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RGC Project No: 118025

Government of Yukon
Assessment & Abandoned Mines
Energy, Mines & Resources

RE: Tritium Age Dating of Groundwater in the Rose Creek valley, Anvil Range Mining Complex (ARMC), Yukon Territory

This letter report documents the results of the 2013 tritium study of groundwater and surface water in the Rose Creek valley at the Anvil Range Mining Complex (ARMC). It was prepared by Robertson GeoConsultants Inc. (RGC) under RGC Project No. 118025 and is a deliverable under the Yukon Government contract no. C00020318.

1 Impetus & Study Objectives

In 2009, elevated zinc (Zn) concentrations were identified in deep groundwater from the bedrock aquifer beneath the Cross Valley Dam. Of particular interest was 176 ug/L Zn in a sample collected from ~90 m below ground surface (bgs) after a 3.5-hour airlift test. Complications during drilling prevented well installation at this depth so no additional samples have been collected from this depth (see SRK, 2009). However, elevated Zn concentrations (up to 25 ug/L) have been observed in deep groundwater to the north at well P09-C2. This well screens a shallower zone of the bedrock aquifer (from 53.5 to 59.3 m bgs) than was airlifted in 2009 to collect sample P09-C3-BR (see RGC, 2011).

Groundwater from well P09-C2 contains high concentrations of alkalinity, bicarbonate ions, and major cations but low concentrations of dissolved sulphate (SO_4). Moreover, the ratio of SO_4 to Zn and other metals is not typical of groundwater impacted by acid rock drainage (ARD) elsewhere at the ARMC. RGC (2011) postulated that modestly-elevated Zn concentrations at well P09-C2 (and sample P09-C3-BR) may not, therefore, be related to seepage from mine waste. Instead, these concentrations may be naturally-occurring in groundwater from a deep, regional flow system in the Rose Creek valley. The geochemical characteristics of groundwater generally support this hypothesis and additional sampling for tritium, a radioactive isotope of hydrogen, was undertaken to provide further confirmation.

Specifically, tritium data were collected in order to constrain the age of groundwater in the Rose Creek valley and thereby differentiate deep, regional groundwater from a shallow groundwater system that has been recharged more recently. A discussion of these data (and supporting water quality data) and some background information on tritium age dating are provided below. Also provided are recommendations for future monitoring.

2 Methods & Approach

2.1 Definitions & Fundamentals of Tritium Age Dating

Hydrogen exists as protium (^{1}H), deuterium (^{2}H), and tritium (^{3}H). ^{1}H and ^{2}H are stable isotopes of hydrogen and together comprise over 99.99% of the naturally-occurring hydrogen on Earth. ^{3}H is a radioactive isotope of hydrogen that decays to helium-3 with a half-life of ~12.4 years (Lucas and Unterwerger, 2000). ^{3}H concentrations are expressed by convention in Tritium Units (TU), where one TU is defined as the presence of a single ^{3}H atom per 10^{18} ^{1}H atoms.

Small amounts of ^{3}H are produced naturally in the Earth's crust by alpha decay of lithium-7 and in the atmosphere by cosmic ray bombardment of nitrogen (Clark and Fritz, 1997). Naturally-occurring ^{3}H is, therefore, extremely rare and most ^{3}H in the Earth's atmosphere was produced during nuclear bomb testing in the 1950s. During this period, ~1.13 billion TU were released to the Northern Hemisphere and subsequently incorporated into atmospheric moisture and the hydrologic cycle. ^{3}H concentrations in precipitation reached maximum levels in 1963 and have since decreased due to the cessation of this type of nuclear testing (see Figure 1).

^{3}H concentrations in groundwater reflect atmospheric levels when the water was last in contact with the atmosphere (as precipitation). Consequently, ^{3}H can be used to constrain the timing of groundwater recharge by determining whether or not groundwater contains appreciable amounts of ‘bomb tritium’. Age estimation is semi-quantitative but the following guidelines apply:

- < 0.8 TU: no ‘bomb tritium’ (recharge occurred prior to the 1950s)
- 5 to 12 TU: current ^{3}H levels (recharge within the last 20 years)
- 12 to 24 TU: some ‘bomb tritium’ (recharge likely occurred 20 to 40 years ago)
- >24 TU: considerable ‘bomb tritium’ (recharge occurred in the 1960s and 1970s)

These guidelines enable older groundwater in deeper, regional flow systems to be differentiated from shallow groundwater that has been recharged relatively recently.

2.2 Sampling locations

In August and September 2013, 26 water samples (and 4 duplicates) were collected from a selection of groundwater monitoring wells and surface water monitoring stations in the Rose Creek valley (see Figure 2). Samples for tritium analysis were collected by CH2M-Hill personnel in conjunction with routine groundwater monitoring and analyzed at the University of Waterloo (see Section 2.3).

