	<0.0010	0.0012	<DL	0.0013	0.0011	0.956	0.107	0.0036	0.0034	<2xDL	0.0141	0.0146	0.0016	5.89	0.0021	0.146	0.146	0.153

Applied Guidelines: 'Federal CCME Canadian Environmental Quality Guidelines (May 2015), CCME: Freshwater Aquatic Life 'Mount Nansen Effluent Discharge Standards

COLOUR KEY:
Exceeds CCME Guideline
Exceeds MN Effluent Discharge Standards
Exceeds both CCME and MN Standards
Exceeds Hardness Dependent Calculated Guideline (CCME)
Data flag for Detection Limit Adjustment --> Please refer to the lab COA report and lab excel report for more info
QA/QC Codes: RPD - Relative Percent Difference, <DL - below detection limit, and <2XDL - less than two times the detection limit.

Notes:
** WQ-PW is a drinking water sample and the analysis package has different detection limits than all other samples. The results are also compared to the Guidelines for Canadian Drinking Water Quality (Health Canada, October 2014) versus the CCME or MN Effluent Quality Standards.
QA/QC Travel/Field Blank Analysis - The travel blank had all parameters below detection limit, while the field blank only had one parameter that was above the detection limit (total manganese).
QA/QC Replicate Analysis - the average RPD of the replicate sample set for WQ-VC-UMN-r was 2% with an average difference of 2% for dissolved and 2% for total metals. All individual parameters had RPD of 10% or less, which is considered adequately precise.
The average RPD of the replicate sample set for WQ-DC-B-r was 3% with an average difference of 3% for both dissolved and total metals. Dissolved iron had a RPD just over %20, indicating some natural variability or lab imprecision.

Summary of Water Quality Results for the July 13-14, 2015 Trip.

Analyte	Units	CCME-WATER-FAL	Mount Nansen Effluent Discharge Standards	Sample ID/Site ID Date Sampled Detection Limit	WQ-PW** 7/14/2015 11:40:00 AM	FIELD BLANK 7/14/2015 10:15:00 AM	TRAVEL BLANK
Temperature (in-situ)	°C	-	-	-	0.9	-	-
Specific Conductivity (in-situ)	µS/cm	-	-	-	367.9	-	-
pH (in-situ)	pH	6.5 - 9.0	6.0 - 8.5	-	7.15	-	-
Dissolved Oxygen (in-situ)	mg/L	-	-	-	n/a	-	-
Turbidity (in-situ)	NTU	-	-	-	0.10	-	-
Colour, True	CU	15	-	5	<5.0	-	-
Conductivity	µS/cm	-	-	2	353	<2.0	<2.0
Hardness (as CaCO3)	mg/L	-	-	0.5	184	<0.50	-
pH (lab)	pH	6.5 - 9.0	6.0 - 8.5	0.1	8.22	***5.43***	***5.33***
Total Suspended Solids	mg/L	-	50	3	-	<3.0	<3.0
Total Dissolved Solids	mg/L	-	-	1	209	<1.0	<1.0
Alkalinity, Bicarbonate (as CaCO3)	mg/L	-	-	1	-	<1.0	<1.0
Alkalinity, Carbonate (as CaCO3)	mg/L	-	-	1	-	<1.0	<1.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	-	-	1	-	<1.0	<1.0
Alkalinity, Total (as CaCO3)	mg/L	-	-	1	181	<1.0	<1.0
Ammonia, Total (as N)	mg/L	0.75	-	0.005	-	<0.0050	<0.0050
Chloride (Cl)	mg/L	120	-	0.5	<0.50	<0.50	<0.50
Fluoride (F)	mg/L	0.12	-	0.02	0.103	<0.020	<0.020
Nitrate (as N)	mg/L	13	-	0.005	0.137	<0.0050	<0.0050
Nitrite (as N)	mg/L	0.06	-	0.001	<0.0010	<0.0010	<0.0010
Sulfate (SO4)	mg/L	-	-	0.3	32.2	<0.30	<0.30
Cyanide, Weak Acid Diss	mg/L	-	0.1	0.005	-	<0.0050	<0.0050
Cyanide, Total	mg/L	-	0.3	0.005	-	<0.0050	<0.0050
Cyanate	mg/L	-	-	0.2	-	<0.20	<0.20
Thiocyanate (SCN)	mg/L	-	-	0.5	-	<0.50	<0.50
Aluminum (Al)-Total	mg/L	0.1	-	0.003	<0.010	<0.0030	<0.0030
Antimony (Sb)-Total	mg/L	-	0.15	0.0001	<0.00050	<0.00010	<0.00010
Arsenic (As)-Total	mg/L	0.005	-	0.0001	0.0004	<0.00010	<0.00010
Barium (Ba)-Total	mg/L	-	1.0	0.00005	0.084	<0.000050	<0.000050
Beryllium (Be)-Total	mg/L	-	-	0.00002	-	<0.000020	<0.000020
Bismuth (Bi)-Total	mg/L	-	-	0.00005	-	<0.000050	<0.000050
Boron (B)-Total	mg/L	-	-	0.01	<0.10	<0.010	<0.010
Cadmium (Cd)-Total *(Lab Result)*	mg/L	0.00009	0.02	0.000005	<0.00020	<0.0000050	<0.0000050
Cadmium (Cd)-Total (Hardness Adjusted Guideline)	*mg/L*	-	-	-	-	*0.000170*	*0.000170*
Calcium (Ca)-Total	mg/L	-	-	0.05	42.6	<0.050	<0.050
Chromium (Cr)-Total	mg/L	0.0089	0.04	0.0001	<0.0020	<0.00010	<0.00010
Cobalt (Co)-Total	mg/L	-	-	0.0001	-	<0.00010	<0.00010
