

Brownfield Renewal Funding Program Stage 2 Preliminary Site Investigation Old Bridge Dump Site at Lillooet , B.C.

Prepared for:

**District of Lillooet
Lillooet Municipal Hall
615 Main Street
Lillooet, BC V0K 1V0**



Prepared by:

**Western Water Associates Ltd.
#106 - 5145 26th Street
Vernon B.C. V1T 8G4**

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January 29, 2013

District of Lillooet
ATTN: Steve Hohner, Public Works Manager
Lillooet Municipal Hall
615 Main Street
PO Box 610, Lillooet, BC
V0K 1V0

Dear Mr. Hohner:

Re: Stage 2, Preliminary Site Investigation of the Old Bridge Dump Site at Lillooet, B.C.

Western Water Associates Ltd. (WWAL) is pleased to provide this report on the Stage 2 Preliminary Site Investigation of the Old Bridge Dump Site at Lillooet, B.C. The purpose of the investigation was to further assess if groundwater contamination exists. Along with groundwater, soil and soil vapour were included in the investigation to assess the level of impact on these matrices. The report is suitable for submission to the B.C. Ministry of Environment.

The results of our investigation indicate that a low degree of impact to groundwater and soil is occurring at the site attributable to landfilling. We provide recommendations for future action to mitigate these effects.

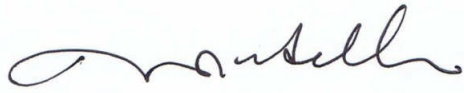
We trust that the professional opinions and advice presented in this document are sufficient for your current requirements. Should you have any questions, or if we can be of further assistance in this matter, please contact the undersigned.

WESTERN WATER ASSOCIATES LTD.

Reviewed by:



Bryer Manwell, M.Sc., P.Eng.
Hydrogeologist



Douglas Geller, M.Sc., P.Geo.
Senior Hydrogeologist

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I. INTRODUCTION

We understand the District of Lillooet (DoL) would like to redevelop the Old Bridge landfill site herein referred to as “the site” located at Lillooet on the bank of the Fraser River. At the request of District of Lillooet, Western Water Associates Ltd. (WWAL) has completed a Stage 2 Preliminary Site Investigation of the site at Lillooet, B.C. (Figure 1). This report presents the results of the investigation. The current program was funded by the District of Lillooet and the B.C. Ministry of Forests, Lands and Natural Resources Operations under the Brownfield Renewal Funding.

Last year (2011) Stage 1 of the Preliminary Site Investigation was initiated. Stage 1 investigated only the groundwater matrix at the site. Stage 2 follows from recommendations made with respect to the water matrix in the 2011 works (January 2012). Stage 2 further includes investigating the soil and soil vapour matrices.

Although we understand the DoL is not looking for a Certificate of Compliance (CoC) from the B.C. Ministry for the site; the investigation was completed to satisfy the requirements of the B.C. Environmental Management Act and the associated Contaminated Sites Regulation for Stage 2 Preliminary Site Investigations (PSIs). It also meets the requirements of Canadian Standards Association Z769-00 for Phase II Environmental Site Assessments, the Canada-wide standard for environmental due diligence for financing purposes. We used standard practices laid out in the B.C. Ministry of Environment Protocol documents and the Technical Guidance documents for due diligence. In the event the DoL seeks a CoC in the future this Preliminary Site Investigations intends to comply with industry standards.

The following Technical Guidance (TG) and Protocol documents for Contaminated Sites, published by the B.C. Ministry of Environment were used in the design, execution and evaluation of results:

- TG 1 - Site Characterization and Confirmation Testing (January 2009);
- TG 3 - Environmental Quality Standards (February 2009);
- TG 4 - Vapour Investigation and Remediation (Version 1 September 2009);
- TG 6 - Water Use Determination (Version 2 July 2009);
- TG 8 - Groundwater Investigation and Characterization (Version 1 July 2010);
- TG 10 - Checklist for Review of a Preliminary Site Investigation (October 2005);
- TG 17 - Soil Background Database (October 2005);
- Protocol 4 - Determining Background Soil Quality (October 2010); and
- Protocol 13 - Screening Level Risk Assessment (draft document, accessed on-line at: http://www.env.gov.bc.ca/epd/remediation/requests_for_comments/archives/feb07/protocol13.htm).

I.1 Project Objectives and Scope of Work

The scope of work for the Stage 2 PSI was outlined in our proposal provided to the DoL May 22, 2012. The study objectives are to assess whether or not contamination from landfill leachate is occurring above standards for Urban Park Land Use at the site.

The scope of work to accomplish the Stage 2 Preliminary Site Investigation was as follows:

- Drilling and developing three new groundwater monitoring wells;
- Installing seven soil vapour sampling point;
- Sampling 13 soil samples at 1 m depths from across the site;
- Sampling groundwater, surface water and soil vapor at three different times to evaluate occurrence of potential contaminants associated with landfill activity;
- Evaluate and interpret result and resent results (this report); and
- Make recommendations for future mitigative or ongoing action.

1.2 Roster Professional

In compliance with the requirement of the Brownfield Renewal Funding Program, Mr. Rob Lauman P.Chem., CSAP, Senior Environmental Scientist at Summit Environmental Consultants Inc. was the Contaminated Site Approved Professional (CSAP) on our project team. Mr. Lauman is a Standards Assessment Specialist and a member of the BC MoE's Roster of Approved Professionals. Mr. Lauman provided oversight for project design, review of program results and review of the final report.

1.3 Project Location and Description

The site is located north of the Lillooet town centre off Phair Rd. and adjacent to the Fraser River (Figure 1 and 2). The site is approximately 120 m by 250 m (30,000 m²) or 7.4 acres in area. The site was used for landfilling municipal waste including animal carcasses between 1976 and 1985; therefore, the last landfilling occurred almost 30 years ago (District of Lillooet 1996). In 1993 the Provincial Government asked the District to close the site. The site was graded and a layer of fill between 1 m to 3 m thick was applied over the site during the closure.

Review of historic data was discussed in the previous report (VWAL 2012). The following description of the site, geology and hydrogeology were presented in the Stage 1 report and are recaptured here; however, an updated hydrogeological conceptual model is presented later in the report.

2. SITE DESCRIPTION, GEOLOGIC AND HYDROGEOLOGIC SETTING

The following sections summarize physiographic, geologic, hydrogeologic and hydrologic information available for the site.

2.1 Setting Physiography and Vegetation

The site occupies a raised terrace above the Fraser River and sits at an elevation of 220 m above mean sea level. The site is oriented in a northeast to southwesterly direction (Figure 2). The Fraser River is the dominant feature at the site, and is located to the east and below the site at an elevation of about 192 m asl and flows on the order of 3000 m³/sec. The general topographic gradient at the site is on the order of 0.003 sloping from northeast to southwest. Virtually the entire site is bare, with a sparse dry grass cover. During 2012 truckloads of clean fill were dumped across the site in 1 m piles as the District was producing the fill from another site in-town. Bordering the site are the following features:

- Fraser River to the east;
- Phair Rd. to the west, with uplands above where land use is residual, above the residential land use is predominantly agricultural land;
- mobile homes serviced by community utilities to the south; and

- a large vehicle storage lot to the north.



Photo 1 The site during digging of Test Pits, September, 2012, facing south.

2.2 Surficial and Bedrock Geology

Surficial geology mapping for the area shows fluvial sand and gravel deposits associated with the Fraser River (B.C. MoE 2012). The bedrock geology indicates bedrock underlying the site to be comprised of siltstone or shale of the Hurley Formation within the Cadwallader Group, 97 to 235 million years old (BCGS 2005 and B.C. MoE 2012).

2.3 Hydrogeology

From a search of the B.C. Water Resources Atlas the aquifer underlying the site is B.C. MoE mapped aquifer number 324 IIC. Sand and gravel aquifer 324 is considered to be of low demand, moderate productivity and low vulnerability. Our hydrogeological conceptual model prior to drilling at the site was that there was hydraulic connection between the Fraser River and the adjoining alluvial aquifer; and the aquifer is likely unconfined. After the 2011 and 2012 drilling programs where the site lithology was logged at six locations this conceptual model remains valid with some additional insight. Section 4.1.2 details our revised conceptual model of groundwater flow under the site.



Photo 2 The Fraser River from the top of the bank at the eastern edge of the site, October 5, 2011, facing northwest.

2.4 Climate and Leachate Generation Potential

Lillooet is located in the dry interior of B.C. and has a semi-arid climate. Compared to other southern B.C. interior locations such as Kamloops and Merritt, Lillooet's local weather tends to have a greater degree of coastal and orographic influence. The area tends to have fewer snowstorms but can experience higher intensity rainfall events. Canadian Climate Normal data from 1971-2000 (Environment Canada 2012) indicate an average annual precipitation of 330 mm and an annual mean temperature of 9.2 deg C at the Lillooet Seton station (Table 2.1), which is within a few km of the study area and at approximately the same elevation. The climate normal data indicate November is typically the wettest month and April has the lowest average precipitation. Approximately 90% of the average annual precipitation (297 mm) occurs as rain, with most of the 32 mm of average precipitation falling as snow during the months of December and January.

Table 2.1 1971-2000 Climate Normals for Lillooet Seton BCHA Climate Station Number 1114627

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Daily Average (°C)	-3.6	-0.1	5	9.8	14.4	18.4	21.4	21	15.7	8.8	1.9	-2.4	9.2
Rainfall (mm)	26.2	17.6	16.1	17.5	22.6	24.7	27.4	26.9	22.1	29.4	36.7	29.9	297.1
Snowfall (cm)	10.4	4	1.4	0	0	0	0	0	0	0.5	4.6	11.5	32.4
Precipitation (mm)	36.6	21.6	17.4	17.6	22.6	24.7	27.4	26.9	22.1	29.9	41.3	41.4	329.5

Data Source: Environment Canada 2011

Using the Thornthwaite method an estimate of the annual potential evapotranspiration was calculated to be approximately 300 mm, which is close to the annual precipitation. The high potential evapotranspiration and low annual precipitation suggest that very little leachate is potentially generated at the landfill site.

2.5 Description of Surface Water Receptor

The closest surface water receptor in the area is the Fraser River, located approximately 50 m to the east of the eastern boundary of the site. The Fraser drains one of the largest catchment areas in the province and flows generally from north to south past Lillooet. The water survey records for the Fraser River at Lillooet have not operated for nearly a century; therefore, the hydrograph presented below is for the Fraser River at Hope, some 200 km south of Lillooet. The hydrograph for the Fraser at Hope indicates that peak flow for the Fraser occurs between June 1 and July 1 and there appears to be only one peak flow for the river during the spring snow melt. From July through to April the Fraser River is typically in recession (Figure 3). We expect the groundwater within the adjoining alluvial aquifer to show similar seasonal shifts in water level as we expect the groundwater to be hydraulically connected to the Fraser River.

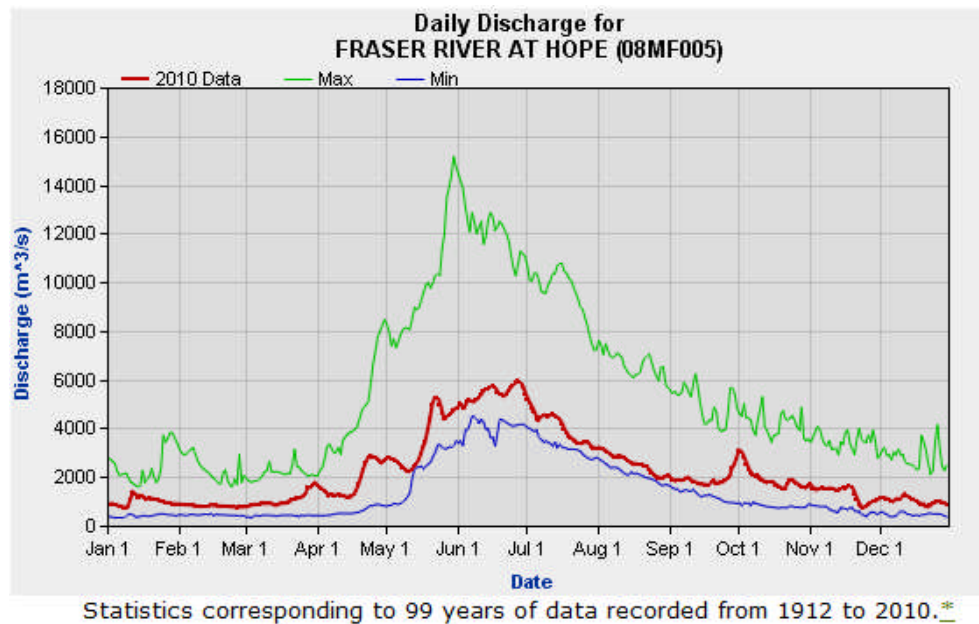


Figure 3 Fraser River Hydrograph at Hope (Water Survey of Canada 2012)

3. FIELD INVESTIGATIONS AND SITE CHARACTERIZATION METHOD

No post-closure environmental monitoring has been conducted at the site. The site is currently vacant and prior to our investigation it was not known if refuse at the landfill site was causing contamination of the groundwater or surface water in the site vicinity, soils at the site or air quality above the site. The following sections outline the investigation procedures implemented in the current study.