2.2.1 Seepage at X23

Seepage from the Main WRD at X23 is acidic and characterized by high concentrations of Zn and other metals (see RGC, 2013). This seepage is often referred to as ‘Faro Creek seepage’ (or FCS) after it has mixed to some extent with tailings porewater from the nearby Emergency Tailings Area (ETA). FCS reports to the Rose Creek alluvial aquifer (RCAA) via groundwater in Faro Creek canyon. FCS loads account for higher SO_4 and metals concentrations in the RCAA along the northern side of the Rose Creek valley than along the southern side (RGC, 2009; 2013).

2.2.2 Groundwater

Depths, screened intervals, and screened lithologies for the wells sampled in these reaches are summarized in Table 1. Most of the wells are screened in permeable, unconsolidated sediments that comprise the RCAA. The thickness of the RCAA reaches 50-m in some areas and it is primarily underlain by bedrock (or till). Groundwater from the RCAA is variably-impacted by ARD products that originate from tailings and other mine waste upgradient. Groundwater is particularly impacted along the northern side of the valley due to FCS loads from Faro Creek canyon (see RGC, 2010 for additional details).

Wells P09-C1, P09-C2, and CH12-204-MW001B are screened in the bedrock aquifer beneath the RCAA. These wells screen relatively competent, un-weathered phyllite that is typically fractured to some extent. Well P09-C1 screens a fractured zone of the aquifer that is characterized by a hydraulic conductivity (K) of $2x10^{-4}$ m/s (SRK, 2009). Well P09-C2, on the other hand, screens a less permeable zone that is characterized by a K of $6x10^{-8}$ m/s. Bedrock permeability towards the southern side of the valley (near well P09-C3) is comparable to bedrock screened by well P09-C2. Complications during drilling prevented well installation in the bedrock aquifer at this location. Instead, a well (P09-C3) was screened in the deep RCAA (see Table 1).

A sample of groundwater from the bedrock aquifer beneath well P09-C3 was collected by SRK during drilling (and is characterized by elevated Zn) (SRK, 2009). This sample is referred to as ‘P09-C3-BR’ in Table 2 of this report and was collected from a fractured zone of the bedrock aquifer (from 85 to 93 m bgs) at the end of a 3.5-hour airlift test (see SRK, 2009). The K inferred from the airlift test was $2x10^{-6}$ m/s or about an order-of-magnitude higher than K for shallower bedrock at this location. A sample collected at the end of this airlift test contained 176 ug/L of dissolved Zn that could not be explained by cross-contamination (as shallow groundwater from the RCAA above is unimpacted by ARD) (see SRK, 2009).

2.2.3 Seepage & surface water downstream of Cross Valley Dam

Samples from the toe drains along the Cross Valley Dam at X11 and X12 were collected for the purpose of this study. X11 is located near the northern abutment of the Cross Valley Dam and is typified by higher flows and poorer water quality than seepage at X12 (RGC, 2006). According to RGC (2011), seepage at X11 is most likely sustained by the discharge of FCS-impacted groundwater that typifies the northern side of the valley. Seepage at X12, on the other hand, likely represents the surface expression of less-impacted groundwater from the southern side of the valley. This groundwater is impacted mainly by tailings porewater and possibly diluted to some extent by water from the Rose Creek diversion channel.

Further downstream, surface water was collected from the Rose Creek diversion channel at X10 and from Rose Creek at X14. X14 is the surface water monitoring station located furthest downstream in the Rose Creek valley (see Figure 2). Samples from these stations are typically characterized by elevated levels of SO_4 and some dissolved metals, such as Zn (see RGC, 2006).

2.3 Analytical procedures

An additional 500 mL water sample for tritium analysis was collected by CH2M-Hill during the August/September 2013 sampling campaign. These samples were sent to the University of Waterloo Environmental Isotope Laboratory (uwEILAB) where their ^{3}H content was determined by liquid scintillation counting after electrolytic enrichment. The detection limit for this procedure is 0.8 TU and the precision of ^{3}H measurements is 0.5 TU.

3 Results

Water quality data and ^{3}H concentrations are provided in Table 2. Also provided are data for samples collected in 2009 from wells P09-C1 and P09-C2 (and sample P09-C3-BR). Water quality data are generally consistent with previously-collected data and key trends in the valley were observed (see RGC, 2013). Namely, groundwater along the northern side of the Rose Creek valley tends to be more impacted than groundwater along the southern side of the valley (see Figure 3). As in 2009, groundwater collected from well P09-C2 in 2013 is characterized by high concentrations of alkalinity and major ions. Zn concentrations were less than the 2 ug/L detection limit.