Copper (Cu)-Total *(Lab Result)*	mg/L	0.002	0.2	0.0005	<0.0010	<0.00050	<0.00050
Copper (Cu)-Total (Hardness Adjusted Guideline)	*mg/L*	-	-	-	-	*0.00400*	*0.00400*
Iron (Fe)-Total	mg/L	0.3	1.0	0.01	<0.030	<0.010	<0.010
Lead (Pb)-Total *(Lab Result)*	mg/L	0.001	0.1	0.00005	0.00058	<0.000050	<0.000050
Lead (Pb)-Total (Hardness Adjusted Guideline)	*mg/L*	-	-	-	-	*0.00700*	*0.00700*
Lithium (Li)-Total	mg/L	-	-	0.001	-	<0.0010	<0.0010
Magnesium (Mg)-Total	mg/L	-	-	0.1	18.9	<0.10	<0.10
Manganese (Mn)-Total	mg/L	-	0.5	0.0001	<0.0020	0.00014	<0.00010
Mercury (Hg)-Total	mg/L	0.000026	0.005	0.000005	<0.00020	<0.0000050	<0.0000050
Molybdenum (Mo)-Total	mg/L	0.0073	-	0.00005	-	<0.000050	<0.000050
Nickel (Ni)-Total *(Lab Result)*	mg/L	0.025	0.3	0.0005	-	<0.00050	<0.00050
Nickel (Ni)-Total (Hardness Adjusted Guideline)	*mg/L*	-	-	-	-	*0.15000*	*0.15000*
Phosphorus (P)-Total	mg/L	-	-	0.05	-	<0.050	<0.050
Potassium (K)-Total	mg/L	-	-	0.1	0.89	<0.10	<0.10
Selenium (Se)-Total	mg/L	0.001	-	0.00005	<0.0010	<0.000050	<0.000050
Silicon (Si)-Total	mg/L	-	-	0.05	-	<0.050	<0.050
Silver (Ag)-Total	mg/L	0.0001	0.1	0.00001	-	<0.000010	<0.000010
Sodium (Na)-Total	mg/L	-	-	0.05	4.8	<0.050	<0.050
Strontium (Sr)-Total	mg/L	-	-	0.0002	-	<0.00020	<0.00020
Sulfur (S)-Total	mg/L	-	-	0.5	-	<0.50	<0.50
Thallium (Tl)-Total	mg/L	0.0008	-	0.00001	-	<0.000010	<0.000010
Tin (Sn)-Total	mg/L	-	-	0.0001	-	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L	-	-	0.0003	-	<0.00030	<0.00030
Uranium (U)-Total	mg/L	0.015	-	0.00001	0.00178	<0.000010	<0.000010
Vanadium (V)-Total	mg/L	-	-	0.0005	-	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	0.03	0.3	0.003	<0.050	<0.0030	<0.0030
Dissolved Metals Filtration Location		-	-	-	-	FIELD	-
Aluminum (Al)-Dissolved	mg/L	0.1	-	0.001	-	<0.0010	-
Antimony (Sb)-Dissolved	mg/L	-	-	0.0001	-	<0.00010	-
Arsenic (As)-Dissolved	mg/L	0.005	0.15	0.0001	-	<0.00010	-
Barium (Ba)-Dissolved	mg/L	-	-	0.00005	-	0.000064	-
Beryllium (Be)-Dissolved	mg/L	-	-	0.00002	-	<0.000020	-
Bismuth (Bi)-Dissolved	mg/L	-	-	0.00005	-	<0.000050	-
Boron (B)-Dissolved	mg/L	-	-	0.01	-	<0.010	-
Cadmium (Cd)-Dissolved *(Lab Result)*	mg/L	0.00009	-	0.000005	-	<0.0000050	-
Cadmium (Cd)-Diss. (Hardness Adjusted Guideline)	*mg/L*	-	-	-	-	*0.00170*	-
Calcium (Ca)-Dissolved	mg/L	-	-	0.05	-	<0.050	-
Chromium (Cr)-Dissolved	mg/L	0.0089	-	0.0001	-	<0.00010	-
Cobalt (Co)-Dissolved	mg/L	-	-	0.0001	-	<0.00010	-
Copper (Cu)-Dissolved *(Lab Result)*	mg/L	0.002	-	0.0002	-	<0.00020	-
Copper (Cu)-Diss. (Hardness Adjusted Guideline)	*mg/L*	-	-	-	-	*0.00400*	-
Iron (Fe)-Dissolved	mg/L	0.3	-	0.01	-	<0.010	-
Lead (Pb)-Dissolved *(Lab Result)*	mg/L	0.001	-	0.00005	-	<0.000050	-
Lead (Pb)-Diss. (Hardness Adjusted Guideline)	*mg/L*	-	-	-	-	*0.00700*	-
Lithium (Li)-Dissolved	mg/L	-	-	0.001	-	<0.0010	-
Magnesium (Mg)-Dissolved	mg/L	-	-	0.1	-	<0.10	-
Manganese (Mn)-Dissolved	mg/L	-	-	0.0001	-	<0.00010	-
Mercury (Hg)-Dissolved	mg/L	0.000026	-	0.000005	-	<0.0000050	-
Molybdenum (Mo)-Dissolved	mg/L	0.0073	-	0.00005	-	<0.000050	-
Nickel (Ni)-Dissolved *(Lab Result)*	mg/L	0.025	-	0.0005	-	<0.00050	-
Nickel (Ni)-Diss. (Hardness Adjusted Guideline)	*mg/L*	-	-	-	-	*0.15000*	-
Phosphorus (P)-Dissolved	mg/L	-	-	0.05	-	<0.050	-
Potassium (K)-Dissolved	mg/L	-	-	0.1	-	<0.10	-
Selenium (Se)-Dissolved	mg/L	0.001	-	0.00005	-	<0.000050	-
Silicon (Si)-Dissolved	mg/L	-	-	0.05	-	<0.050	-
Silver (Ag)-Dissolved	mg/L	0.0001	-	0.00001	-	<0.000010	-
Sodium (Na)-Dissolved	mg/L	-	-	0.05	-	<0.050	-
Strontium (Sr)-Dissolved	mg/L	-	-	0.0002	-	<0.00020	-
Sulfur (S)-Dissolved	mg/L	-	-	0.5	-	<0.50	-
Thallium (Tl)-Dissolved	mg/L	0.0008	-	0.00001	-	<0.000010	-
Tin (Sn)-Dissolved	mg/L	-	-	0.0001	-	<0.00010	-
Titanium (Ti)-Dissolved	mg/L	-	-	0.0003	-	<0.00030	-
Uranium (U)-Dissolved	mg/L	0.015	-	0.00001	-	<0.000010	-
Vanadium (V)-Dissolved	mg/L	-	-	0.0005	-	<0.00050	-
Zinc (Zn)-Dissolved	mg/L	0.03	-	0.001	-	<0.0010	-