3.1 Drilling and Development of Monitoring Wells

VWAL completed drilling and groundwater monitoring well installation in a two-stage process initiated in 2011 and completed in 2012. During the first stage, three monitoring wells were installed (MW11-01, MW11-02, and MW11-03 – see Figure 2 for borehole / well locations and Appendix A for borehole logs). Based on elevation and water level surveys on the initial three-well network, we determined that the prevailing hydraulic gradient was perpendicular to the Fraser River instead of the initially presumed sub-parallel to river groundwater flow direction. Therefore, to complete the groundwater monitoring network, three additional wells were installed in September 2012 (MW12-04, MW12-05, and MW12-06). Once these wells were installed, we determined that the well network was robust enough to enable characterization of groundwater quality conditions upgradient and downgradient of the landfilled area.

The monitoring wells were drilled using Odex drilling and installed by Tervita (formerly Beck Drilling) of Vancouver, B.C. with a nested design as illustrated in the borehole logs. Each well nest had a groundwater monitoring well 50 mm (2 in) in diameter and a 24 mm (1 in) diameter soil vapour monitoring point installed within the nominal 10 cm (4 in) diameter borehole. In terms of selecting the well depths, the strategy was to screen the wells near the contact between the upper bedrock surface and the base of unconsolidated sediments. Difficult drilling conditions at MW12-05 precluded

confirmation of bedrock. At MW12-06, only a thin saturated zone was encountered at approximately 9 m (30 ft) bgs. See Section 4.1 for more discussion on the discontinuous shallow groundwater zones.

Following installation, location and elevation of the monitoring wells and soil vapour points were surveyed (accurate to the nearest 1 mm for z and to the nearest 10 cm for x and y directions).

3.2 Water Quality Sampling

After installation the wells were developed and then sampled a total of three times. Sampling occurred on September 25, November 8, and December 12, 2012. During one event (September 25) groundwater samples were assessed for hydrocarbon contamination. During each sampling event, we measured the depth to groundwater in each well in order to estimate the direction and gradient of groundwater flow under conditions approaching baseflow in the Fraser River.

During all three monitoring events there was not sufficient water in MW12-04 or MW12-06/SVP-06 for sampling; however, water levels were recorded at each well and are presented below. Along with the four sampled wells at the site, two river samples were taken from the northeastern edge of the Fraser River. The location of the sampled locations appear on Figure 2; except SW1 (upgradient) which is about 550 m north of the site, accessed at the traditional fishing area near the Old Bridge accessed further up Phair Rd.

Sampling occurred in accordance with provincial standards (MoE 2003) with the exception that samples for dissolved metals were not field filtered prior to shipping to the lab as the samples were highly turbid. Therefore, filtering for dissolved metals occurred at the laboratory. Samples were shipped on ice to Caro Analytical in Kelowna. In our opinion, this discrepancy in sampling protocol does not affect water quality interpretation related to potential impact from the landfill. See Appendix B for the full list of parameters sampled.

3.3 Soil Sampling

In addition to the groundwater, the sampling and analysis of soils was conducted at 12 test pits and on the fill materials located on site. Grab samples from 1 m deep test pits were taken in laboratory supplied sampling containers and subsequently transported on ice to Caro Analytical in Kelowna, B.C. Where there was refuse present within the test pits only soil was sampled. All soil samples were all taken on September 21, 2012. See Appendix C for a full list of soil parameters analyzed; the following list summarizes the general categories of parameters analysed:

- Polycyclic Aromatic Hydrocarbons (PAH)
- Volatile Organic Compounds (VOC)
- Aggregate Organic Parameters
- Strong Acid Leachable Metals
- General Parameters
- Calculated Parameters

3.4 Installation and Sampling of Soil Vapour Monitoring Points

During the drilling and installation of the new groundwater monitoring wells soil vapour monitoring points (SVP) were installed in a nested design with the groundwater wells (MW12-04, 05 and 06). Soil

vapour monitoring points SVP-01, 02, 03, 07 were installed using an excavator. Except for SVP-06 all other SVP's were installed at 3 m (10 ft) bgs. Sampling of these points occurred the same days as groundwater sampling, see above. Soil vapour was purged from the SVP's with a GEM four gas monitor until the field measured gases stabilized. Vapour samples were then collected for a 10 minutes period with Vapour Intrusion (SVI) Thermal Desorption TD Tubes connected to the vapour sampling pump. The TD tubes were then sent to Caro Analytical in Vancouver, B.C. The following parameters were sampled and analyzed:

- Field parameters
- Aggregate Organic Parameters
- Volatile Organic Compounds (VOC)

4. INVESTIGATION RESULTS

The following sections summarize the results from the Stage 2 Preliminary Site Investigation conducted at the Old Bridge Landfilling Site at Lillooet. Sections include discussion on the following:

- groundwater flow;
- influence of the bedrock topography on subsurface flow and potential contaminant migration; and
- water quality and a summary of exceedances of water, soil and soil vapour, if any.

4.1 Groundwater Flow

During the three sampling events in 2012, groundwater levels were measured at all six monitoring wells. A summary of the groundwater levels is presented in Table 4.1. Figures 3 and 4 show the water table contours for the September 25 and December 12 sampling events. Figure 6 depicts a map of the bedrock surface. Contour maps were created with interpolation using the inverse distance method in Envirolnsite, an environmental software package (Figures 3, 4 and 5).

As mentioned above, during drilling of MW12-04, and 06 interception of shallower (well above the bedrock contact) saturated zones was observed. These potentially discontinuous zones of saturated groundwater were not thick enough to be screened and sampled at MW12-04 or MW12-06; however, the shallow saturated zone was screened at SPVE-06. Unfortunately, there was not enough water to provide a groundwater sample.

MW12-05 is assumed to have been completed in this shallower zone as the water levels at MW12-05 are closer to the surface than water levels at the other monitoring wells which are completed at the bedrock interface. As mentioned above, bedrock was not tagged at MW12-05 due to the loss of the drill bit while drilling. Therefore, it is not known if the water level at MW12-05 represents the same groundwater system encountered at the other wells or if the groundwater at MW12-05 is completed within the shallower, potentially discontinuous saturated zone. With this in mind, the groundwater contours presented in Figures 3 and 4 are interpolated from all monitoring wells except MW12-05.

The contour maps (Figure 4 and 5) show the groundwater flow to be from the northwest to the southeast, directly towards the river or even towards the northeast. It is apparent from the bedrock

contact (Figure 6) and the water level contours that groundwater flow at the site is complex. Our updated conceptual model of subsurface flow beneath the site is that the bedrock surface is a driving force for local groundwater flow.

Of note is an observation made during the November sampling event. During the night, prior to sampling on November 8, there was a high intensity rain storm. While sampling the next day an area resident pointed out a cut channel into the sand sediments on the bank of the Fraser River directly northeast of MW11-01. The resident stated that the channel had not been there the day prior. A potential explanation for the presence of this new cut channel is that groundwater accumulated quickly during the intense precipitation event the night prior and caused a breakout point at the cut channel. This observation, along with the groundwater and bedrock contours suggests there could be groundwater migration into the Fraser River at a discreet location directly northeast of MW11-01. Further investigation of this location should be made.

Water levels, summarized in Tale 4.1, show that similar to last year MW11-01 water levels declined approximately 1.1 m from September 25 to December 12; whereas water level at MW11-02, MW11-03 and MW12-05 receded on the order of 10 to 20 cm. At MW12-04, MW12-06 and SVP-06 there was actually a rise in water level between September and December on the order of a few centimeters.

Table 4.1 Summary of Groundwater Levels

Well	Date	Depth to Water (m btoc)
MW11-01	06-Oct-11	28.66
	25-Oct-11	28.82
	14-Dec-11	30.17
	25-Sep-12	29.325
	06-Nov-12	29.78
	12-Dec-12	30.4
MW11-02	07-Oct-11	18.99
	25-Oct-11	20.56
	12-Dec-11	20.655
	25-Sep-12	20.65
	06-Nov-12	20.725
	12-Dec-12	20.825
MW11-03	07-Oct-11	21.715
	25-Oct-11	21.725
	12-Dec-11	21.735
	25-Sep-12	21.64
	06-Nov-12	21.68
	12-Dec-12	21.73

Table 4.1 Continued from previous page

Continued from previous page Well	Date	Depth to Water (m btoc)
MW12-04	25-Sep-12	25.225
	06-Nov-12	25.14
	12-Dec-12	25.19
MW12-05	25-Sep-12	15.36
	06-Nov-12	15.385
	12-Dec-12	15.43
MW12-06D	25-Sep-12	26.38
	12-Dec-12	26.265
	06-Nov-12	26.32
SVP-06	06-Nov-12	7.81
	25-Sep-12	7.805
	12-Dec-12	7.78

4.2 Water Quality Assessment

The Stage 1 PSI report (WWAL 2012) details the historic water quality in the area along with a presentation of the water quality results from the 2011 sampling program (MW11-01,02, and 03). In this Stage 2 PSI, we will present further discussion on the groundwater characteristics at each monitored location along with time series plots of parameters that exceeded the applicable Contaminated Site Regulation (CSR) standards in Stage 1 and Stage 2. Following the above water quality discussion we will present the water quality exceedances that occurred during 2012 when compared to the CSR guidelines.

4.2.1 Groundwater Characteristics

The results of the past two years of water quality testing are summarized in Table 4.2; see Appendix B for the full water quality database and Appendix E for the laboratory reports. Figure 7 depicts a Schoeller Plot of the four wells sampled. The groundwater in the area is characterized as hard with elevated sulphate, electrical conductivity, sodium and chloride.

Table 4.2 presents the average and standard deviation for the six rounds of sampling between 2011 and 2012. As noted last year, the background groundwater quality represented at B.C. Well Tag Number 38009 and 37238 (Summit 2010 and WWAL 2011), appears to be impacted by private sewage disposal systems located up-gradient of the site. Impact is indicated from the presence of chloride, sodium and nitrate at above typical ambient concentrations in the up-gradient domestic wells.

All four wells sampled at the Old Bridge Dump show signs of anthropogenic impact. MW11-01 and MW12-05 appear to be more influenced by effluent from up-gradient private sewage disposal systems or agriculture activity, indicated by more elevated nitrate compared to MW11-02 and MW11-03. However, at MW11-01 and MW12-05 chloride, sodium and sulphate are statically lower than at MW11-

02 and MW11-03 (Table 4.2 and Figure 6). At MW11-02 and MW11-03 there remains a slight expression of groundwater impact, potentially due to the old landfill site. However, the concentrations of leachate-associated parameters at the wells are relatively low for a landfill site (USEPA 1975); see Appendix F for a Table depicting the normal ranges of municipal landfill leachate associated parameters in groundwater.