^{3}H concentrations ranged from less than 0.8 TU in groundwater from well P09-C2 to 13.4 TU in seepage from the Main WRD at X23 (see Table 2). Aside from well P09-C2 (and CH12-204-001B), ^{3}H concentrations in the groundwater typically contained 5 to 10 TU and no appreciable differences were observed within the different reaches of the Rose Creek valley. ^{3}H concentrations in surface water from Rose Creek at X14 and the Rose

Creek diversion channel at X10 and the toe drains along the Cross Valley Dam were slightly higher than in groundwater but still less than 10 TU (see Table 2).

4 Discussion

4.1 Recharge to the Main WRD

Seepage from the Main WRD at X23 contains 13.4 TU of ^3H. This ^3H concentration reflects the presence of substantial 'bomb tritium' in waste rock seepage and implies that the majority of the water sampled in August 2013 was last in contact with the atmosphere 30 to 40 years ago.

The Main WRD is known to be periodically 'flushed' during high rainfall periods. The last significant 'flushing' event occurred in June 2009 and caused an abrupt increase in SO_4 and Zn concentrations in seepage at X23 (RGC, 2013). These increases suggest the flushing of stored oxidation products during wet periods. The predominance of 'old' water in the seepage sample collected in August 2013 may reflect a large contribution of stored water during this low-flow (or baseflow) period.

High ^3H concentrations could also reflect some evaporative enrichment of residual waters in ^3H due to high temperatures within the Main WRD. Additional sampling for ^3H would be needed to further constrain the timing of recharge to the Main WRD and determine whether fractionation during evaporation affects the ^3H content of seepage/porewater. Sampling the wells recently installed beneath the Main WRD or those screened in waste rock elsewhere at the site would be particularly informative.

4.2 Groundwater systems in Rose Creek valley

According to RGC (2011), elevated Zn concentrations in groundwater from well P09-C2 and in sample P09-C3-BR are likely related to the natural leaching of Zn-bearing minerals in the bedrock aquifer. This is well-supported by the available water quality data and is consistent with the timing of contaminant breakthrough at the ARMC (i.e. Zn breaks through long after SO_4) (see RGC, 2011 for additional details).

Accordingly, groundwater from well P09-C2 is thought to be representative of a deep, regional flow system in the bedrock aquifer of the Rose Creek valley. This is consistent with a very low ^{3}H concentration at well P09-C2 (<0.8 TU) that is indicative of an absence of ‘bomb tritium’ in groundwater (and hence recharge prior to the 1953). In other words, water collected from well P09-C2 contains only natural ^{3}H and was, therefore, last in contact with the atmosphere before thermonuclear testing began.

Other groundwater samples are characterized by higher ^{3}H concentrations that are representative of ‘modern’ atmospheric ^{3}H levels. This suggests groundwater recharge by precipitation within the last 20 to 30 years. Groundwater from well CH12-204-001B is characterized by a ^{3}H concentration of 2.9 TU (see Figure 4). This well is screened to 44 m bgs in the bedrock aquifer and contained 77 ug/L Zn (and 5 mg/L SO_4) when first sampled in July 2012. Groundwater at this location appears to be a mixture of groundwater from a system that has been recently recharged and groundwater from a system that was recharged prior to 1953.

These observations suggest that the bedrock aquifer in the Rose Creek valley features two groundwater systems:

- A deeper, slow-moving regional flow system that was recharged at least 60 years ago; this groundwater system is characterized by the very low ^{3}H concentration (<0.8 TU) observed at well P09-C2; and
- A shallower flow system that has been recharged within the last 10 to 20 years; groundwater from this system contains 5 to 10 TU of ^{3}H and is typified by groundwater from well P09-C1 (which contains 6.3 TU).

Groundwater in the shallower flow system is variably-impacted by ARD from mine waste seepage. The majority of this groundwater could likely be intercepted in order to prevent contaminant loads from reaching areas downstream of the Cross Valley Dam. Small, additional loads of Zn and other metals are likely delivered to these areas via deep groundwater flowing beneath the Cross Valley Dam. Zn and other metals in this deep groundwater system appear to be naturally-occurring and interception would not be necessary (or likely feasible). Additional monitoring wells screened in the deep bedrock aquifer (i.e. > 80 m bgs) would be needed to confirm the elevated Zn concentrations at greater depths in the bedrock aquifer. Installation of these wells is not recommended unless a drill rig is mobilized to this area for another program.