Applied Guidelines: 'Federal CCME Canadian Environmental Quality Guidelines (May 2015), CCME: Freshwater Aquatic Life 'Mount Nansen Effluent Discharge Standards

COLOUR KEY:
Exceeds CCME Guideline
Exceeds MN Effluent Discharge Standards
Exceeds both CCME and MN Standards
Exceeds Hardness Dependent Calculated Guideline (CCME)
Data flag for Detection Limit Adjustment --> Please refer to the lab COA report and lab excel report for more info
QA/QC Codes: RPD - Relative Percent Difference, <DL - below detection limit, and <2XDL - less than two times the detection limit.

ENVIRONMENTAL DYNAMICS INC.
ATTN: Meghan Marjanovic
2195 - 2nd Ave
Whitehorse YT Y1A 3T8

Date Received: 15-JUL-15
Report Date: 24-JUL-15 17:35 (MT)
Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1642735

Project P.O. #: NOT SUBMITTED
Job Reference: MOUNT NANSEN 15-Y-0146
C of C Numbers: 1, 2, 3
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1642735-1	L1642735-2	L1642735-3	L1642735-4	L1642735-5
Description	Water	Water	Water	Water	Water
Sampled Date	13-JUL-15	13-JUL-15	13-JUL-15	13-JUL-15	13-JUL-15
Sampled Time	18:00	13:00	16:00	17:45	14:45
Client ID	WQ-VC-U	WQ-VC-R	WQ-DC-R	WQ-VC-DBC	WQ-VC-UMN
Grouping / **Analyte**					
WATER					
Physical Tests Conductivity (uS/cm)	222	283	1250	224	303
Hardness (as CaCO3) (mg/L)	115	145	730	116	155
pH (pH)	8.07	8.12	8.01	8.03	8.09
Total Suspended Solids (mg/L)	<3.0	<3.0	6.0	<3.0	<3.0
Total Dissolved Solids (mg/L)	120	163	941	122	174
Anions and Nutrients Alkalinity, Bicarbonate (as CaCO3) (mg/L)	95.1	92.6	172	96.5	98.5
Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (as CaCO3) (mg/L)	95.1	92.6	172	96.5	98.5
Ammonia, Total (as N) (mg/L)	<0.0050	0.0065	0.508	<0.0050	0.0058
Chloride (Cl) (mg/L)	<0.50	<0.50	<1.0 DLA	<0.50	<0.50
Fluoride (F) (mg/L)	0.052	0.056	0.150	0.053	0.053
Nitrate (as N) (mg/L)	0.0432	0.0537	0.747	0.0415	0.0538
Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0242	<0.0010	<0.0010
Sulfate (SO4) (mg/L)	19.7	51.6	556	20.0	55.9
Anion Sum (meq/L)	2.32	2.93	15.1	2.35	3.14
Cation Sum (meq/L)	2.44	3.10	15.6	2.46	3.29
Cation - Anion Balance (%)	2.5	2.8	1.7	2.3	2.4
Cyanides Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanate (mg/L)	<0.20	0.20	0.53	<0.20	0.22
Thiocyanate (SCN) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Total Metals Aluminum (Al)-Total (mg/L)	0.0105	0.0301	0.0228	0.0125	0.0185
Antimony (Sb)-Total (mg/L)	<0.00010	0.00038	0.00088	0.00010	0.00041
Arsenic (As)-Total (mg/L)	0.00032	0.00200	0.0190	0.00033	0.00206
Barium (Ba)-Total (mg/L)	0.0794	0.0758	0.0633	0.0805	0.0769
Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	<0.010	<0.010	0.030	<0.010	<0.010
Cadmium (Cd)-Total (mg/L)	0.0000138	0.0000191	0.0000498	0.0000134	0.0000150
Calcium (Ca)-Total (mg/L)	29.1	37.9	188	30.1	40.6
Chromium (Cr)-Total (mg/L)	<0.00010	0.00017	0.00028	0.00010	0.00012
Cobalt (Co)-Total (mg/L)	<0.00010	0.00013	0.00235	<0.00010	0.00012
Copper (Cu)-Total (mg/L)	0.00102	0.00118	0.00110	0.00104	0.00110
Iron (Fe)-Total (mg/L)	0.016	0.139	3.59	0.018	0.053
Lead (Pb)-Total (mg/L)	<0.000050	0.000093	0.000168	<0.000050	0.000077
Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	0.0017	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1642735-6 Water 13-JUL-15 14:50 WQ-VC-UMN-R	L1642735-7 Water 14-JUL-15 10:15 FIELD BLANK	L1642735-8 Water 14-JUL-15 09:00 WQ-SEEP	L1642735-9 Water 14-JUL-15 09:25 WQ-TP	L1642735-10 Water 14-JUL-15 16:10 WQ-DC-DX
WATER						
Physical Tests	Conductivity (uS/cm)	305	<2.0	1660	1390	606
	Hardness (as CaCO3) (mg/L)	155	<0.50	935	790	333
	pH (pH)	8.11	5.43	7.56	7.98	7.80
	Total Suspended Solids (mg/L)	<3.0	<3.0	21.3	<3.0	3.3
	Total Dissolved Solids (mg/L)	174	<1.0	1320	1120	398
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	98.3	<1.0	230	62.0	134
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	98.3	<1.0	230	62.0	134
	Ammonia, Total (as N) (mg/L)	0.0057	<0.0050	4.40 DLA	0.0119	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<0.50	<2.5	<2.5 DLA	<0.50
	Fluoride (F) (mg/L)	0.052	<0.020	0.25	0.35	0.059
	Nitrate (as N) (mg/L)	0.0544	<0.0050	0.260	<0.025 DLA	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0158	<0.0050 DLA	<0.0010
	Sulfate (SO4) (mg/L)	55.7	<0.30	783	761	186
	Anion Sum (meq/L)	3.13	<0.10	20.9	17.1	6.54
	Cation Sum (meq/L)	3.31	<0.10	21.3	17.0	7.17
	Cation - Anion Balance (%)	2.8	0.0	0.9	-0.3	4.6
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	0.0261	<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	<0.0050	0.157	<0.0050	<0.0050
	Cyanate (mg/L)	0.26	<0.20	0.72	0.25	0.20
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	4.41	<0.50	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.0173	<0.0030	0.0183	0.0259	0.0370
	Antimony (Sb)-Total (mg/L)	0.00040	<0.00010	0.00049	0.0401	0.00043
	Arsenic (As)-Total (mg/L)	0.00212	<0.00010	0.0580	0.113	0.0126
	Barium (Ba)-Total (mg/L)	0.0775	<0.000050	0.0675	0.0108	0.0660
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	0.000127	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	0.071	0.091	<0.010
	Cadmium (Cd)-Total (mg/L)	0.0000195	<0.0000050	0.000411	0.000455	0.0000148
	Calcium (Ca)-Total (mg/L)	41.0	<0.050	279	229	91.9
	Chromium (Cr)-Total (mg/L)	0.00011	<0.00010	0.00046	0.00016	0.00016
	Cobalt (Co)-Total (mg/L)	0.00012	<0.00010	0.00935	0.00040	0.00490
	Copper (Cu)-Total (mg/L)	0.00110	<0.00050	0.00254	0.0221	0.00057
	Iron (Fe)-Total (mg/L)	0.051	<0.010	9.13	0.170	1.76
	Lead (Pb)-Total (mg/L)	0.000090	<0.000050	0.000078	0.00930	0.000079
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	0.0013	0.0092	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1642735-11 Water 14-JUL-15 15:40 WQ-MS-S-03	L1642735-12 Water 14-JUL-15 15:00 WQ-DC-D1B	L1642735-13 Water 14-JUL-15 09:45 WQ-DC-B	L1642735-14 Water 14-JUL-15 08:35 WQ-DC-U	L1642735-15 Water 14-JUL-15 11:10 WQ-CH-P-13-01
WATER						
Physical Tests	Conductivity (uS/cm)	1270	1560	1490	1450	1970
	Hardness (as CaCO3) (mg/L)	783	987	886	857	1160
	pH (pH)	7.91	8.28	8.22	8.20	6.07
	Total Suspended Solids (mg/L)	4.7	<3.0	10.0	6.7	<3.0
	Total Dissolved Solids (mg/L)	928	1220	1080	1140	1490
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	277	263	207	209	2.9
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	277	263	207	209	2.9
	Ammonia, Total (as N) (mg/L)	0.0188	0.284	0.125	1.21	0.0052
	Chloride (Cl) (mg/L)	<1.0 DLA	<2.5 DLA	<1.0 DLA	<2.5 DLA	<1.0 DLA
	Fluoride (F) (mg/L)	0.254	0.23	0.118	0.26	0.082
	Nitrate (as N) (mg/L)	<0.010 DLA	0.163	0.068	0.414	0.067
	Nitrite (as N) (mg/L)	<0.0020 DLA	<0.0050 DLA	0.0021	0.0148	<0.0020 DLA
	Sulfate (SO4) (mg/L)	480	720	650	688	1070
	Anion Sum (meq/L)	15.5	20.3	17.7	18.5	22.4
	Cation Sum (meq/L)	16.1	20.3	18.3	18.3	23.8
	Cation - Anion Balance (%)	1.7	0.0	1.6	-0.7	2.9
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanate (mg/L)	<0.20	0.32	<0.20	<0.20	<0.20
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.0744	0.0338	0.0332	0.0265	0.255
	Antimony (Sb)-Total (mg/L)	0.0165	0.00502	0.00137	0.00075	0.00013
	Arsenic (As)-Total (mg/L)	0.112	0.0278	0.00699	0.0271	0.00060
	Barium (Ba)-Total (mg/L)	0.0153	0.0314	0.0422	0.0547	0.0161
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	0.000057
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	0.051	0.020	0.034	<0.010
	Cadmium (Cd)-Total (mg/L)	0.00251	0.000314	0.0000169	0.0000493	0.0157
	Calcium (Ca)-Total (mg/L)	195	220	197	222	280
	Chromium (Cr)-Total (mg/L)	0.00014	0.00013	0.00015	0.00022	0.00019
	Cobalt (Co)-Total (mg/L)	0.00113	0.00045	0.00050	0.00268	0.00025
	Copper (Cu)-Total (mg/L)	0.00145	0.00090	<0.00050	0.00097	0.00124
	Iron (Fe)-Total (mg/L)	2.16	1.18	1.95	2.55	0.065
	Lead (Pb)-Total (mg/L)	0.00492	0.000185	<0.000050	<0.000050	0.000074
	Lithium (Li)-Total (mg/L)	0.0107	0.0074	0.0034	0.0021	0.0022