Table 4.2 Summary of Select Landfill Leachate Indicators

Sampled Location	Nitrate	Chloride	Sodium	Sulphate	Calcium	Alkalinity (as CaCO ₃)	Boron
MW11-01	3 (2.4)	25 (2)	22 (2)	138 (21)	80 (6)	296 (34)	0.21 (0.02)
MW11-02	0.2 (0.3)	37 (2)	88 (17)	170 (18)	71 (6)	468 (221)	0.42 (0.13)
MW11-03	0.2 (0.2)	45 (5)	76 (2)	188 (11)	101 (5)	525 (56)	0.49 (0.02)
MW12-05	3.2 (1.3)	34 (2)	22 (1)	88 (10)	95 (6)	430 (59)	0.21 (0.03)

Notes:

- All concentrations are in mg/L units.
- First number is the average and second, bracketed number is the standard deviation.
- Values are averaged from six sampling events for MW12-01, 02 and 03 and three sampling events for MW12-05.

4.2.2 Exceedances in Water Quality Standards 2011 and 2012

The following section details the CSR fresh water aquatic life standard exceedance observed at the site in 2012. Drinking water standards are not applicable for comparison as this site as there are no drinking water wells down-gradient of the landfill and the aquifer is discontinuous and not of appreciable thickness.

As dissolved lead exceeded drinking water guidelines in 2011 at MW11-02 and MW11-03 a time series plot of dissolved lead over time is presented in Figure 8. It can be observed that the concentrations of dissolved lead have come down well below the CSR AW guideline of 0.01 mg/l in 2012.

The only downgradient receptor would be the Fraser River; therefore, the provincial CSR freshwater aquatic life standard is the only applicable standard. The only B.C. CSR AW standard exceedance was for dissolved selenium on September 25, 2012;

As the dissolved selenium concentration distribution is within two times the relevant standard at all locations across the landfill it is appropriate to look at pooled data to represent the site groundwater. As the 90% Confidence Interval for the landfill samples is below the relevant standard, the dissolved selenium concentration for the landfill area as a whole is not considered to be in exceedance of relevant standards during the September 25th, 2012 sampling event. Also, since the concentration observed at MW11-01 has since decreased (Figure 9), the risk of dissolved selenium contamination at the landfill site is low.

Note, dissolved selenium did not exceed standards during the subsequent sampling events (Figure 9). The presence of selenium may be naturally occurring, due to the private sewage disposal systems operating up-gradient of MW11-01, or considered a landfill leachate indicator (Christensen et. al. 2001). When the concentration of selenium is compared to the background wells located upgradient of the site (WTN 38009 and 37238 – see WWAL 2012 for a summary of water quality at these wells) they are similar; note, selenium at WTN 38009 also exceeds the CSR aquatic life guideline of 0.01 mg/l.

4.3 Soil Assessment

Soil samples were taken at 1 m depths from test pits dug with an excavator operated by District staff. Table 4.3 summarizes the materials encountered within the test pits along with the soil. Note that un-decomposed debris was encountered within 0.5 m of ground surface at TP-8 and TP-9 (see Photo 3).

Table 4.3 Summary of Material Observed in Soil Test Pits

<i>Test Pit ID</i>	<i>Constituent Materials</i>
TP-1	-some asphalt and concrete
TP-2	-some wood debris
TP-4	-some asphalt
TP-6	-un-decomposed debris (garbage bags.. etc)
TP-7	-wood chips
TP-8	-un-decomposed debris (garbage bags)
TP-9	-un-decomposed debris (garbage bags)
TP-10	-wood chips
TP-11	-wood chips
TP-12	-wood chips and metal
TP-13	-wood chips
TP-14	-wood chips



Photo 3 Test Pit 9, September 2012, showing un-decomposed debris.

The summarized results of the soil sampling program can be found in Appendix C with the full laboratory results found in Appendix E. Exceedances were assessed using standards outlined in the CSR Schedules 4 and 5; exceedance levels are prescribed according to proposed land use for five categories as follows: Agriculture, Urban Park, Residential, Commercial, and Industrial. As the proposed future use of the site is as park land we have compared the soil sampling results with Urban Park guidelines. Of all parameters analyzed (see Section 3.3. for a full list of parameters) the only parameter exceeding the Urban Park/Residential guideline is nickel at the following test pits: TP-1, 5, 7, 8, 9, 10, and 13.

The Soil Background Database provided in CSR Technical Guidance 17 was searched for nickel to compare the site results with background soil nickel concentrations. The nearest site to Lillooet listed in the database was Kamloops, with nickel concentrations as high as 140 ug/g, well above the Urban Park guideline of 100 ug/g. The fill material brought to the site in 2012 from earthworks occurring elsewhere in Lillooet showed soil nickel concentration at 56 mg/kg (Appendix C). Therefore, it appears that background soil nickel could range between 50 to 140 mg/kg. The soil nickel concentrations found at the test pits at the site were at or well above this range. The results suggest that the nickel soil exceedances are likely related to landfilling activity at the site. Using the Screening Level Risk Assessment framework outlined in Protocol 13 (Section 1) human health and environmental risk associated with the observed contamination could be mitigated by re-grading of the landfill area with a minimum of 1 m of clean fill across the site. By covering the biologically active zone, the risk of ingestion or inhalation of impacted soil is minimized as well as the uptake by non-deep rooting plants and soil invertebrates.

4.4 Soil Vapour Assessment

The soil vapour gases were sampled three times in September, November, and December, 2012 at the same time as the groundwater sampling. The results of soil vapour gas sampling are summarized in Appendix D with the full laboratory reports presented in Appendix E. Exceedances for the soil vapour gas monitoring program were assessed using the CSR Schedule 11 guideline for Urban Park land use. Prior to comparison with the standards an attenuation factor of 1.0×10^{-4} for Outdoor Exposure was applied. This attenuation factor comes from the CSR Technical Guidance 4: Vapour Investigation and Remediation, Table 2. Default Vapour Attenuation Factors for a Subsurface Sample taken <1.0 m bgs and for Outdoor Exposure. When the relevant attenuation factor is applied there are no exceedances of any Schedule 11 parameters. For the intended land use (Urban Park) there is no mitigative action required at this time.

5. CONCLUSIONS

WWAL completed a Stage 2 Preliminary Site Investigation of the Old Bridge closed landfill site located on Phair Road in Lillooet, B.C. Based on the results of our Stage 2 Preliminary Investigation, we provide the following conclusions:

- CI The Old Bridge Landfill Site operated between 1976 and 1985. The Site was officially closed in 1993 and a cover of fill material was placed over the site (as summarized in WWAL 2011).

-
- C2 Due to the low precipitation and high potential evapotranspiration at the site the leachate generation potential from the closed landfill is likely low.
- C3 Three additional groundwater monitoring wells along with seven soil vapour sampling points were installed and sampled three times. Additionally 14 soil test pits were dug and soil samples taken one (September 25, 2012). Of the three additional wells drilled there was only enough water in one, MW12-05, to sample. The other two wells MW12-04 and MW12-06 could not be sampled in 2012.
- C4 Groundwater flow at the site is complex and generally driven by the contour of the bedrock surface which appears to dip to the northeast. Therefore, groundwater flows in the opposite direction of Fraser River water flow near MW11-02 and MW11-03 and towards the river further to the northeast portion of the site.
- C5 The water quality database, created last year, was further populated with the 2012 water quality data. This database provides us the ability to characterize the site over time.
- C6 Dissolved selenium exceeded the CSR standard for aquatic life at one location during the September 25, 2012 sampling event. However, considering appropriately pooled data from across the landfill, this finding does not represent dissolved selenium contamination from the landfill.
- C7 Similar to 2011, MW11-01 shows elevated selenium and nitrate compared to MW11-02 and MW11-03 and MW12-05 shows characteristics similar to MW11-01. The presence of nitrate at similar or higher concentrations compared to potentially impacted up-gradient domestic water wells (WPN 38009 and 37238) suggests that MW11-01 is impacted by private sewage disposal systems and/or possibly by agricultural activity occurring up-gradient of the site.
- C8 MW11-02 and MW11-03, although located at what appear to be cross-gradient or up-gradient locations to the landfill site, show slight impact, potentially from landfill leachate (elevated dissolved manganese, sulphate, sodium and chloride). However, the concentrations of landfill leachate indicators are relatively low for landfill sites (see Appendix F for a range of values).
- C9 Nickel in soil exceeded the applicable urban park standard at several test pit locations. After comparison of site soil nickel concentrations to background concentrations it appears the exceedances are likely related to landfilling activity at the site but associated risks could be mitigated by a clean soil cover of at least 1 m in thickness.
- C10 After applying the appropriate soil vapour attenuation factor for Outdoor Exposure there were no soil vapour exceedances.

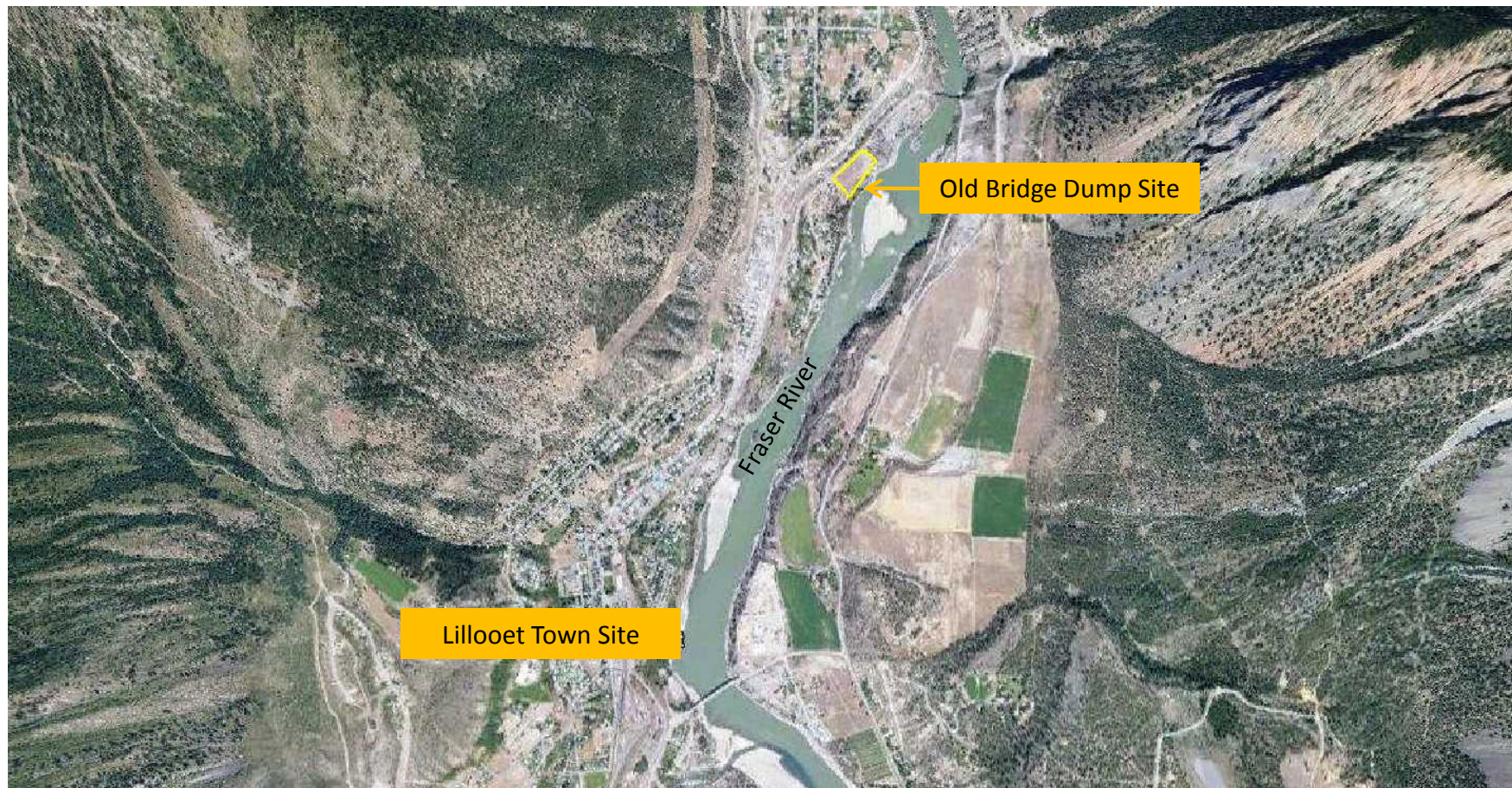
6. RECOMMENDATIONS

Impact to water, soil and soil vapour from the landfilling activities, which ended in 1985, are understood to be low; therefore, we recommend a minimal amount of mitigative action for the site to be used as park land. Based on the conclusions of the Stage 2 Preliminary Site Investigation, we provide the following recommendations moving forward:

- R1 We recommend annual groundwater monitoring occur once per year for at least three years. If after three years the key landfill leachate indicators at the site are trending down or are constant, consider a more limited sampling schedule i.e. once every three years. An annual report should be submitted to the B.C. MoE which summarizes the groundwater levels along with spatial and temporal trends of landfill-associated parameters and a summary of exceedances in water quality guidelines.
- R2 Continue to use the water quality database to house future hydrogeochemical data. We recommend use of Wireless Water as the database managers, as they maintain the current database.
- R3 Spread the fill material, which has been stored at the site, across the entire site. Apply additional fill to achieve a 1 m thick layer of clean fill. This fill material will act as a physical barrier to human health and environmental exposures of metals (specifically nickel) mitigating the risk of the observed exceedances.
- R4 During future monitoring events attention should be paid to the area directly northeast of MW11-01 where a cut channel was observed after a precipitation event. Further investigation of this location should be made.
- R5 When considering land use at the closed landfill site, consider activities that will not increase the leachate generation potential above the site (i.e. do not over-irrigate the land) and consider Xeriscaping.
- R6 If the intended land use for the site changes, re-evaluation of the sampling results should be performed.