5 Conclusions & Recommendations

In 2009, elevated levels of dissolved Zn were identified in deep groundwater collected from the bedrock aquifer beneath the Cross Valley Dam. Water quality data suggest that these elevated Zn levels could be naturally-occurring in a deep, regional groundwater system. ^3H data were collected in 2013 in order to provide further confirmation by estimating the age of groundwater in the RCAA and bedrock aquifer in the Rose Creek valley.

^3H data indicate that the Rose Creek valley features a deeper, regional flow system that was recharged at least 60 years ago and a shallower groundwater system that has been recharged within the last 10 to 20 years. Particularly compelling is the very low concentration of ^3H in groundwater from well P09-C2 that indicates the absence of so-called ‘bomb tritium’ (and confirms the presence of two groundwater systems in the valley). Additional sampling is needed to verify the exact Zn concentrations in the deeper groundwater system beneath the Cross Valley Dam because concentrations at P09-C2 still vary considerably between sampling campaigns.

A monitoring well has not been installed in the deep bedrock aquifer beneath the Cross Valley Dam in order to verify the high Zn concentration in sample P09-C3-BR. Should additional characterization work be conducted near the Cross Valley Dam, the installation of a deep well in bedrock (to 90 m bgs) beneath well P09-C3 is recommended. A well screened at this depth would allow elevated Zn concentrations in deep bedrock near the southern side of the Rose Creek valley to be verified and assist in establishing suitable regulatory guidelines for this metal and others during closure planning. Should this well be installed, additional samples could be collected for ^3H in order to further characterize the timing of groundwater recharge in the Rose Creek valley.

Further study of the timing of contaminant breakthrough to groundwater in the Cross Valley Dam Reach is recommended to support ongoing closure plan development. Discussion of this issue was beyond the scope of this study but it is critical to the design of an interception system in this area. Of particular interest would be predictions of when certain contaminants, such as Zn, Co, and Ni, would arrive in the Cross Valley Dam

Reach via groundwater and how groundwater in this area could become increasingly impacted over time. The study would involve a desktop review of previously-collected groundwater quality data in the Rose Creek valley and could be completed by RGC in 2014.

6 Closure

We trust that the information provided in this memo meets your requirements at this time.

Best Regards,

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7 References

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SRK (2009), Faro Mine Complex – 2009 Groundwater Investigations, February 2010.