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1642735-16	L1642735-17			
	Description	Water	Water			
	Sampled Date	14-JUL-15				
	Sampled Time	09:55				
	Client ID	WQ-DC-B-R	TRIP BLANK			
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	1450	<2.0			
	Hardness (as CaCO3) (mg/L)	885				
	pH (pH)	8.20	5.33			
	Total Suspended Solids (mg/L)	<3.0	<3.0			
	Total Dissolved Solids (mg/L)	1110	<1.0			
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	198	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	198	<1.0			
	Ammonia, Total (as N) (mg/L)	0.125	<0.0050			
	Chloride (Cl) (mg/L)	<1.0 DLA	<0.50			
	Fluoride (F) (mg/L)	0.138	<0.020			
	Nitrate (as N) (mg/L)	0.071	<0.0050			
	Nitrite (as N) (mg/L)	0.0030	<0.0010			
	Sulfate (SO4) (mg/L)	682	<0.30			
	Anion Sum (meq/L)	18.2	<0.10			
	Cation Sum (meq/L)	18.2	<0.10			
	Cation - Anion Balance (%)	0.2	0.0			
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050			
	Cyanide, Total (mg/L)	<0.0050	<0.0050			
	Cyanate (mg/L)	<0.20	<0.20			
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	0.0329	<0.0030			
	Antimony (Sb)-Total (mg/L)	0.00138	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00730	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0442	<0.000050			
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020			
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050			
	Boron (B)-Total (mg/L)	0.019	<0.010			
	Cadmium (Cd)-Total (mg/L)	0.0000206	<0.0000050			
	Calcium (Ca)-Total (mg/L)	205	<0.050			
	Chromium (Cr)-Total (mg/L)	0.00016	<0.00010			
	Cobalt (Co)-Total (mg/L)	0.00052	<0.00010			
	Copper (Cu)-Total (mg/L)	0.00052	<0.00050			
	Iron (Fe)-Total (mg/L)	2.01	<0.010			
	Lead (Pb)-Total (mg/L)	0.000051	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0032	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1642735-1 Water 13-JUL-15 18:00 WQ-VC-U	L1642735-2 Water 13-JUL-15 13:00 WQ-VC-R	L1642735-3 Water 13-JUL-15 16:00 WQ-DC-R	L1642735-4 Water 13-JUL-15 17:45 WQ-VC-DBC	L1642735-5 Water 13-JUL-15 14:45 WQ-VC-UMN
WATER						
Total Metals	Magnesium (Mg)-Total (mg/L)	9.28	11.7	60.0	9.53	12.5
	Manganese (Mn)-Total (mg/L)	0.0411	0.0268	1.98	0.0416	0.0377
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	0.000458	0.000430	0.000436	0.000484	0.000468
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	0.00137	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.74	0.94	3.47	0.75	0.96
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	0.000106	0.000052	<0.000050
	Silicon (Si)-Total (mg/L)	5.85	6.03	5.81	5.93	5.95
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	2.80	3.93	18.5	2.85	4.14
	Strontium (Sr)-Total (mg/L)	0.318	0.317	0.615	0.323	0.344
	Sulfur (S)-Total (mg/L)	7.00	18.2	193	7.08	19.6
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	0.00081	<0.0030 DLM	0.00030	0.00052
	Uranium (U)-Total (mg/L)	0.000676	0.000701	0.00155	0.000691	0.000774
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	0.00066	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	0.0043	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0063	0.0092	0.0072	0.0071	0.0050
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00037	0.00080	0.00011	0.00038
	Arsenic (As)-Dissolved (mg/L)	0.00032	0.00182	0.00806	0.00033	0.00191
	Barium (Ba)-Dissolved (mg/L)	0.0801	0.0752	0.0592	0.0802	0.0772
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	0.025	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000135	0.0000142	0.0000319	0.0000121	0.0000164
	Calcium (Ca)-Dissolved (mg/L)	30.3	38.4	193	30.7	41.2
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00012	0.00022	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00013	0.00224	<0.00010	0.00011
	Copper (Cu)-Dissolved (mg/L)	0.00097	0.00119	0.00103	0.00099	0.00102
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.079	0.947	<0.010	0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	0.0015	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1642735-6	L1642735-7	L1642735-8	L1642735-9	L1642735-10
Description	Water	Water	Water	Water	Water
Sampled Date	13-JUL-15	14-JUL-15	14-JUL-15	14-JUL-15	14-JUL-15
Sampled Time	14:50	10:15	09:00	09:25	16:10
Client ID	WQ-VC-UMN-R	FIELD BLANK	WQ-SEEP	WQ-TP	WQ-DC-DX
Grouping / **Analyte**					
WATER					
Total Metals Magnesium (Mg)-Total (mg/L)	12.8	<0.10	58.8	48.5	23.4
Manganese (Mn)-Total (mg/L)	0.0366	0.00014	7.14	0.0542	4.50
Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	0.0000074	<0.0000050
Molybdenum (Mo)-Total (mg/L)	0.000445	<0.000050	0.000942	0.00166	0.000236
Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	0.00356	0.00061	0.00117
Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Total (mg/L)	0.99	<0.10	6.61	15.1	4.84
Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	0.000205	0.000064	0.000061
Silicon (Si)-Total (mg/L)	6.04	<0.050	7.53	1.64	5.37
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	0.000030	0.000226	<0.000010
Sodium (Na)-Total (mg/L)	4.13	<0.050	41.0	19.0	4.53
Strontium (Sr)-Total (mg/L)	0.342	<0.00020	0.814	0.609	0.265
Sulfur (S)-Total (mg/L)	19.7	<0.50	270	254	68.2
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	0.000266	0.000032
Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	0.00049	<0.00030	<0.0030 DLM	<0.00030	0.00190
Uranium (U)-Total (mg/L)	0.000763	<0.000010	0.00173	0.00102	0.000489
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	0.00189	<0.00050	0.00052
Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	0.0174	0.0248	<0.0030
Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	0.00048	<0.00030	<0.00030
Dissolved Metals Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.0055	<0.0010	0.0084	0.0054	0.0055
Antimony (Sb)-Dissolved (mg/L)	0.00039	<0.00010	0.00041	0.0388	0.00031
Arsenic (As)-Dissolved (mg/L)	0.00190	<0.00010	0.0395	0.0900	0.00258
Barium (Ba)-Dissolved (mg/L)	0.0771	0.000064	0.0618	0.0106	0.0693
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	<0.010	0.059	0.084	<0.010
Cadmium (Cd)-Dissolved (mg/L)	0.0000159	<0.0000050	0.000333	0.000240	0.0000092
Calcium (Ca)-Dissolved (mg/L)	41.2	<0.050	279	236	94.1
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00031	<0.00010	<0.00010
Cobalt (Co)-Dissolved (mg/L)	0.00011	<0.00010	0.00830	0.00036	0.00554
Copper (Cu)-Dissolved (mg/L)	0.00099	<0.00020	0.00174	0.0163	0.00033
Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	6.53	<0.010	0.214
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	0.000404	<0.000050
Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	0.0011	0.0093	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1642735-11 Water 14-JUL-15 15:40 WQ-MS-S-03	L1642735-12 Water 14-JUL-15 15:00 WQ-DC-D1B	L1642735-13 Water 14-JUL-15 09:45 WQ-DC-B	L1642735-14 Water 14-JUL-15 08:35 WQ-DC-U	L1642735-15 Water 14-JUL-15 11:10 WQ-CH-P-13-01
WATER						
Total Metals	Magnesium (Mg)-Total (mg/L)	65.9	104	89.4	72.3	107
	Manganese (Mn)-Total (mg/L)	1.39	1.43	0.688	2.68	0.738
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	0.000348	0.000255	0.000378	0.000552	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00227	0.00083	0.00090	0.00143	0.0117
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	3.56	4.33	3.08	3.83	0.30
	Selenium (Se)-Total (mg/L)	<0.000050	0.000064	0.000061	0.000090	<0.000050
	Silicon (Si)-Total (mg/L)	6.51	5.97	5.53	5.70	6.11
	Silver (Ag)-Total (mg/L)	0.000083	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	4.98	7.98	9.82	19.4	6.86
	Strontium (Sr)-Total (mg/L)	0.465	0.616	0.660	0.719	0.672
	Sulfur (S)-Total (mg/L)	166	244	220	233	390
	Thallium (Tl)-Total (mg/L)	0.000107	0.000026	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00444	<0.0030 DLM	<0.0030 DLM	<0.0030 DLM	<0.0012 DLM
	Uranium (U)-Total (mg/L)	0.00446	0.00277	0.00290	0.00211	0.000011
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	0.00051	0.00060	<0.00050
	Zinc (Zn)-Total (mg/L)	0.972	0.132	0.0056	0.0033	5.63
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0012	0.0034	0.0056	0.0078	0.249
	Antimony (Sb)-Dissolved (mg/L)	0.0155	0.00497	0.00135	0.00072	0.00012
	Arsenic (As)-Dissolved (mg/L)	0.0660	0.0180	0.00448	0.0205	0.00055
	Barium (Ba)-Dissolved (mg/L)	0.0126	0.0301	0.0413	0.0527	0.0156
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	0.000054
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.046	0.016	0.028	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.000838	0.000133	0.0000136	0.0000428	0.0161
	Calcium (Ca)-Dissolved (mg/L)	203	226	203	223	288
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00014	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00099	0.00041	0.00049	0.00252	0.00026
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00067	0.00036	0.00074	0.00121
	Iron (Fe)-Dissolved (mg/L)	1.06	0.095	0.427	1.23	0.054
	Lead (Pb)-Dissolved (mg/L)	0.000095	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0102	0.0076	0.0033	0.0018	0.0021