REFERENCES

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- Western Water Associates Ltd. (WWAL). 2012. Brownfield Renewal Funding Program, Preliminary Site Investigation of The Old Bride Dump Site at Lillooet, B.C., Project No. 11-047-01 prepared for the District of Lillooet on January 24, 2012.



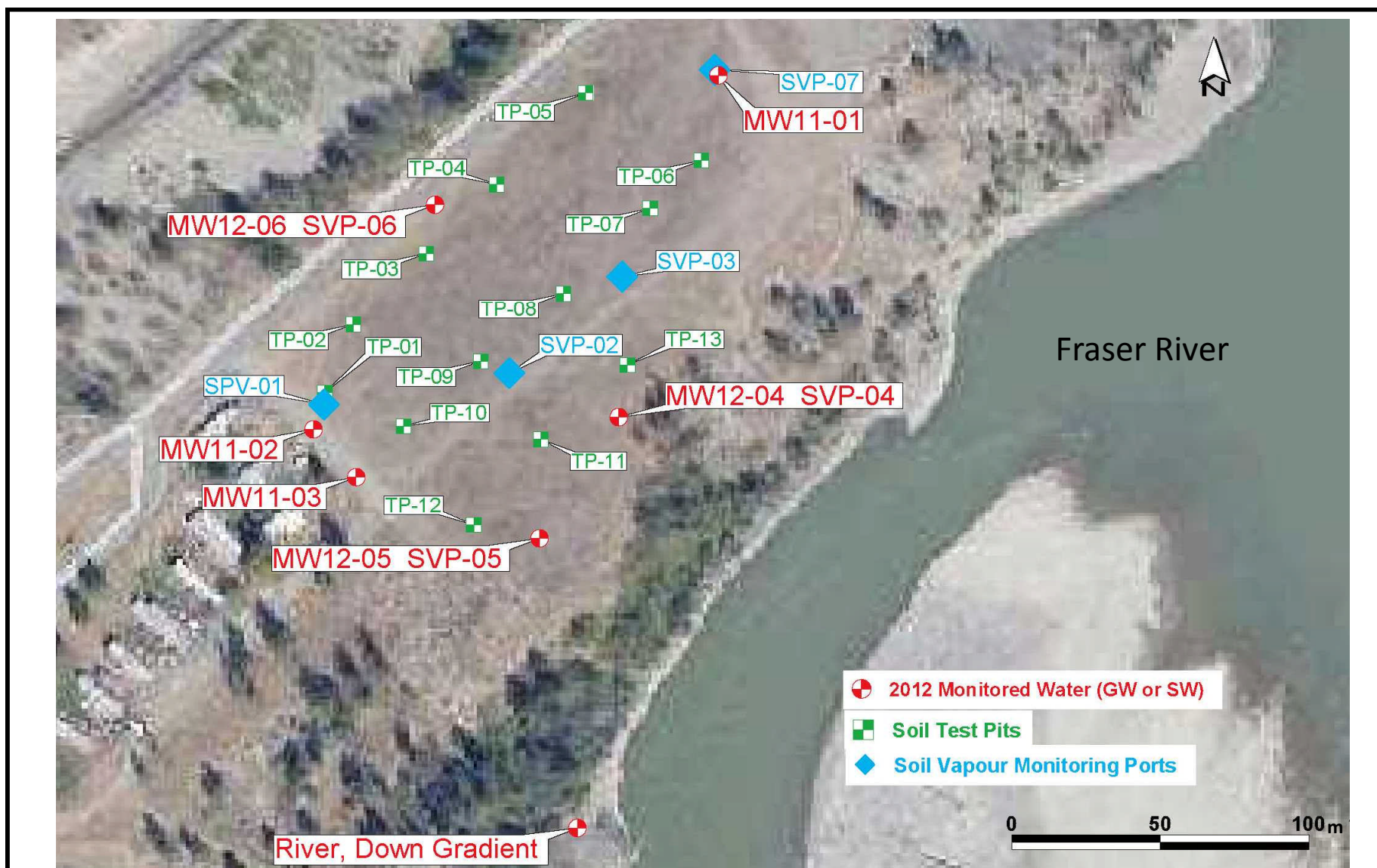
**District of Lillooet
Old Bridge Dump Site**



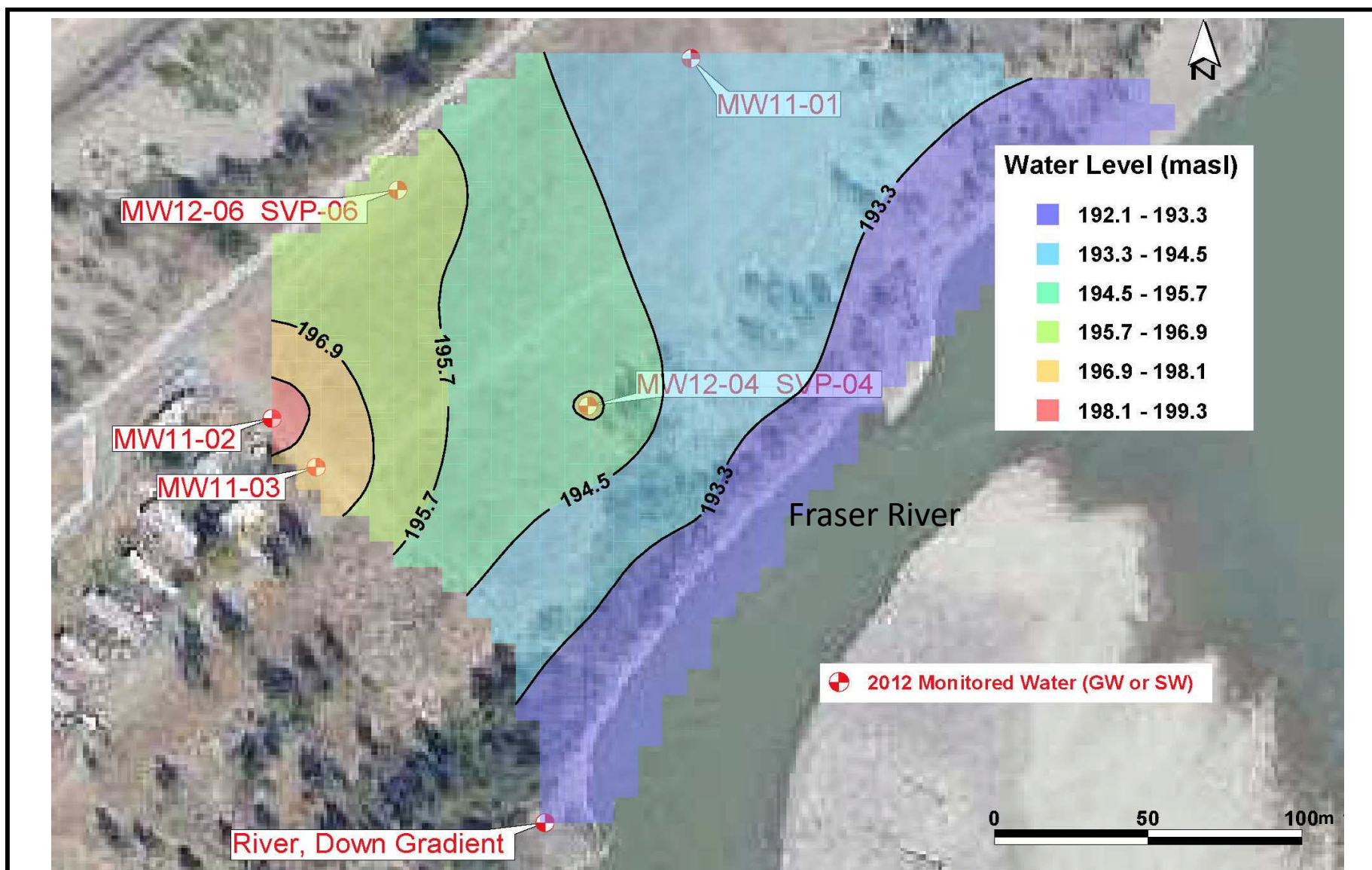
TITLE

Figure 1: Site Location Map, Lillooet , B.C., Image from Google Earth

DRAWN	BRM	DATE	January 2013	PROJECT NO.	11-047-02
CHECKED	DG	SCALE	See figure	DWG. NO.	na
REVIEWED		FILE NO.		FIGURE NO.	1



District of Lillooet Old Bridge Dump Site	Figure 2: Site Map with all Matrix Sample Locations , Lillooet , B.C.			
	DRAWN	BRM	DATE	January 2013
	CHECKED	DG	SCALE	See figure
	REVIEWED		FILE NO.	FIGURE NO. 2



District of Lillooet
Old Bridge Dump Site



TITLE

Figure 4: Groundwater Contours, September 25, 2012, Lillooet , B.C.