FIGURES

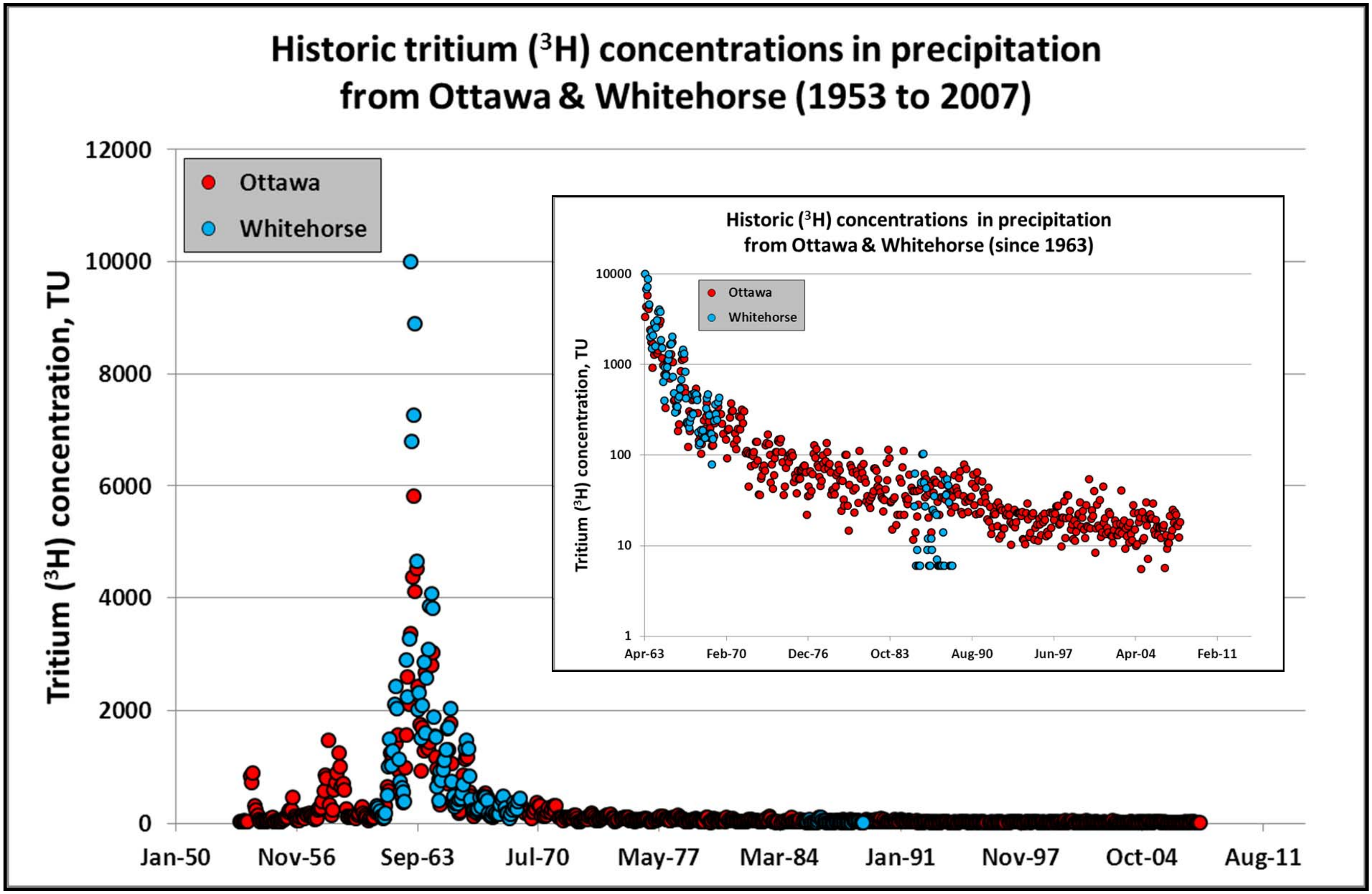


Figure 1. Historic tritium (^{3}H) concentrations in precipitation; ^{3}H concentrations peak in 1963 due to nuclear testing and have since decreased due to radioactive decay; inset illustrates the decrease in ^{3}H concentrations since 1963 (log scale)

Sampling Locations for 2013 Tritium Study
Rose Creek Tailings Facility

Anvil Range Mining Complex

LEGEND

- Monitoring Well (Till)
- Monitoring Well (Bedrock)
- Monitoring Well (RCAA)
- Surface Water Station

SCALE 1:5,000

0 100 200 300 400 Meters

NAD 83 CSRS UTM Zone 8N

Yukon Government

Robertson GeoConsultants Inc.