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1642735-16	L1642735-17			
	Description	Water	Water			
	Sampled Date	14-JUL-15				
	Sampled Time	09:55				
	Client ID	WQ-DC-B-R	TRIP BLANK			
Grouping	**Analyte**					
WATER						
Total Metals	Magnesium (Mg)-Total (mg/L)	90.3	<0.10			
	Manganese (Mn)-Total (mg/L)	0.717	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.000366	<0.000050			
	Nickel (Ni)-Total (mg/L)	0.00092	<0.00050			
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050			
	Potassium (K)-Total (mg/L)	2.98	<0.10			
	Selenium (Se)-Total (mg/L)	0.000061	<0.000050			
	Silicon (Si)-Total (mg/L)	5.51	<0.050			
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Total (mg/L)	10.1	<0.050			
	Strontium (Sr)-Total (mg/L)	0.687	<0.00020			
	Sulfur (S)-Total (mg/L)	239	<0.50			
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.0030 DLM	<0.00030			
	Uranium (U)-Total (mg/L)	0.00301	<0.000010			
	Vanadium (V)-Total (mg/L)	0.00054	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0060	<0.0030			
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD				
	Dissolved Metals Filtration Location	FIELD				
	Aluminum (Al)-Dissolved (mg/L)	0.0056				
	Antimony (Sb)-Dissolved (mg/L)	0.00135				
	Arsenic (As)-Dissolved (mg/L)	0.00445				
	Barium (Ba)-Dissolved (mg/L)	0.0421				
	Beryllium (Be)-Dissolved (mg/L)	<0.000020				
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050				
	Boron (B)-Dissolved (mg/L)	0.016				
	Cadmium (Cd)-Dissolved (mg/L)	0.0000126				
	Calcium (Ca)-Dissolved (mg/L)	207				
	Chromium (Cr)-Dissolved (mg/L)	<0.00010				
	Cobalt (Co)-Dissolved (mg/L)	0.00048				
	Copper (Cu)-Dissolved (mg/L)	0.00036				
	Iron (Fe)-Dissolved (mg/L)	0.339				
	Lead (Pb)-Dissolved (mg/L)	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	0.0029				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1642735-1 Water 13-JUL-15 18:00 WQ-VC-U	L1642735-2 Water 13-JUL-15 13:00 WQ-VC-R	L1642735-3 Water 13-JUL-15 16:00 WQ-DC-R	L1642735-4 Water 13-JUL-15 17:45 WQ-VC-DBC	L1642735-5 Water 13-JUL-15 14:45 WQ-VC-UMN
WATER						
Dissolved Metals	Magnesium (Mg)-Dissolved (mg/L)	9.52	12.0	60.5	9.58	12.6
	Manganese (Mn)-Dissolved (mg/L)	0.0388	0.0245	1.91	0.0372	0.0334
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000434	0.000402	0.000420	0.000426	0.000399
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00067	0.00181	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.76	0.96	3.61	0.74	0.96
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000052	0.000101	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	5.87	6.04	5.64	5.90	5.80
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.80	3.84	17.8	2.81	4.04
	Strontium (Sr)-Dissolved (mg/L)	0.309	0.307	0.591	0.313	0.329
	Sulfur (S)-Dissolved (mg/L)	6.91	17.9	190	7.00	19.5
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	0.00031	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000636	0.000661	0.00150	0.000668	0.000713
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0013	0.0021	0.0014	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1642735-6	L1642735-7	L1642735-8	L1642735-9	L1642735-10
Description	Water	Water	Water	Water	Water
Sampled Date	13-JUL-15	14-JUL-15	14-JUL-15	14-JUL-15	14-JUL-15
Sampled Time	14:50	10:15	09:00	09:25	16:10
Client ID	WQ-VC-UMN-R	FIELD BLANK	WQ-SEEP	WQ-TP	WQ-DC-DX
Grouping **Analyte**					
WATER					
Dissolved Metals Magnesium (Mg)-Dissolved (mg/L)	12.8	<0.10	57.6	48.8	23.9
Manganese (Mn)-Dissolved (mg/L)	0.0309	<0.00010	6.54	0.0345	4.96
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.000410	<0.000050	0.000806	0.00159	0.000215
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00310	<0.00050	0.00121
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	0.99	<0.10	6.60	15.4	4.94
Selenium (Se)-Dissolved (mg/L)	0.000055	<0.000050	0.000219	0.000051	0.000052
Silicon (Si)-Dissolved (mg/L)	5.88	<0.050	7.29	1.63	5.25
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000028	<0.000010
Sodium (Na)-Dissolved (mg/L)	4.03	<0.050	36.5	18.5	4.29
Strontium (Sr)-Dissolved (mg/L)	0.328	<0.00020	0.776	0.595	0.255
Sulfur (S)-Dissolved (mg/L)	19.2	<0.50	259	253	66.4
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000263	0.000034
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	0.00087	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.000714	<0.000010	0.00162	0.000967	0.000495
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	0.00118	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0012	<0.0010	0.0141	0.0146	0.0011
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	0.00043	<0.00030	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1642735-11	L1642735-12	L1642735-13	L1642735-14	L1642735-15
Description	Water	Water	Water	Water	Water
Sampled Date	14-JUL-15	14-JUL-15	14-JUL-15	14-JUL-15	14-JUL-15
Sampled Time	15:40	15:00	09:45	08:35	11:10
Client ID	WQ-MS-S-03	WQ-DC-D1B	WQ-DC-B	WQ-DC-U	WQ-CH-P-13-01
Grouping **Analyte**					
WATER					
Dissolved Metals Magnesium (Mg)-Dissolved (mg/L)	67.1	103	92.0	72.8	108
Manganese (Mn)-Dissolved (mg/L)	1.32	1.37	0.691	2.58	0.752
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.000312	0.000230	0.000342	0.000500	<0.000050
Nickel (Ni)-Dissolved (mg/L)	0.00205	0.00080	0.00077	0.00129	0.0116
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	3.59	4.45	3.08	3.89	0.32
Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000074	0.000061	0.000108	<0.000050
Silicon (Si)-Dissolved (mg/L)	6.41	5.85	5.61	5.50	6.26
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	4.87	7.71	9.79	18.8	6.71
Strontium (Sr)-Dissolved (mg/L)	0.452	0.600	0.664	0.691	0.659
Sulfur (S)-Dissolved (mg/L)	165	238	223	225	384
Thallium (Tl)-Dissolved (mg/L)	0.000095	0.000027	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	0.00033	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.00437	0.00263	0.00286	0.00204	<0.000010
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.956	0.107	0.0036	0.0016	5.89
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1642735-16	L1642735-17			
	Description	Water	Water			
	Sampled Date	14-JUL-15				
	Sampled Time	09:55				
	Client ID	WQ-DC-B-R	TRIP BLANK			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Magnesium (Mg)-Dissolved (mg/L)	89.4				
	Manganese (Mn)-Dissolved (mg/L)	0.697				
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050				
	Molybdenum (Mo)-Dissolved (mg/L)	0.000353				
	Nickel (Ni)-Dissolved (mg/L)	0.00096				
	Phosphorus (P)-Dissolved (mg/L)	<0.050				
	Potassium (K)-Dissolved (mg/L)	2.99				
	Selenium (Se)-Dissolved (mg/L)	0.000054				
	Silicon (Si)-Dissolved (mg/L)	5.34				
	Silver (Ag)-Dissolved (mg/L)	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	9.76				
	Strontium (Sr)-Dissolved (mg/L)	0.672				
	Sulfur (S)-Dissolved (mg/L)	230				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010				
	Tin (Sn)-Dissolved (mg/L)	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	<0.00030				
	Uranium (U)-Dissolved (mg/L)	0.00294				
	Vanadium (V)-Dissolved (mg/L)	<0.00050				
	Zinc (Zn)-Dissolved (mg/L)	0.0034				
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Chromium (Cr)-Dissolved	DLA	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)-Dissolved	DLA	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)-Dissolved	DLA	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nickel (Ni)-Dissolved	DLA	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)-Dissolved	DLA	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tin (Sn)-Dissolved	DLA	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Vanadium (V)-Dissolved	DLA	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zirconium (Zr)-Dissolved	DLA	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cyanate	DLA	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cadmium (Cd)-Dissolved	DLM	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Fluoride (F)	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L1642735-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L1642735-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L1642735-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9

Reference Information

	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L1642735-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Total	MS-B	L1642735-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Total	MS-B	L1642735-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L1642735-10
Matrix Spike	Manganese (Mn)-Total	MS-B	L1642735-10
Matrix Spike	Sodium (Na)-Total	MS-B	L1642735-10
Matrix Spike	Strontium (Sr)-Total	MS-B	L1642735-10
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642735-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". 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.

BE-D-L-CCMS-VA Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BE-T-L-CCMS-VA Water Total Be (Low) in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

CL-IC-N-WR Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-CNO-WT Water Cyanate APHA 4500-CN-L

This analysis is carried out using procedures adapted from APHA method 4500-CN "Cyanide". Cyanate is determined by the Cyanate hydrolysis method using an ammonia selective electrode

CN-SCN-VA Water Thiocyanate by Colour APHA 4500-CN CYANIDE

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-CN- M "Thiocyanate" Thiocyanate is determined by the ferric nitrate colourimetric method.

CN-T-CFA-VA Water Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-CFA-VA Water Weak Acid Diss. Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

F-IC-N-WR Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-VA Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-DIS-LOW-ICP-VA Water Dissolved Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-TOT-LOW-ICP-VA Water Total Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

Reference Information

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-WR Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WR Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

S-DIS-ICP-VA Water Dissolved Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

S-TOT-ICP-VA Water Total Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

SO4-IC-N-WR Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-CALC-VA Water TDS (Calculated) APHA 1030E (20TH EDITION)

This analysis is carried out using procedures adapted from APHA 1030E "Checking Correctness of Analyses".

TSS-MAN-WR Water Total Suspended Solids by Gravimetric APHA 2540 D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids are determined by filtering a sample through a glass fibre filter and drying the filter at 104 degrees celsius.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WR	ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1 2 3

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour 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.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1642735-COFC

COC Number: 14 -

Page 1 of 5

Report To		Report Format / Distri	Turnaround Time (TAT) is not available for all tests
Company:	EDI	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Meghan Marjanovic	Quality Control (QC) Report with Report ☐ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	2195 - 2nd Avenue Whitehorse, YT Y1A 3T8	☐ Criteria on Report - provide details below if box checked	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-393-4882	Email 1 or Fax mmarjanovic@edynamics.com	Specify Date Required for E2,E or P:
		Email 2 Emilie.Hamm@gov.yk.ca	
		Email 3 erik.pit@gov.yk.ca	

Invoice To	Same as Report To ☑ Yes ☑ No	Invoice Distribution	
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:	EDI	Email 1 or Fax sjenner@edynamics.com	
Contact:	S Jenner	Email 2 mmarjanovic@edynamics.com	
Project Information		**Oil and Gas Required Fields (client use)**	
ALS Quote #:	Q49310	Approver ID:	Cost Center:
Job #:	MOUNT NANSEN 15-Y-0146	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact: Sean Slugget	Sampler: LD/DH

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)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ALK-PCT-VA,EC-PCT-VA,PH-PCT-VA	ANIONS-ALL-IC-WR,TSS-MAN-WR	CN-WAD-CFA-VA,CN-T-CFA-VA	CN-CNO-WT	CN-SCN-VA	NH3-F-VA	MET-T-BCMDG-VA	MET-D-BCMDG-VA	IONBALANC-VA, TDS-CALC-VA					Number of Containers
							P	P	P	P	P	F/P						
	WQ-VC-U	13 - June -15	18:00	Water	R	R	R	R	R	R	R	R	R					9
	WQ-VC-R	13 - June -15	13:00	Water	R	R	R	R	R	R	R	R	R					9
	WQ-DC-R	13 - June -15	16:00	Water	R	R	R	R	R	R	R	R	R					9
	WQ-VC-DBC	13 - June -15	17:45	Water	R	R	R	R	R	R	R	R	R					9
	WQ-VC-UMN	13 - June -15	14:45	Water	R	R	R	R	R	R	R	R	R					9
	WQ-VC-UMN-V	13 - June -15	14:50	Water	R	R	R	R	R	R	R	R	R					9
	Field Blank	14 - June -15	10:15	Water	R	R	R	R	R	R	R	R	R					9

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ Yes ☐ No

Are samples for human drinking water use?
☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice packs ☐ Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
2.1	4.1	3.5			