DRAWN BRM

DATE January 2013

PROJECT NO. 11-047-02

CHECKED DG

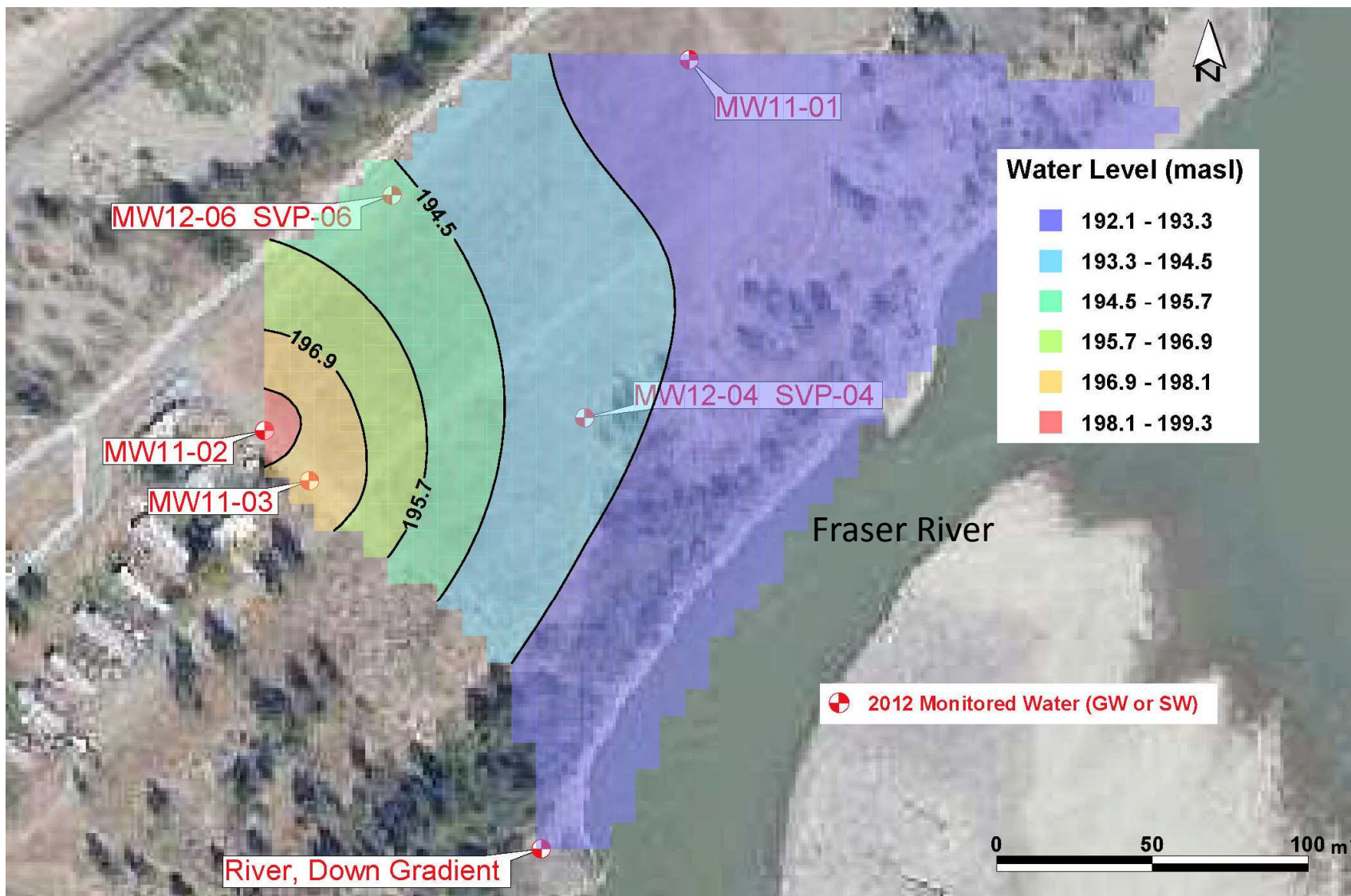
SCALE See figure

DWG. NO. na

REVIEWED

FILE NO.

FIGURE NO. 4



District of Lillooet
Old Bridge Dump Site



TITLE

Figure 5: Groundwater Contours, December 12, 2012, Lillooet , B.C.

DRAWN BRM

DATE January 2013

PROJECT NO. 11-047-02

CHECKED DG

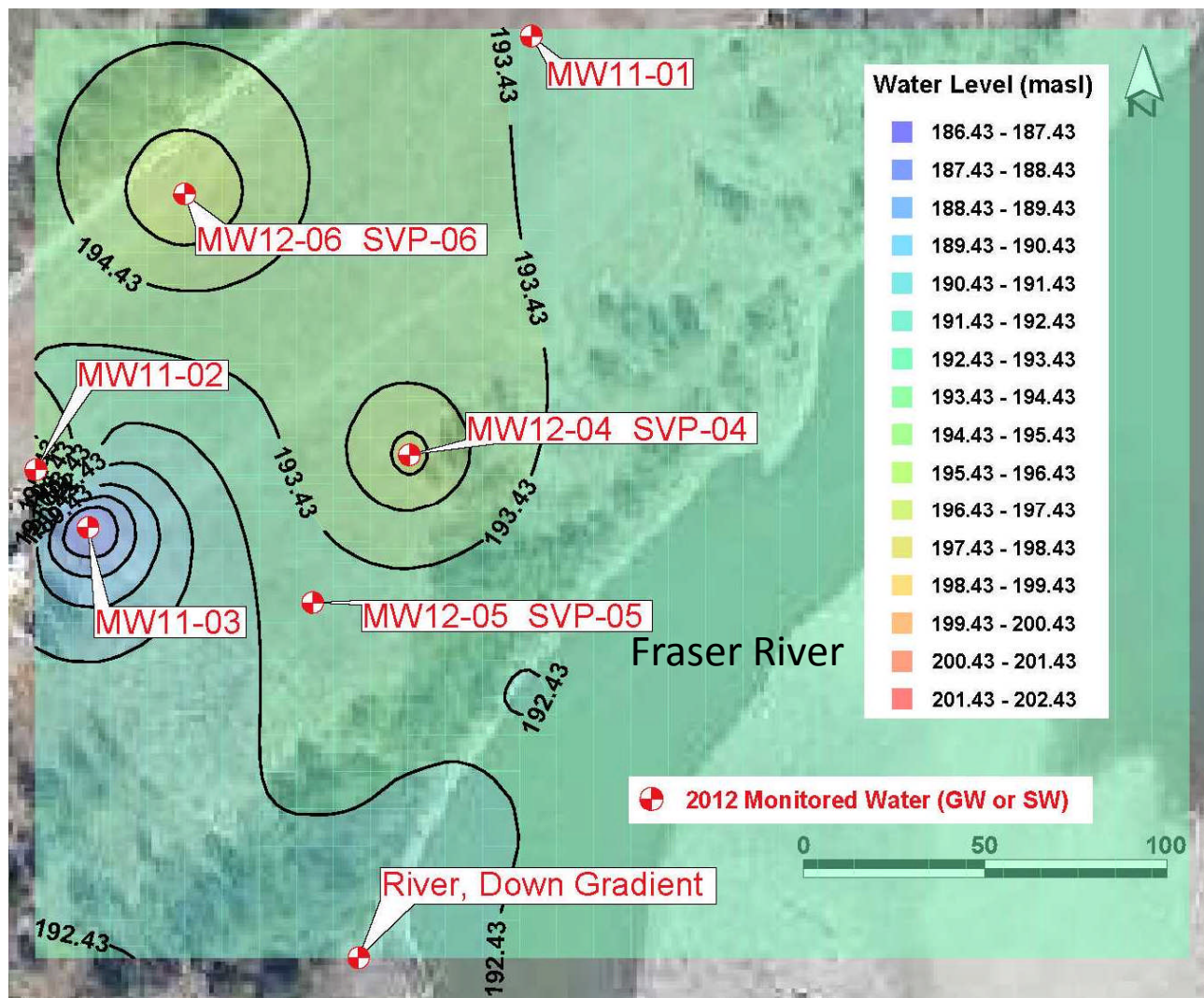
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REVIEWED

FILE NO.

FIGURE NO. 5



District of Lillooet
Old Bridge Dump Site



TITLE

Figure 6: Bedrock Surface Contours, 2012, Lillooet , B.C.

Note: Bedrock was not encountered at MW11-01 and MW12-05; therefore, the contours are to the depth of drilling and the bedrock surface is deeper at those locations.

DRAWN

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DATE

January 2013

PROJECT NO.

11-047-02

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SCALE

See figure

DWG. NO.

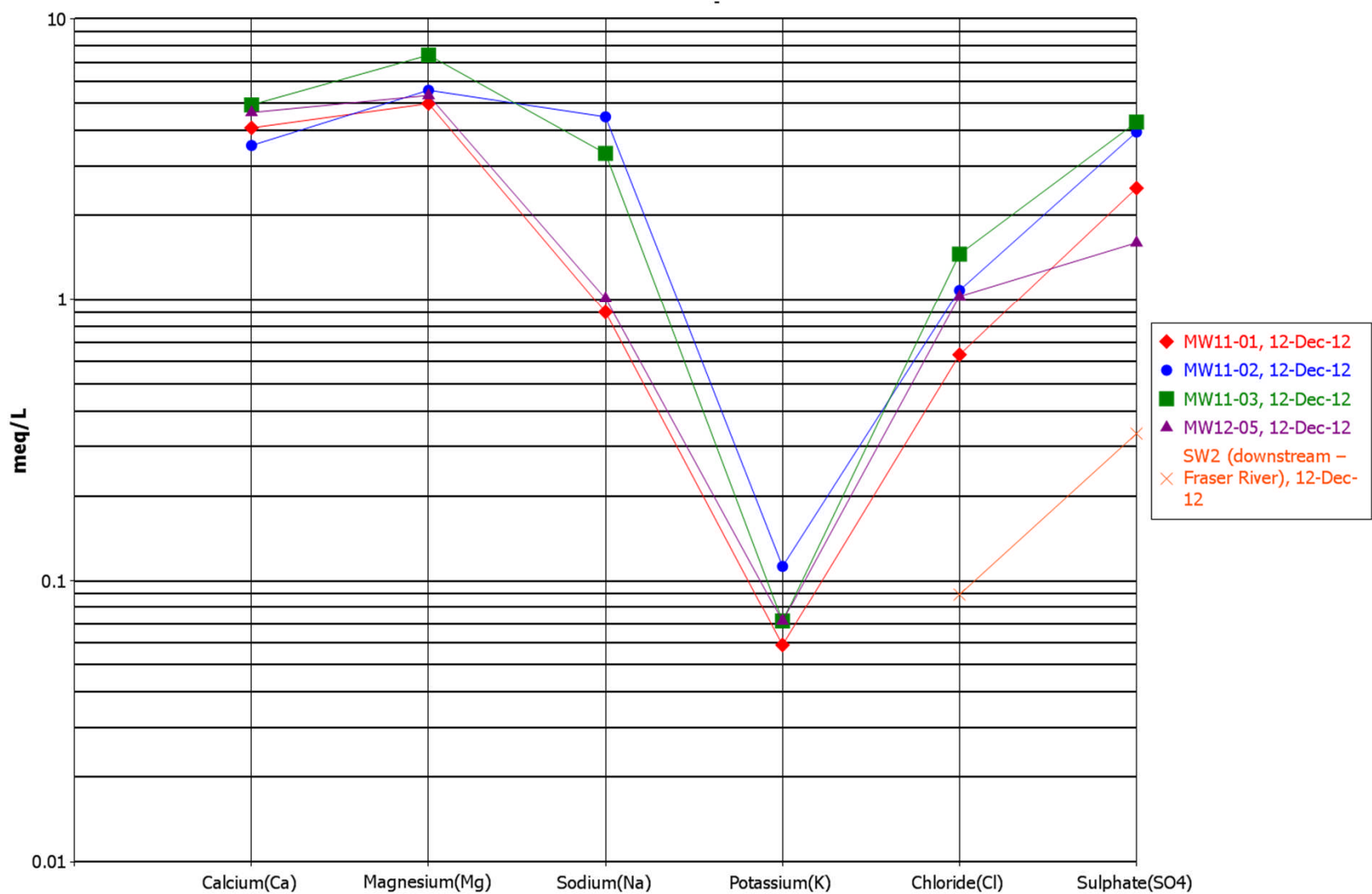
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FIGURE NO.