FIGURE: 2

CLIENT: Yukon Government

PROJECT: TritiumStudy

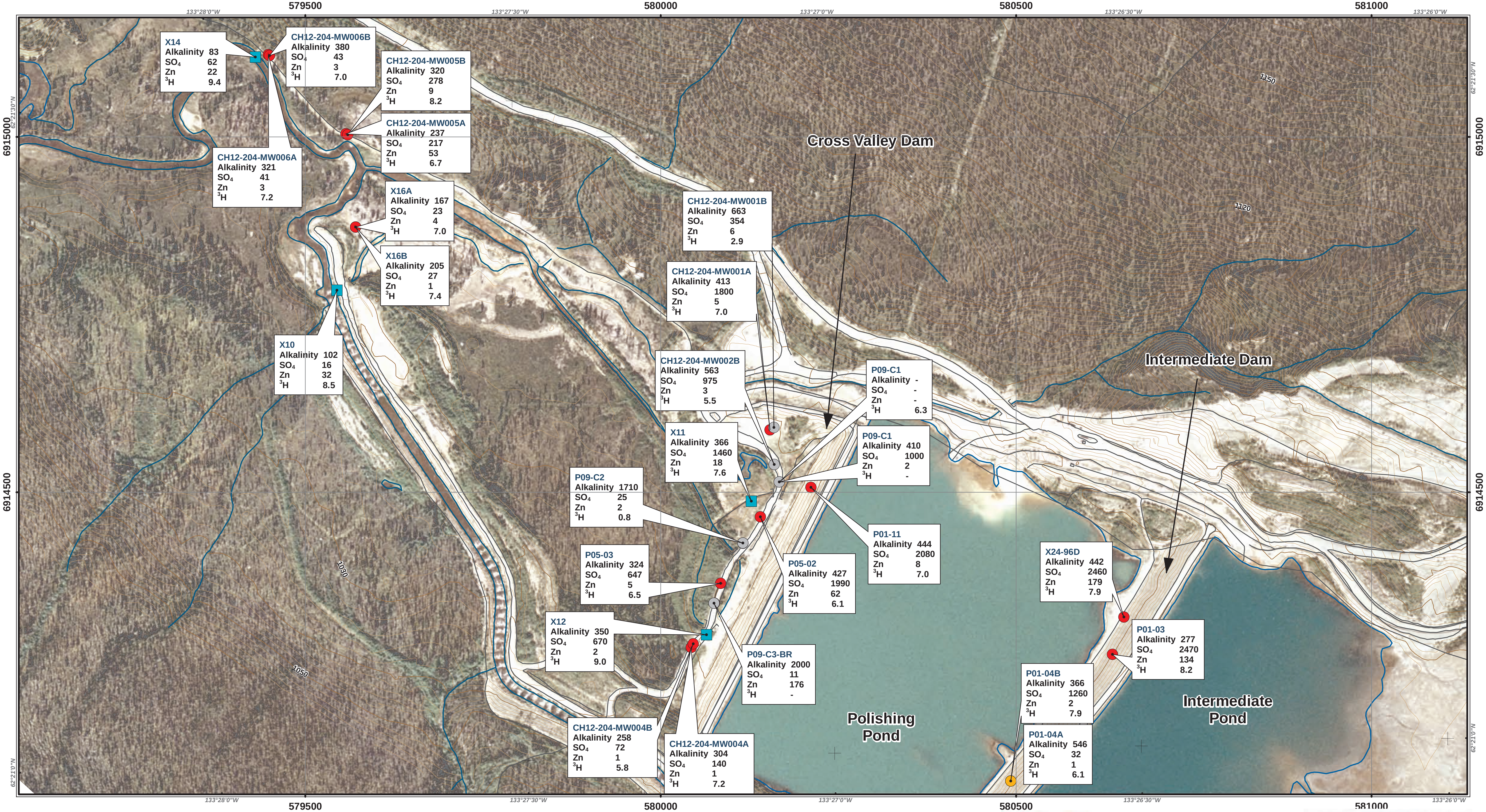
REPORT: RGC 118025

LOCATION: Anvil Range Mining Complex,YT, Canada

DATE: Feb.28, 2014

DRAWN BY: LR

FILE: Faro_Tailing_LocationPlan_Feb28-2014.mxd



Tritium and Selected Water Quality Data
Rose Creek Tailings Facility
Anvil Range Mining Complex

LEGEND

- Monitoring Well (Till)
- Monitoring Well (Deep Bedrock)
- Monitoring Well (Alluvium)
- Surface Water Station

Alkalinity	in mg/L (as CaCO3)
SO_4	in mg/L
Zn	in µg/L
^3H	in TU

SCALE 1:5,000

0 100 200 300 400 Meters

NAD 83 CSRS UTM Zone 8N

Yukon Government

Robertson GeoConsultants Inc.