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:
	15 Jun 2015	12:18		15 JUN	12:46			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1642735-COFC

COC Number: 14 -

Page 2 of 5

Report To		Report Format / Distribution	Turnaround Time (TAT) (Rush Turnaround Time (TAT) is not available for all tests)
Company:	EDI	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Meghan Marjanovic	Quality Control (QC) Report with Report ☐ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	2195 - 2nd Avenue Whitehorse, YT Y1A 3T8	☐ Criteria on Report - provide details below if box checked Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-393-4882	Email 1 or Fax mmarjanovic@edynamics.com	Specify Date Required for E2, E or P:
		Email 2 Emilie.Hamm@gov.yk.ca	
		Email 3 erik.pit@gov.yk.ca	

Invoice To	Same as Report To ☑ Yes ☑ No	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:	EDI	Email 1 or Fax sjenner@edynamics.com	
Contact:	S Jenner	Email 2 mmarjanovic@edynamics.com	
Project Information		**Oil and Gas Required Fields (client use)**	
ALS Quote #:	Q49310	Approver ID: / Cost Center:	
Job #:	MOUNT NANSEN 15-Y-0146	GL Account: / Routing Code:	
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact: Sean Slugget	Sampler: LD/DH

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	ALK-PCT-VA,EC-PCT-VA,PH-PCT-VA	ANIONS-ALL-IC-WR,TSS-MAN-WR	CN-WAD-CFA-VA,CN-T-CFA-VA	CN-CNO-WT	CN-SCN-VA	NH3-F-VA	MET-T-BCMDG-VA	MET-D-BCMDG-VA	IONBALANC-VA, TDS-CALC-VA	Number of Containers
							P	P	P	P	P	F/P		
	WQ-SEEP	14-June-15	09:00	Water	R	R	R	R	R	R	R	R	R	9
	WQ-TP	14-June-15	09:25	Water	R	R	R	R	R	R	R	R	R	9
	WQ-DC-DX	14-June-15	16:10	Water	R	R	R	R	R	R	R	R	R	9
	WQ-MS-5-03	14-June-15	15:40	Water	R	R	R	R	R	R	R	R	R	9
	WQ-DC-D16	14-June-15	15:00	Water	R	R	R	R	R	R	R	R	R	9
	WQ-DC-B	14-June-15	09:45	Water	R	R	R	R	R	R	R	R	R	9
	WQ-DC-11	14-June-15	08:35	Water	R	R	R	R	R	R	R	R	R	9

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☐ No

Are samples for human drinking water use? ☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ 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:
	15/Jul/2015	12:18						

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1642735-COFC

COC Number: 14 -

Page 3 of 5

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	EDI	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Meghan Marjanovic	Quality Control (QC) Report with Report ☐ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	2195 - 2nd Avenue Whitehorse, YT Y1A 3T8	☐ Criteria on Report - provide details below if box checked	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-393-4882	Email 1 or Fax mmarjanovic@edynamics.com	Specify Date Required for E2,E or P:
		Email 2 Emilie.Hamm@gov.yk.ca	
		Email 3 erik.pit@gov.yk.ca	

Invoice To	Same as Report To ☑ Yes ☑ No	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:	EDI	Email 1 or Fax sjenner@edynamics.com	
Contact:	S Jenner	Email 2 mmarjanovic@edynamics.com	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q49310	Approver ID:	Cost Center:
Job #:	MOUNT NANSEN 15-Y-0146	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: Sean Slugget Sampler: LD/DH

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	ALK-PCT-VA,EC-PCT-VA,PH-PCT-VA	ANIONS-ALL-IC-WR,TSS-MAN-WR	CN-WAD-CFA-VA,CN-T-CFA -VA	CN-CNO-WT	CN-SCN-VA	NH3-F-VA	MET-T-BCMDG-VA	MET-D-BCMDG-VA	IONBALANC-VA, TDS-CALC-VA					Number of Containers
							P	P	P	P	P	F/P						
	WQ-CH-P-13-01	14 - June -15	11:10	Water	R	R	R	R	R	R	R	R	R					9
	WQ-DC-B-V	14 - June -15	09:55	Water	R	R	R	R	R	R	R	R	R					9
	Trip Blank	~~- June -15~~		Water	R	R	R	R	R	R	R	R	R					9
		- June -15		Water	R	R	R	R	R	R	R	R	R					9
		- June -15		Water	R	R	R	R	R	R	R	R	R					9
		- June -15		Water	R	R	R	R	R	R	R	R	R					9
		- June -15		Water	R	R	R	R	R	R	R	R	R					9

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ 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:
	15 JUL 2015	12:16						

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ENVIRONMENTAL DYNAMICS INC.
ATTN: Meghan Marjanovic
2195 - 2nd Ave
Whitehorse YT Y1A 3A2

Date Received: 15-JUL-15
Report Date: 24-JUL-15 15:42 (MT)
Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1642738

Project P.O. #: NOT SUBMITTED
Job Reference: MOUNT NANSEN 15-Y-0146
C of C Numbers: 1
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1642738-1	L1642738-2	L1642738-3	L1642738-4	
	Description	Water	Water	Water	Water	
	Sampled Date	14-JUL-15	14-JUL-15	14-JUL-15	14-JUL-15	
	Sampled Time	13:40	13:45	14:00	11:40	
	Client ID	WQ-PIT-1 (TOP)	WQ-PIT-2 (MIDDLE) (1.5M)	WQ-PIT-3 (BOTTOM) (3.0M)	WQ-PW	
Grouping	**Analyte**					
WATER						
Physical Tests	Colour, True (CU)				<5.0	
	Conductivity (uS/cm)	1560	1560	1590	353	
	Hardness (as CaCO3) (mg/L)	948	955	955	184	
	pH (pH)	8.21	8.22	8.19	8.22	
	Total Suspended Solids (mg/L)	<3.0	<3.0	<3.0		
	Total Dissolved Solids (mg/L)	1240	1270	1280	209	
	Turbidity (NTU)				<0.10	
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	152	150	152		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	152	150	152	181	
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050		
	Chloride (Cl) (mg/L)	<1.0 DLA	<2.5 DLA	<2.5 DLA	<0.50	
	Fluoride (F) (mg/L)	0.264	0.41	0.34	0.103	
	Nitrate (as N) (mg/L)	0.033	<0.025 DLA	<0.025 DLA	0.137	
	Nitrite (as N) (mg/L)	<0.0020 DLA	<0.0050 DLA	<0.0050 DLA	<0.0010	
	Sulfate (SO4) (mg/L)	801	831	842	32.2	
	Anion Sum (meq/L)	19.7	20.3	20.6	4.31	
	Cation Sum (meq/L)	19.5	19.6	19.6	3.91	
	Cation - Anion Balance (%)	-0.7	-1.8	-2.5	-4.8	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0136	0.0133	0.0110	<0.010	
	Antimony (Sb)-Total (mg/L)	0.00330	0.00322	0.00333	<0.00050	
	Arsenic (As)-Total (mg/L)	0.0105	0.00994	0.0107	0.00040	
	Barium (Ba)-Total (mg/L)	0.0155	0.0153	0.0156	0.084	
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020		
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.10	
	Cadmium (Cd)-Total (mg/L)	0.00156	0.00149	0.00158	<0.00020	
	Calcium (Ca)-Total (mg/L)	268	261	267	42.6	
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.0020	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Copper (Cu)-Total (mg/L)	0.00167	0.00162	0.00181	<0.0010	
	Iron (Fe)-Total (mg/L)	0.023	0.022	0.024	<0.030	
	Lead (Pb)-Total (mg/L)	0.000384	0.000340	0.000396	0.00058	
	Lithium (Li)-Total (mg/L)	0.0079	0.0075	0.0068		
	Magnesium (Mg)-Total (mg/L)	74.4	72.8	75.8	18.9	
	Manganese (Mn)-Total (mg/L)	0.0216	0.0219	0.0279	<0.0020	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1642738-1	L1642738-2	L1642738-3	L1642738-4	
Description	Water	Water	Water	Water	
Sampled Date	14-JUL-15	14-JUL-15	14-JUL-15	14-JUL-15	
Sampled Time	13:40	13:45	14:00	11:40	
Client ID	WQ-PIT-1 (TOP)	WQ-PIT-2 (MIDDLE) (1.5M)	WQ-PIT-3 (BOTTOM) (3.0M)	WQ-PW	
Grouping	**Analyte**				
WATER					
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.00020
	Molybdenum (Mo)-Total (mg/L)	0.000192	0.000176	0.000166	
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	
	Potassium (K)-Total (mg/L)	3.36	3.24	3.37	0.89
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.0010
	Silicon (Si)-Total (mg/L)	2.99	2.91	2.98	
	Silver (Ag)-Total (mg/L)	0.000012	0.000012	0.000013	
	Sodium (Na)-Total (mg/L)	10.7	10.6	10.2	4.8
	Strontium (Sr)-Total (mg/L)	0.938	0.937	0.937	
	Sulfur (S)-Total (mg/L)	262	257	266	
	Thallium (Tl)-Total (mg/L)	0.000073	0.000070	0.000073	
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	
	Uranium (U)-Total (mg/L)	0.00390	0.00385	0.00398	0.00178
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Total (mg/L)	0.149	0.146	0.159	<0.050
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0021	0.0021	0.0022	
	Antimony (Sb)-Dissolved (mg/L)	0.00318	0.00318	0.00330	
	Arsenic (As)-Dissolved (mg/L)	0.00984	0.0101	0.0101	
	Barium (Ba)-Dissolved (mg/L)	0.0151	0.0157	0.0156	
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.00145	0.00149	0.00152	
	Calcium (Ca)-Dissolved (mg/L)	260	261	260	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	0.00139	0.00141	0.00137	
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	0.000052	0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0067	0.0069	0.0061	
	Magnesium (Mg)-Dissolved (mg/L)	72.2	73.8	74.4	
	Manganese (Mn)-Dissolved (mg/L)	0.0198	0.0193	0.0231	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1642738-1	L1642738-2	L1642738-3	L1642738-4	
Description	Water	Water	Water	Water	
Sampled Date	14-JUL-15	14-JUL-15	14-JUL-15	14-JUL-15	
Sampled Time	13:40	13:45	14:00	11:40	
Client ID	WQ-PIT-1 (TOP)	WQ-PIT-2 (MIDDLE) (1.5M)	WQ-PIT-3 (BOTTOM) (3.0M)	WQ-PW	
Grouping / **Analyte**					
WATER					
Dissolved Metals Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050		
Molybdenum (Mo)-Dissolved (mg/L)	0.000154	0.000152	0.000151		
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050		
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050		
Potassium (K)-Dissolved (mg/L)	3.20	3.24	3.21		
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		
Silicon (Si)-Dissolved (mg/L)	2.86	2.92	2.83		
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
Sodium (Na)-Dissolved (mg/L)	10.3	9.49	9.57		
Strontium (Sr)-Dissolved (mg/L)	0.898	0.916	0.902		
Sulfur (S)-Dissolved (mg/L)	253	256	254		
Thallium (Tl)-Dissolved (mg/L)	0.000068	0.000070	0.000072		
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030		
Uranium (U)-Dissolved (mg/L)	0.00373	0.00376	0.00375		
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050		
Zinc (Zn)-Dissolved (mg/L)	0.146	0.146	0.153		
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Chromium (Cr)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Cobalt (Co)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Lead (Pb)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Nickel (Ni)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Silver (Ag)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Tin (Sn)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Vanadium (V)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Zirconium (Zr)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Cadmium (Cd)-Dissolved	DLM	L1642738-1, -2, -3
Matrix Spike	Sulfate (SO4)	MS-B	L1642738-1, -2, -3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Barium (Ba)-Total	MS-B	L1642738-3
Matrix Spike	Strontium (Sr)-Total	MS-B	L1642738-3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Boron (B)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	EPA 310.2