6



District of Lillooet
Old Bridge Dump Site



TITLE

Figure 7: Schoeller Plot of Monitored Locations, December 12, 2012

DRAWN BRM

DATE January 2013

PROJECT NO. 11-047-02

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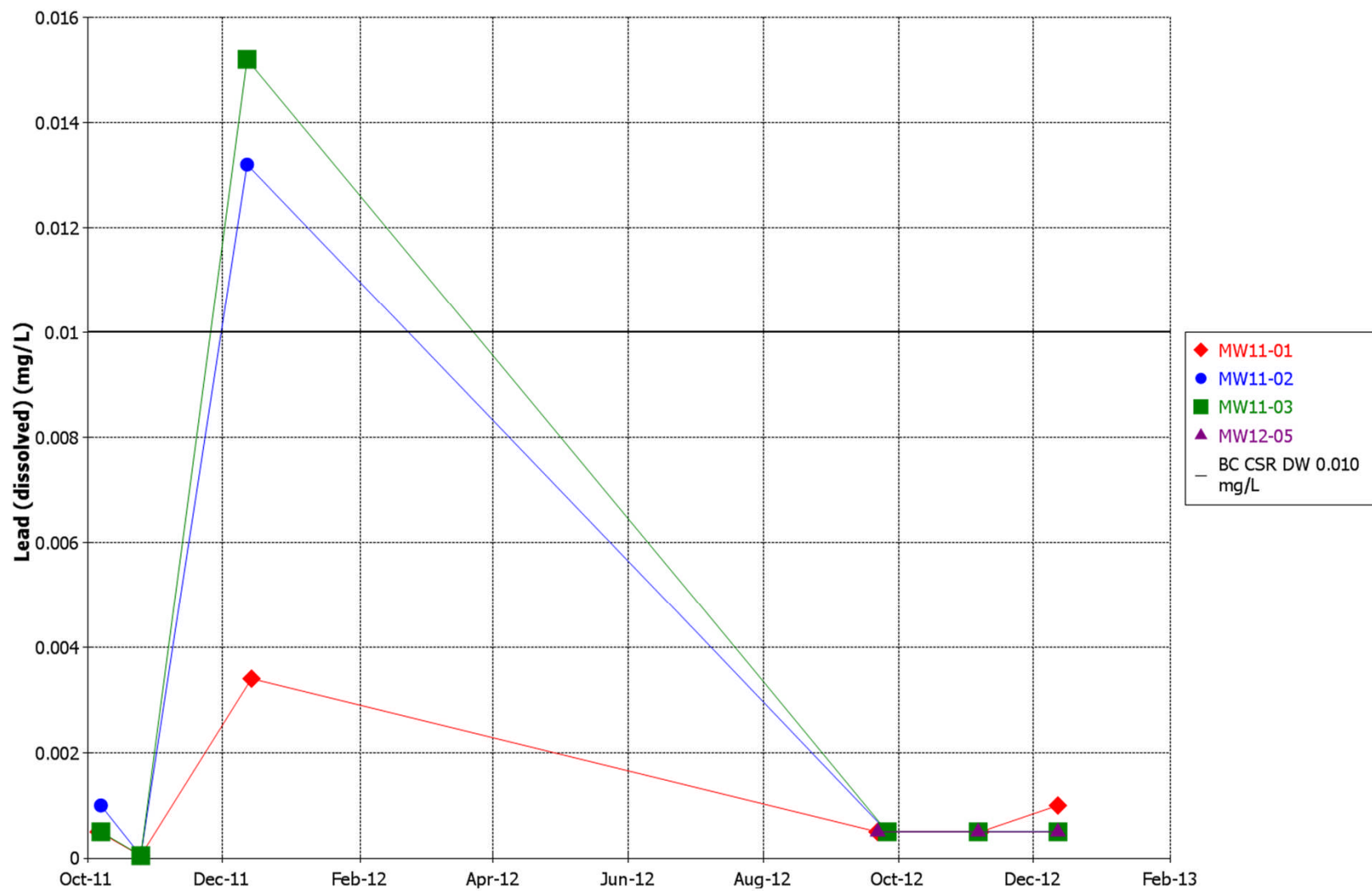
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FILE NO.

FIGURE NO. 7



District of Lillooet
Old Bridge Dump Site



TITLE

Figure 8: Time Series Plot, Dissolved Lead

DRAWN BRM

DATE January 2013

PROJECT NO. 11-047-02

CHECKED DG

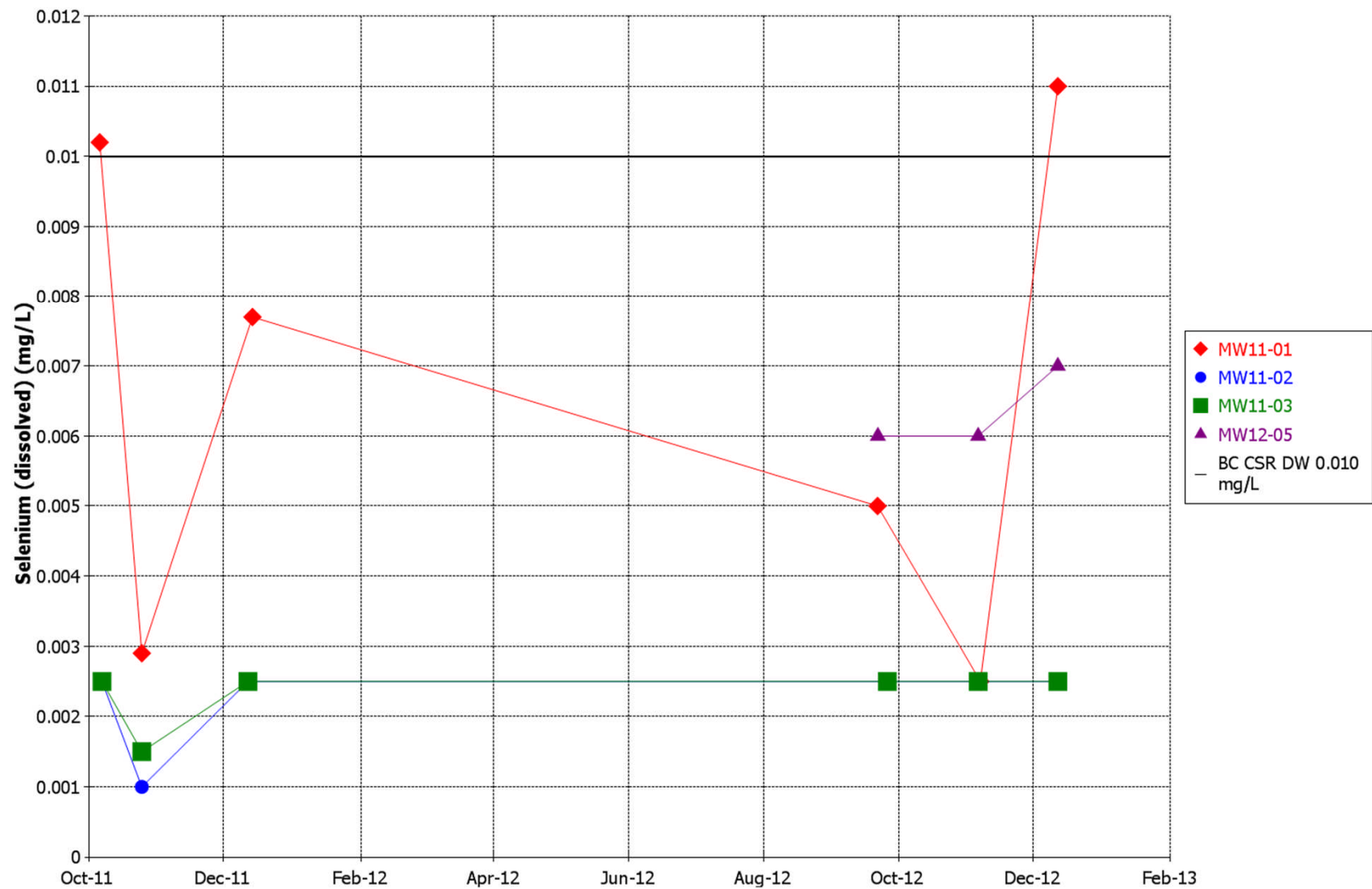
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FILE NO.

FIGURE NO. 8



District of Lillooet
Old Bridge Dump Site



TITLE

Figure 9: Time Series Plot, Dissolved Selenium

DRAWN BRM

CHECKED DG

REVIEWED

DATE January 2013

SCALE See figure

FILE NO.

PROJECT NO. 11-047-02

DWG. NO. na

FIGURE NO. 9

Western Water Associates Ltd.

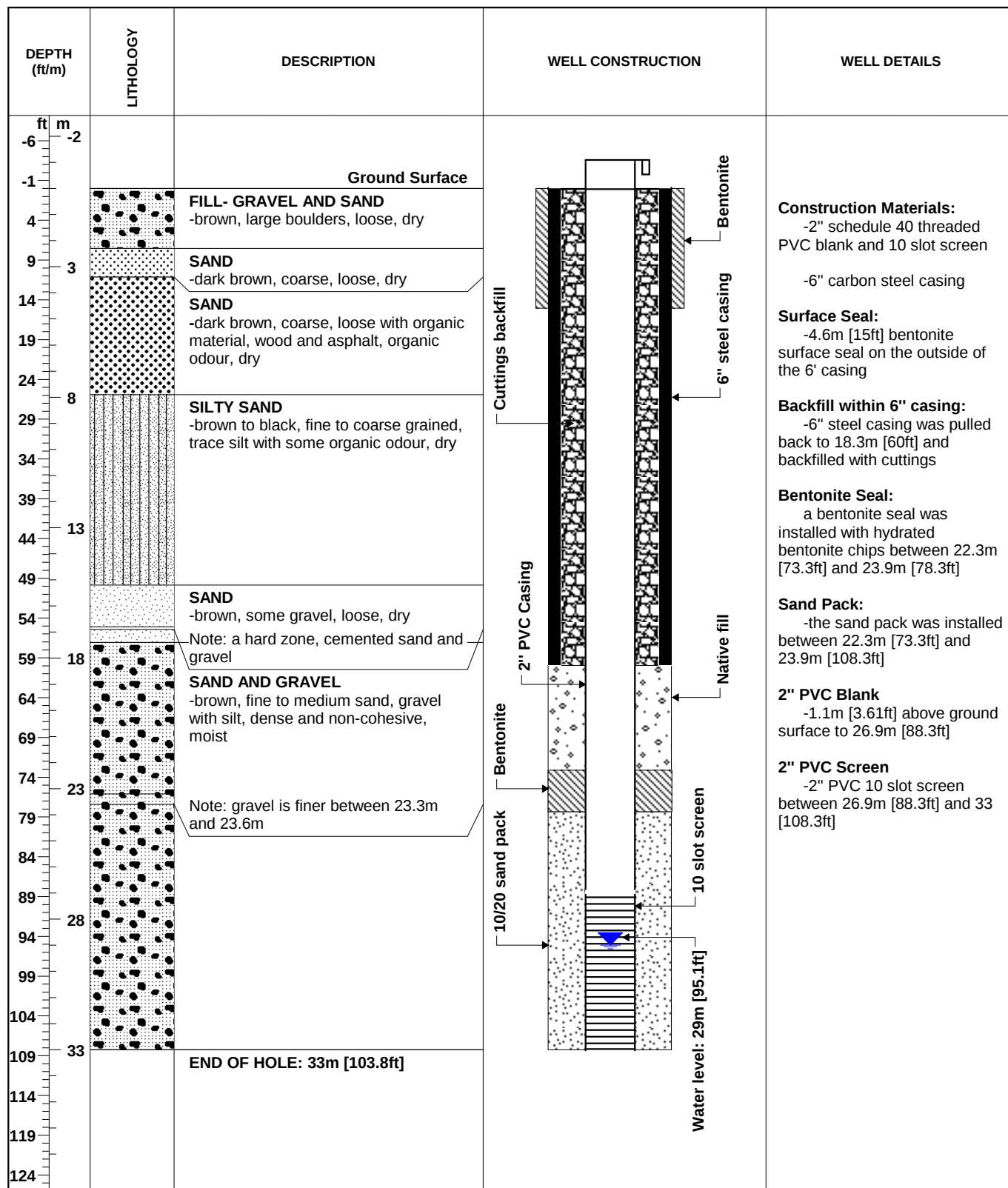
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2. The scope and the period of service provided by Western Water Associates Ltd are subject to restrictions and limitations outlined in subsequent numbered limitations.
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Appendix A