CLIENT: Yukon Government

PROJECT: Tritium Study

REPORT: RGC 118025

LOCATION: Anvil Range Mining Complex,YT, Canada

FIGURE: 3

DATE: Feb.28, 2014

DRAWN BY: LR

FILE: Faro_Tailing_Sampling_Feb28-2014.mxd

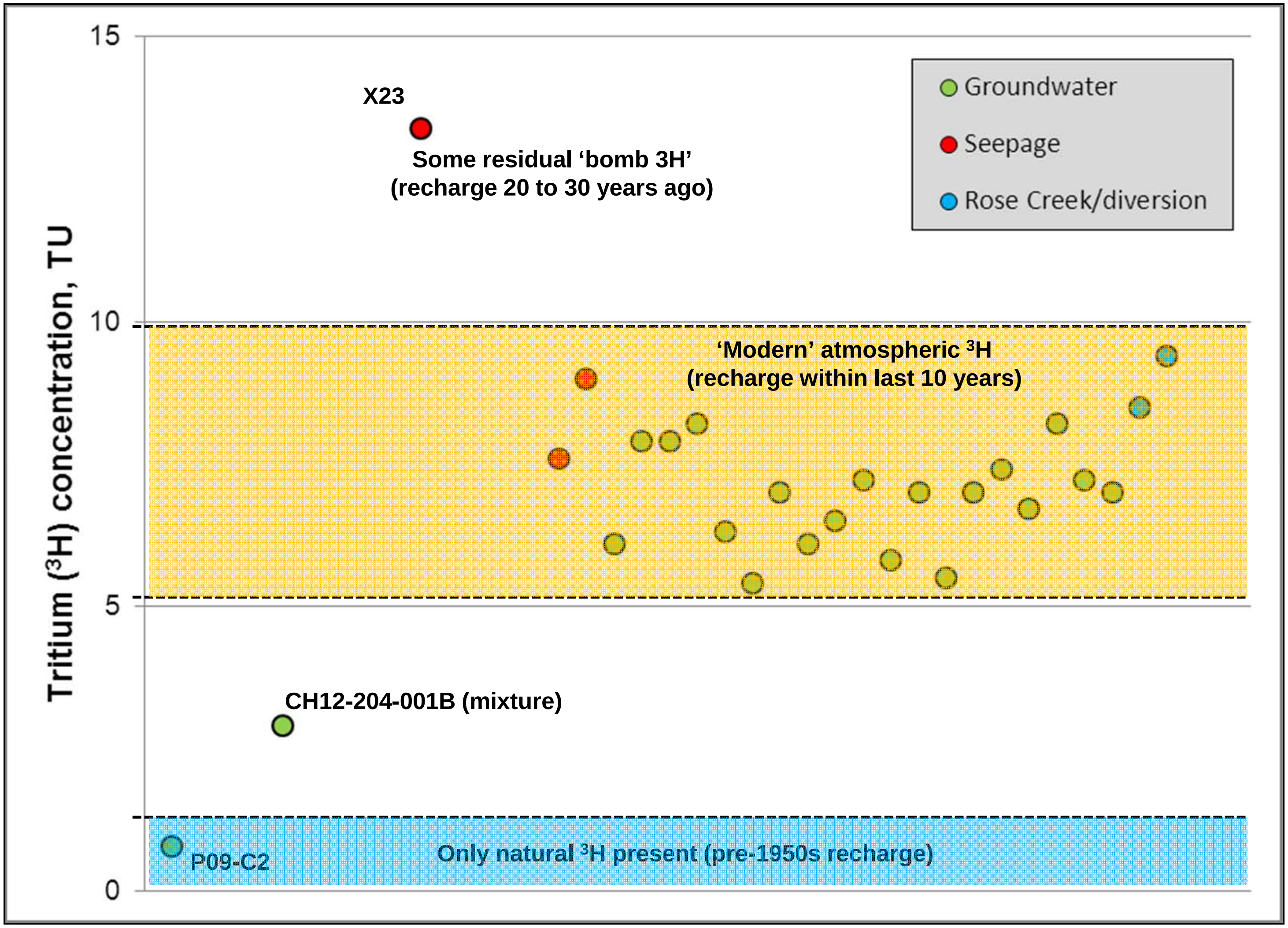


Figure 4. ^{3}H concentrations in groundwater, seepage, and surface water in the Rose Creek valley

TABLES

Table 1. Construction details for wells sampled for the tritium study

Well ID	Year of Construction	Total Depth (m bgs)	Top of Screen (m bgs)	Bottom of Screen (m bgs)	Screened lithology
Intermediate Dam Reach					
X24D-96	1996	28.3	26.8	28.3	RCAA
P01-03	2001	9.3	7.8	9.3	RCAA
P01-04A	2001	34.1	32.5	34.1	RCAA
P01-04B	2001	53.4	51.9	53.4	Till
Cross Valley Dam Reach					
P09-C1	2009	34.0	32.6	34.0	Bedrock
P09-C2	2009	59.3	53.5	59.3	Bedrock
P09-C3	2009	-	-	-	RCAA
P01-11	2001	10.7	9.2	10.7	RCAA
P05-02	2005	5.2	1.8	4.9	RCAA
P05-03	2005	7.6	3.4	7.6	RCAA
CH12-204-MW001A	2012	26.9	6.7	25.0	RCAA
CH12-204-MW001B	2012	50.3	35.1	44.2	Bedrock
CH12-204-MW002B	2012	49.7	35.8	47.0	Bedrock
CH12-204-MW004A	2012	32.9	14.4	30.4	RCAA
CH12-204-MW004B	2012	43.7	37.5	42.8	RCAA/Bedrock
Downstream of Cross Valley Dam					
CH12-204-MW003B	2012	50.6	43.0	49.1	Bedrock
X16A	1981	6.0	3.0	6.0	RCAA
X16B	1981	34.0	20.0	34.0	RCAA
CH12-204-MW005A	2012	2.7	1.2	2.7	RCAA
CH12-204-MW005B	2012	6.1	4.6	6.1	RCAA
CH12-204-MW006A	2012	3.5	2.0	3.5	RCAA
CH12-204-MW006B	2012	6.1	4.6	6.1	RCAA