Reference Information

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ALK-TITR-VA Water Alkalinity Species by Titration APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". 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.

BE-D-L-CCMS-VA Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BE-T-L-CCMS-VA Water Total Be (Low) in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

CL-IC-N-WR Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

COLOUR-TRUE-VA Water Colour (True) by Spectrometer BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method.
Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

F-IC-N-WR Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-TOT-CVAFS-VA Water Total Hg in Water by CVAFS LOR=50ppt EPA 1631E (mod)

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

IONBALANCE-VA Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-DIS-LOW-ICP-VA Water Dissolved Metals in Water by ICPOES EPA 3005A/6010B

Reference Information

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-TOT-LOW-ICP-VA Water Total Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-WR Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WR Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

S-DIS-ICP-VA Water Dissolved Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

S-TOT-ICP-VA Water Total Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Reference Information

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

SO4-IC-N-WR	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-CALC-VA	Water	TDS (Calculated)	APHA 1030E (20TH EDITION)

This analysis is carried out using procedures adapted from APHA 1030E "Checking Correctness of Analyses".

TSS-MAN-WR	Water	Total Suspended Solids by Gravimetric	APHA 2540 D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids are determined by filtering a sample through a glass fibre filter and drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WR	ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour 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.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1642738-COFC

COC Number: 14 -

Page 4 of 5

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	EDI	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Meghan Marjanovic	Quality Control (QC) Report with Report ☐ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	2195 - 2nd Avenue Whitehorse, YT Y1A 3T8	☐ Criteria on Report - provide details below if box checked Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-393-4882	Email 1 or Fax mmarjanovic@edynamics.com	Specify Date Required for E2,E or P:
		Email 2 Emilie.Hamm@gov.yk.ca	
		Email 3 erik.pit@gov.yk.ca	

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:	EDI	Email 1 or Fax sjenner@edynamics.com	
Contact:	S Jenner	Email 2 mmarjanovic@edynamics.com	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q49311 and Q49312	Approver ID:	Cost Center:
Job #:	MOUNT NANSEN 15-Y-0146	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact: Sean Sluggett	Sampler: LD/DH

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	ALK-PCT-VA,PH-PCT-VA,EC-PCT-VA	ANIONS-ALL-IC-WR,TSS-MAN-WR	NH3-F-VA (P)	MET-T-BCMDG-VA (P)	MET-D-BCMDG-VA (F/P)	TDS-CALC-VA,IONBLANCE-VA		FULL-TOT-DW-WR					Number of Containers
	WQ-Pit-1 (Top)	14 - June - 15	13:40	Water	R	R	R	R	R	R							6
	WQ-Pit-2 (Middle) (1.5m)	14 - June - 15	13:45	Water	R	R	R	R	R	R							6
	WQ-Pit-3 (Bottom) (3.0m)	14 - June - 15	14:00	Water	R	R	R	R	R	R							6
	WQ-PW	14 - June - 15	11:40	Water								R					3

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice packs ☐ Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
2					

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:
	15 Jul 2015	12:16		15 Jul 15	12:16			

ENVIRONMENTAL DYNAMICS INC.
ATTN: Meghan Marjanovic
2195 - 2nd Ave
Whitehorse YT Y1A 3T8

Date Received: 15-JUL-15
Report Date: 27-JUL-15 14:05 (MT)
Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1642758

Project P.O. #: NOT SUBMITTED
Job Reference: MOUNT NANSEN 15-Y-0146
C of C Numbers: 1
Legal Site Desc:

Comments: Please note ALS identified sample L1642758-1 was sublet to Nautilus Environmental for 96 hour LC50 Rainbow Trout analysis.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID					
Grouping **Analyte**					

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

1

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour 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.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Nautilus Environmental

ALS Environmental
ATTN: Can Dang
Suite 100-8081 Lougheed Hwy.
Burnaby, BC
V5A 1W9

Report Date: July 24, 2015
Work Order: 15535

Data Report

Species: **Rainbow trout (*Oncorhynchus mykiss*)**
Protocol: **EPS 1/RM/13 (Second Ed. with 2007 amendments)**

Table 1. Results for the 96-h rainbow trout acute toxicity test.

Sample ID	Collection Date and Time	96-h LC50
L1642758-1 WQ-SEEP	July 15, 2015 @ N/A	>100

The test met performance criteria and there were no deviations from the test method. The results presented here relate only to the sample tested.

Josh Baker, M.Sc.
Environmental Chemist

Reviewed By:
Edmund Canaria, R.P.Bio
Senior Reviewer

Rainbow Trout Summary Sheet

Client: ALS

Start Date/Time: July 17/15 @ 0900h

Work Order No.: 155355

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: L1642758-1 WQ-SEEP
Sample Date: July 15/15
Date Received: July 17/15 6/15
Sample Volume: 2x20L
Other: -

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 10
Alkalinity (mg/L $CaCO_3$): 8

Test Organism Information:

Batch No.: 061515
Source: Aqua Farms
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.31
Mean Length ± SD (mm): 34 ± 2
Range: ~~32-36~~ 31-39
Mean Weight ± SD (g): 0.37 ± 0.07
Range: ~~0.30 - 0.44~~ 0.28-0.51

~~NaNO2~~ Zn Reference Toxicant Results:

Reference Toxicant ID: RTZn14
Stock Solution ID: 1SZn04
Date Initiated: July 14/15
96-h LC50 (95% CL): 100.3 (71.6 - 149.9) µg/L Zn

Reference Toxicant Mean and Historical Range: 66.1 (42.9 - 101.7) µg/L Zn
Reference Toxicant CV (%): 24.1

Test Results: The 96-h LC50 is >100%

Reviewed by: [signature]

Date reviewed: July 23/15

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: AGS
Sample I.D. L1642758-1WQ - SEEP
W.O. # 15535
RBT Batch #: 061515
Date Collected/Time: July 15/15 @ N/A
Date Setup/Time: July 17/15 @ 0900h
Sample Setup By: JAB / KL

D.O. meter: DO-1/2
pH meter: pH-1
Cond. Meter: C-1/2

Number Fish/Volume: 10/12 L
7-d % Mortality: 0%
Total Pre-aeration Time (mins): 30
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	14.5		14.5
pH	6.9		7.2
D.O. (mg/L)	9.3		10.1
Cond. (µS/cm)	1634		1631