Well Logs





PROJECT No: 11-047-02

SITE: Lillooet Old Dump

CLIENT: District of Lillooet

DRILL METHOD: Direct Air Rotary

DATE: Oct. 5, 2011

LOGGED BY: Bryer Manwell

CONTRACTOR: Robbins Drilling and Pump Services

SURFACE ELEVATION: 221.6 masl

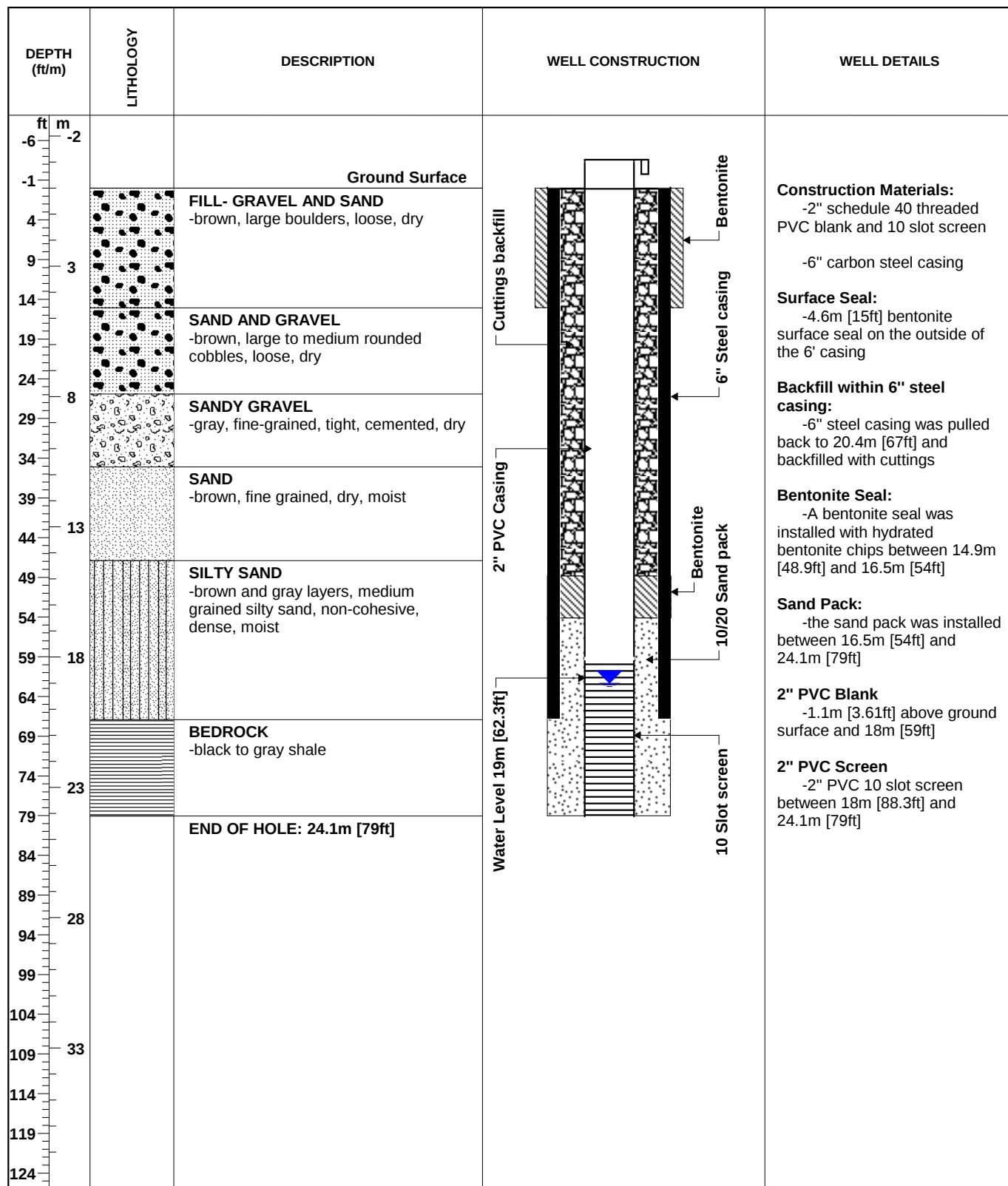
EASTING: 576406

NORTHING: 5617971

CASING HEIGHT: 1.1m [3.6ft]

Drawn By: JW

Reviewed By: BRM



PROJECT No: 11-047-02

SITE: Lillooet Old Dump

CLIENT: District of Lillooet

DRILL METHOD: Direct Air Rotary

DATE: Oct. 5, 2011

LOGGED BY: Bryer Manwell

CONTRACTOR: Robbins Drilling and Pump Services

SURFACE ELEVATION: 218.8 masl

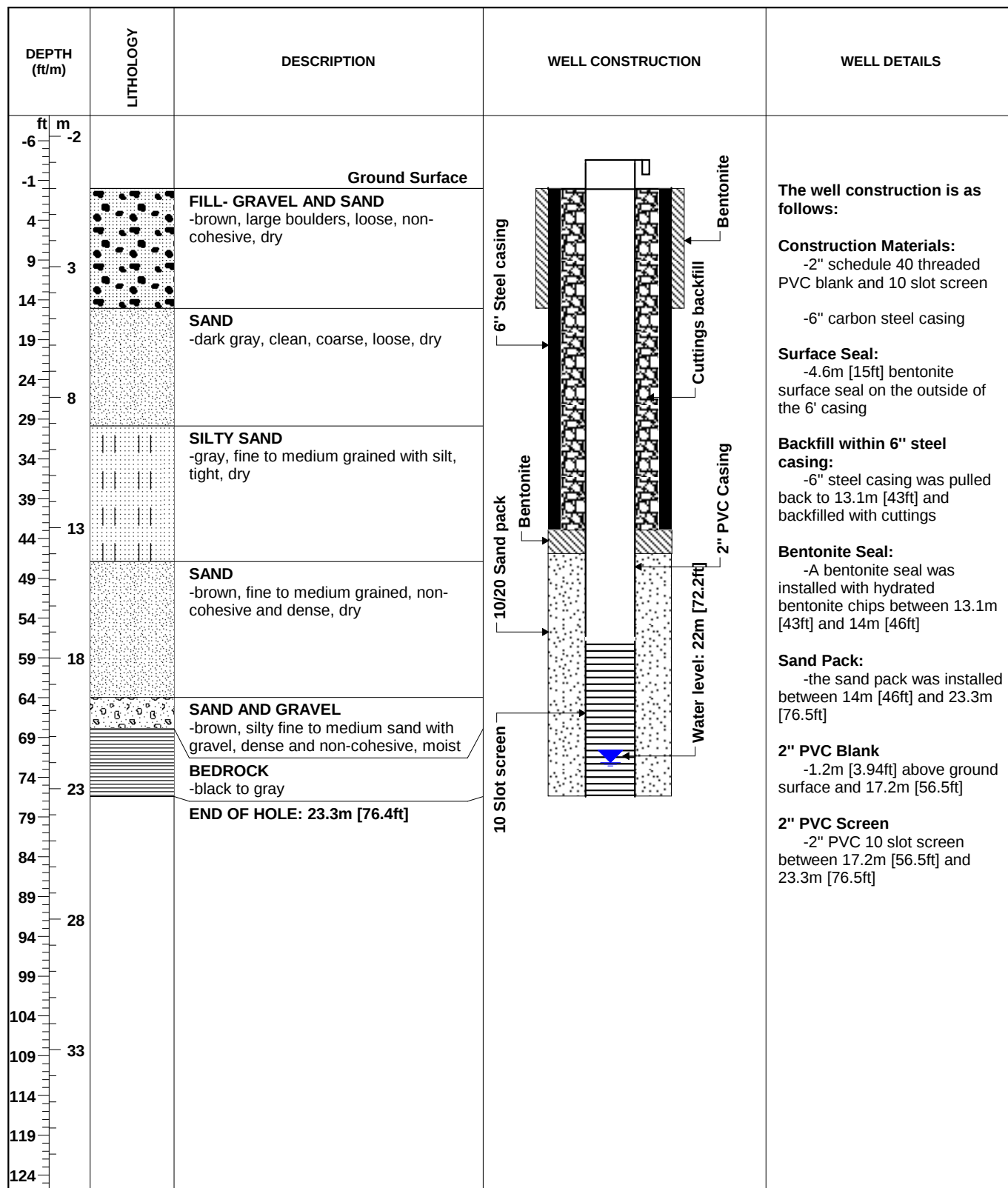
EASTING: 576269

NORTHING: 5617852

CASING HEIGHT: 1.1m [3.6ft]

Drawn By: JW

Reviewed By: BRM



PROJECT No: 11-047-02

SITE: Lillooet Old Dump

CLIENT: District of Lillooet

DRILL METHOD: Direct Air Rotary

DATE: Oct. 5, 2011

LOGGED BY: Bryer Manwell

CONTRACTOR: Robbins Drilling and Pump Services

SURFACE ELEVATION: 218.2 masl

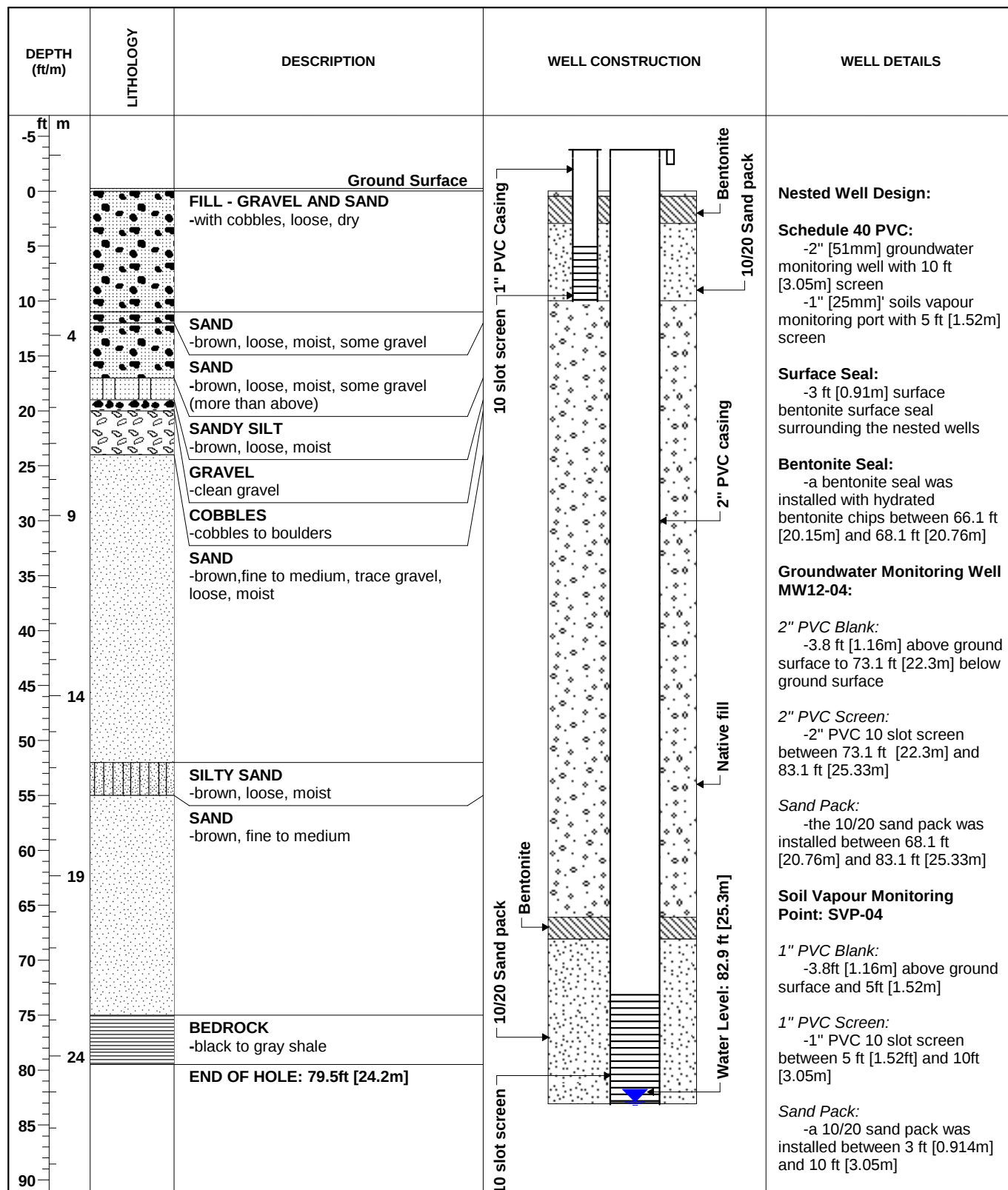
EASTING: 576284

NORTHING: 5617835

CASING HEIGHT: 1.2m [3.9ft]