Table 2. Water quality data for wells and stations in Rose Creek valley

Sample ID	Date	Field pH	Field EC	Lab pH	Alkalinity	SO_4	Ca	Mg	Na	K	Al	As	Cd	Co	Cu	Fe	Mn	Ni	Pb	Zn	^3H	± 1σ
			uS/cm		mg/L CaCO3	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	TU	TU
Seepage																						
X23	7-Aug-13	6.0	8600	5.0	25	10500	484	1350	75	20	120	4	638	2590	76	631000	127000	2660	8	1220000	13.4	1.1
X11	8-Aug-13	6.9	2603	7.8	366	1460	494	105	29	7	3	2	0	37	1	4710	32400	44	0	18	7.6	0.7
X12	8-Aug-13	7.4	1594	8.1	350	670	282	54	17	6	5	0	0	0	0	66	1340	3	0	2	9.0	0.8
Intermediate Dam																						
P01-04A	12-Sep-13	7.5	1050	-	546	32	120	40	62	3	2	0	0	0	0	429	235	1	0	1	6.1	0.6
P01-04B	12-Sep-13	7.5	2330	-	366	1260	459	74	41	5	2	2	0	1	0	12800	7630	3	0	2	7.9	0.7
X24-96D	12-Sep-13	6.8	3690	-	442	2460	684	168	37	7	20	2	5	404	4	1590	106000	556	1	179	7.9	0.7
P01-03	12-Sep-13	6.7	3640	-	277	2470	600	161	30	7	10	1	2	196	2	143000	80400	64	1	134	8.2	0.8
Cross Valley Dam																						
P09-C1	31-Jul-09	-	-	7.7	410	1000	433	95	77	7	11	8	0	0	0	9720	12200	3	0	2	-	-
P09-C1	12-Sep-13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	0.6
P09-C2	2-Aug-09	-	-	7.6	1500	28	207	88	305	10	48	1	0	1	0	3120	167	5	0	8	-	-
P09-C2	12-Sep-13	7.2	2600	-	1710	25	216	102	317	11	15	0	0	0	0	3150	153	1	0	2	0.8	0.3
P09-C3-BR	29-Jun-09	-	-	7.9	2000	11	418	149	315	9	8	0	0	0	0	8530	457	3	0	176	-	-
P09-C3	12-Sep-13	7.6	1170	-	499	174	136	54	53	3	1	1	0	0	0	2310	268	1	0	1	5.4	0.6
P01-11	12-Sep-13	7.2	3280	-	444	2080	661	140	40	8	31	42	0	10	1	71700	39200	22	0	8	7.0	0.6
P05-02	28-Aug-13	7.0	-	-	427	1990	639	142	38	8	22	1	1	16	1	14800	40900	17	0	62	6.1	0.6
P05-03	28-Aug-13	6.9	1586	7.6	324	647	268	60	18	4	7	1	1	3	0	926	10900	4	0	5	6.5	0.6
CH12-204-MW004A	30-Aug-13	7.0	813	8.0	304	140	110	35	5	2	1	3	0	0	0	1690	336	1	0	1	7.2	0.7
CH12-204-MW004B	30-Aug-13	6.0	600	8.0	258	72	75	30	10	2	1	2	0	0	0	1220	108	1	0	1	5.8	0.6
CH12-204-MW001A	28-Aug-13	6.3	-	7.1	413	1800	600	148	46	7	14	1	0	1	1	21000	19100	3	0	5	7.0	0.7
CH12-204-MW001B	28-Aug-13	5.7	1467	7.5	663	354	134	68	140	7	13	0	0	1	0	1420	252	3	0	6	2.9	0.4
CH12-204-MW002B	31-Aug-13	6.5	2571	7.7	563	975	239	119	157	9	3	0	0	1	0	3210	487	1	0	3	5.5	0.6
Downstream of Cross Valley Dam																						
X16A	10-Sep-13	7.2	335	8.0	167	23	54	12	2	1	3	0	0	0	0	30	0	1	0	4	7.0	0.6
X16B	10-Sep-13	7.5	418	8.1	205	27	63	16	2	1	2	0	0	0	0	30	0	1	0	1	7.4	0.7
CH12-204-MW005A	31-Aug-13	6.6	890	7.6	237	217	130	29	7	5	3	0	0	0	3	30	15	2	0	53	6.7	0.6
CH12-204-MW005B	31-Aug-13	7.1	1057	7.9	320	278	160	38	9	4	3	0	0	0	3	30	1540	2	1	9	8.2	0.7
CH12-204-MW006A	29-Aug-13	6.7	657	7.9	321	41	105	25	2	3	25	1	0	0	1	30	1	1	0	3	7.2	0.7
CH12-204-MW006B	29-Aug-13	7.0	742	8.1	380	43	105	37	3	2	2	0	0	0	1	30	1	1	0	3	7.0	0.7
Rose Creek diversion																						
X10	10-Sep-13	8.3	224	7.8	102	16	28	7	2	1	22	0	0	0	1	261	37	1	0	32	8.5	0.8
X14	27-Aug-13	7.8	287	8.0	83	62	35	9	3	1	19	0	0	2	1	181	1190	2	0	22	9.4	0.8
Duplicates																						
X23	24-Aug-13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.6	1.0
X12	24-Aug-13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	0.6
CH12-204-MW904A	30-Aug-13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	0.6
CH12-204-MW906B	29-Aug-13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.9	0.7

Numbers in red are less than the indicated detection limit