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Control				10	10	10	10	14.0	15.0	15.0	15.0	15.0	9.9	9.9	9.7	9.6	9.9	7.0	6.9	7.0	6.8	7.0	34	37
6.25				10	10	10	10	14.0	15.0	15.0	15.0	15.0	10.2	10.0	9.6	9.7	9.8	7.2	7.1	7.1	7.0	7.1	198	203
12.5				10	10	10	10	14.0	15.0	15.0	15.0	14.5	10.3	10.1	9.9	9.7	9.6	7.2	7.2	7.3	7.3	7.3	292	295
25				10	10	10	10	14.0	15.0	15.0	15.0	14.5	10.3	10.0	10.0	9.6	9.8	7.1	7.4	7.5	7.8	7.6	558	561
50				10	10	10	10	14.0	15.0	15.0	15.0	15.0	10.3	10.0	10.0	9.7	9.9	7.4	7.5	7.7	8.0	7.8	930	936
100				10	10	10	10	14.5	15.0	15.0	15.0	15.0	10.1	10.0	9.8	9.6	9.8	7.2	7.8	7.8	8.3	8.3	1631	1618
Initials						KL	KL	JAB/KL			KL	KL	JAB/KL			KL	KL	JAB/KL			KL	KL	JAB/KL	KL

WQ Ranges: T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Description/Comments: Orange, cloudy / turbid

Fish Description at 96 h: Fish look okay — Number of Stressed Fish at 96 h: 0

Other Observations:

Reviewed by: [signature] — Date Reviewed: July 23/15

L1642758

VANCOUVER

ALS Environmental

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL
8664 COMMERCE COURT
BURNABY,BC V5A 4N7

NOTES: Please reference on final report and invoice: PO# *L1642758*
ALS requires QC data to be provided with your final results.
Rainbow Trout LC50 - wo # 15535

Please see enclosed 1 **sample(s) in** 2 **Container(s)**

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED / DUE DATE	Priority Flag
L1642758-1 WQ-SEEP		7/15/2015	
	Special Request- Nautilus Environmental (SPECIAL REQUEST-NL 14)	7/22/2015	

Subcontract Info Contact: Dorota Jamro (604) 253-4188

Analysis and reporting info contact: Can Dang
8081 LOUGHEED HWY
SUITE 100
BURNABY,BC V5A 1W9
Phone: (604) 253-4188 Email: can.dang@alsglobal.com

Please email confirmation of receipt to: **can.dang@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: Nautilus Date Received: July 16/15 @ 10:50

Verified By: NY - Nai Yamamoto Date Verified: _____

Temperature: 6.4°C - 2x20L

Sample Integrity Issues: _____

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1642758-COFC

COC Number: 14 -

Page 5 of 5

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	EDI	Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Meghan Marjanovic	Quality Control (QC) Report with Report	☐ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	2195 - 2nd Avenue Whitehorse, YT Y1A 3T8	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-393-4882	Email 1 or Fax	mmarjanovic@edynamics.com	Specify Date Required for E2,E or P:
		Email 2	erik.pit@gov.yk.ca	
		Email 3	Emilie.Hamm@gov.yk.ca	

Invoice To		Invoice Distribution	
	Same as Report To ☑ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report ☑ Yes ☐ No	Email 1 or Fax	sjenner@edynamics.com
Company:	EDI	Email 2	mmarjanovic@edynamics.com
Contact:	S Jenner		

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q49310	Approver ID:	Cost Center:
Job #:	MOUNT NANSEN 15-Y-0146	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: Sean Sluggett

Sampler: LD/DH

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)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Rainbow Trout LC50	Number of Containers
	~~0146-1605~~ - WQ-SEEP	~~May-15~~ 19 Jul 2015	08:00	Water	R	2

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ Yes ☐ No

Are samples for human drinking water use?
☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice packs Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
8.1							

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:
	15 Jul 2015	12:17		16 Jul 15	12:46			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Yukon
Health and Social Services
Santé et Affaires sociales
Environmental Health Services
Service d'hygiène du millieu

BACTERIOLOGICAL ANALYSIS OF DRINKING WATER
ANALYSE BACTÉRIOLOGIQUE DE L'EAU POTABLE

#2 Hospital Road, Whitehorse, Yukon Y1A 3H8
phone : (867) 667-8391 fax : (867) 667-8322
Toll free: 1-800-661-0408 ext.8391

2 Hospital Road, Whitehorse (Yukon) Y1A 3H8
Tél. : 867-667-8391 Téléc. : 867-667-8322
Sans frais au Yukon : 1-800-661-0408, poste 8391

Contact Information · *Coordonnées de la personne ressource*

Contact Person / *Personne ressource*: Meghan Marjanovic
Phone / *Téléphone*: 867-393-4882
Mailing address / *Adresse postale*: 2195 2nd Ave Whitehorse, YT
Fax / *Télécopieur*:
Postal code / *Code postal*: Y1A 3T8
First Nation, Municipal or Business Name / *Nom de la Première nation, de la municipalité ou de l'entreprise*: EDI
Agent / *Agent*:
Fax / *Télécopieur*:

Sampling Location · *Lieu de la prise d'échantillon*

Municipal Address / *Adresse municipale*: Mt. Nansen
Subdivision / *Lotissement*:
Legal Description Lot / *Désignation officielle Lot*:
Quad / *Quadrilatère*:
Plan no. / *Plan n°*:
Other Information (e.g., Location, Business / Building Name) / *Autres renseignements (ex. : emplacement, nom de l'entreprise, nom de l'édifice)*:

Sample Collection / *Prélèvement de l'échantillon*

Sample Collected By / *Échantillon prélevé par*: Lyndsay Doetzel
Date / *Date*: 15/Jul/15 (YY/MM/DD · *AA/MM/JJ*)
Time / *Heure*: 08:00 (am / pm)
Sampling Site (e.g., kitchen tap) / *Point d'échantillonnage (ex. : robinet de cuisine)*: Pumphouse
Is this a Resample from a Previous Test? / *Est-ce un deuxième échantillon d'un test antérieur?*: ☐ Yes / *Oui* ☐ No / *Non*
Previous Sample Number / *Numéro de l'échantillon précédent*:

Sample Supply / *Source d'approvisionnement en eau*

☑ Public Supply / *Municipal – par canalisation*
☐ Bulk Water Distributor / *Municipal – par camion*
☐ Business / *Privé – entreprise*
☐ Private Residence / *Privé – résidence*

Sample Source / *Provenance de l'échantillon*

☐ Dug Well / *Puits creusé*
☐ Driven Well / *Puits tubulaire*
☑ Drilled Well / *Puits foré à la sondeuse*
Depth of Well / *Profondeur du puits*: 3
☐ Water Holding Tank / *Réservoir d'eau*
☐ Other (explain) / *Autre (précisez)*:

Water Treatment / *Traitement de l'eau*

Is the Water Chlorinated? / *L'eau contient-elle du chlore?*: ☐ Yes / *Oui* ☑ No / *Non*
Free Available Chlorine / *Chlore libre disponible*: ppm / *mg/L*
Other Treatment Systems (e.g., UV, softener, filter) / *Autre dispositif de traitement (ex. : désinfection aux rayons UV, adoucisseur d'eau, filtre)*:

For Laboratory Use Only / *À l'usage du laboratoire seulement*

Receipt of Sample / ***Réception de l'échantillon***: Date / *Date*: 15-07-15 (YY/MM/DD · *AA/MM/JJ*) Time / *Heure*: 1200 (am / pm) By / *Par*: SS

Condition of Sample / ***État de l'échantillon***: ☑ Satisfactory / *Satisfaisant* ☐ Unsatisfactory / *Non satisfaisant* Details / *Précisez*: 10.4°C

Incubation / ***Incubation***: Date / *Date*: 15-07-15 (YY/MM/DD · *AA/MM/JJ*) Time / *Heure*: 230 (am / pm) By / *Par*: SS Incubator / *Incubateur*: 4

Analysis Completed / ***Analyse terminée***: Date / *Date*: 15-07-16 (YY/MM/DD · *AA/MM/JJ*) Time / *Heure*: 315 (am / pm) By / *Par*: SS

Results (See Reverse Side for Interpretation) per 100 ml
Résultats (Voir au verso l'interprétation des résultats)

Total Coliforms/*Coliformes totaux*	**E. coli**/*E. coli*
☐ Present / *Présence*	☐ Present / *Présence*
☒ Absent / *Absence*	☒ Absent / *Absence*

Comments / *Commentaires*

Report Authorized By / *Rapport autorisé par*: [signature]
Position / *Poste*: WLT
Date / *Date*: 15-07-16 (YY/MM/DD · *AA/MM/JJ*)

Distribution: / *Distribution :*
White - Chain of Custody / *Blanc - Chaîne de possession*
Yellow - Lab Copy / *Jaune - Laboratoire*
Pink - Client Copy / *Rose - Client*

YG(4649)NC3 Rev.03/2013

Sample Number / ***Numéro de l'échantillon***: 62789