Drawn By: JW

Reviewed By: BRM



PROJECT No: 11-047-02

SITE: Lillooet Old Dump

CLIENT: District of Lillooet

DRILL METHOD: Odex

DATE: Sept.18, 2012

LOGGED BY: Bryer Manwell

CONTRACTOR: Terra Vita

SURFACE ELEVATION: 220 masl

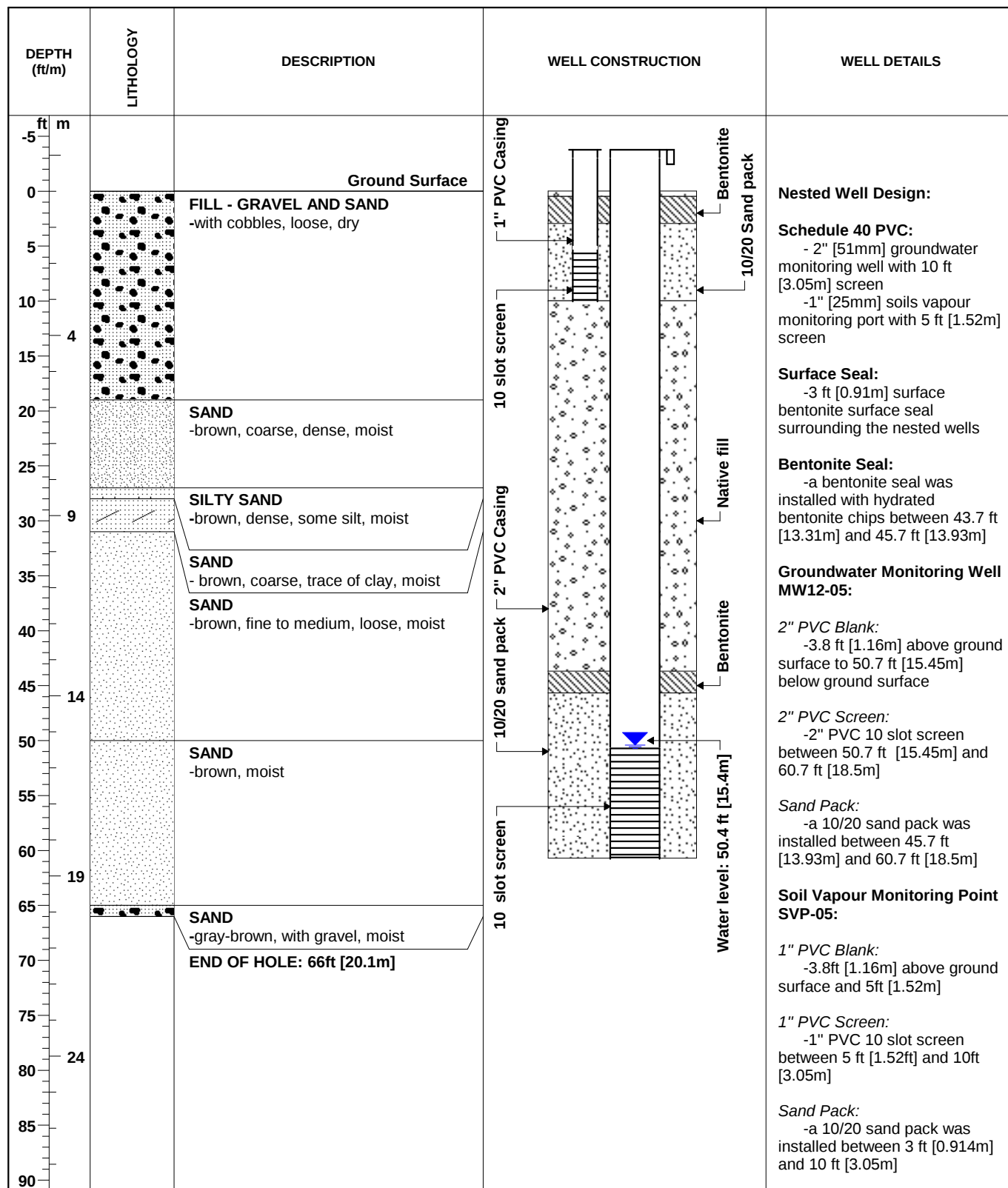
EASTING: 576372

NORTHING: 5617856

CASING HEIGHT: 1.2m [3.8ft]

Drawn By: JW

Reviewed By: BRM



PROJECT No: 11-047-02

SITE: Lillooet Old Dump

CLIENT: District of Lillooet

DRILL METHOD: Odex

DATE: Sept. 20, 2012

LOGGED BY: Bryer Manwell

CONTRACTOR: Terra Vita

SURFACE ELEVATION: 219.8 masl

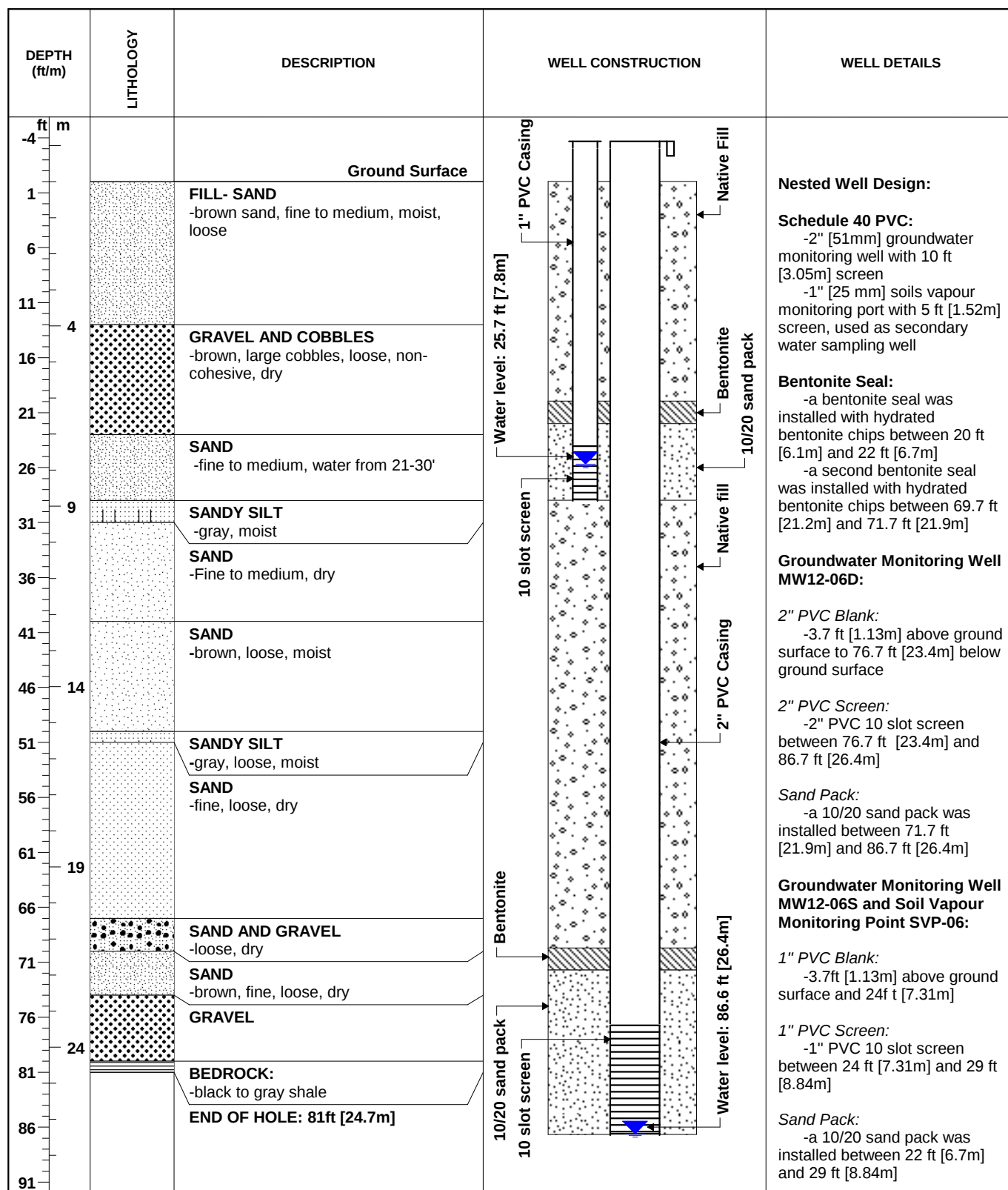
EASTING: 576345

NORTHING: 5617815

CASING HEIGHT: 1.2m [3.8ft]

Drawn By: JW

Reviewed By: BRM



PROJECT No: 11-047-02

SITE: Lillooet Old Dump

CLIENT: District of Lillooet

DRILL METHOD: Odex

DATE: Sept. 18, 2012

LOGGED BY: Bryer Manwell

CONTRACTOR: Terra Vita

SURFACE ELEVATION: 221.8 masl

EASTING: 576310

NORTHING: 5617927

CASING HEIGHT: 1.1m [3.7ft]

Drawn By: JW

Reviewed By: BRM

Appendix B

Water Quality Database



Old Dump Site
Water Quality Results

Legend for Reports for Lillooet Old Dump Site Investigation 11-047 Water Quality Results

<	Less than reported detection limit
>	Greater than reported upper detection limit
A	Absent
BC CSR AW	BC CSR, Schedule 6, Generic Numerical Water Standards for Freshwater Aquatic Life
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, and is calculated from a formula or table.
L	Laboratory reading type (Lab result)
m asl	metres above sea level
N	Narrative type of guideline or standard.
ND	Non-detect. Result is less than lower detection limit.
NG	No Guideline
NR	No Result
NS	No Standard
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
TK	Test kit reading type (Field result)
TNTC	Too numerous to count
	Highlighted value has a reported detection limit that is greater than the guideline or standard maximum.
<u>BC CSR AW</u>	Highlighted value exceeds BC CSR AW

Guideline Notes for Reports for Lillooet Old Dump Site Investigation 11-047 Water Quality Results

1. Notes for BC CSR, Schedule 6, Generic Numerical Water Standards for Freshwater Aquatic Life (BC CSR AW)

General Notes:

Water Standards from Schedule 6, for freshwater aquatic life, have been applied.

Aquatic life standards assume minimum 1:10 dilution available.

Standards for all organic substances are for total substance concentrations. Standards for surface water samples to be analyzed for heavy metals, metalloids and inorganic ions are total substance concentrations. Standards for groundwater samples for heavy metals, metalloids and inorganic ions are for dissolved substance concentrations.

Note 1.1 for Ammonia (total, as N):

Standard varies with pH and temperature. The freshwater CSR Schedule 6 aquatic life standards are based on "Table 4. Average 30-day Concentration of Total Ammonia Nitrogen for Protection of Aquatic Life" from the approved guidelines, which is available at: <http://www.env.gov.bc.ca/wat/wq/BCguidelines/nitrogen/nitrogen.html#tab4>. That table provides pH (6.5 – 9.0) and temperature (0° C – 20° C) dependent freshwater guidelines for ammonia.

The above table is used to derive pH and temperature specific freshwater water quality standards in this report.

Note 1.2 for Cadmium (dissolved):

The standard for cadmium is as follows:

0.1 µg/L at hardness less than 30 mg/L as CaCO₃

0.3 µg/L at hardness of 30 to 90 mg/L as CaCO₃

0.5 µg/L at hardness of 90 to 150 mg/L as CaCO₃

0.6 µg/L at hardness of 150 to 210 mg/L as CaCO₃

0.6 µg/L at hardness greater than 210 mg/L as CaCO₃

Note 1.3 for Chromium (dissolved):

Standard Standard is 0.010 mg/L for chromium VI. Standard is 0.090 mg/L for chromium III. The guideline of 0.010 mg/L was used, in this report, to identify exceedances for dissolved chromium, and total chromium as a means for determining the potential for exceeding the chromium VI and/or chromium III guidelines.

Note 1.4 for Copper (dissolved):

The standard for copper is as follows:

20 µg/L at hardness less than 50 mg/L as CaCO₃

30 µg/L at hardness of 50 to 75 mg/L as CaCO₃

40 µg/L at hardness of 75 to 100 mg/L as CaCO₃

50 µg/L at hardness of 100 to 125 mg/L as CaCO₃

60 µg/L at hardness of 125 to 150 mg/L as CaCO₃

70 µg/L at hardness of 150 to 175 mg/L as CaCO₃

80 µg/L at hardness of 175 to 200 mg/L as CaCO₃

90 µg/L at hardness greater than 200 mg/L as CaCO₃

Note 1.5 for Fluoride:

The standard for fluoride is:

2000 µg/L where water hardness is less than 50 mg/L as CaCO₃;

3000 µg/L where water hardness is greater than or equal to 50 mg/L as CaCO₃

Note 1.6 for Lead (dissolved):

The standard for lead is as follows:

40 µg/L for hardness less than 50 mg/L as CaCO₃

50 µg/L at hardness of 50 to 100 mg/L as CaCO₃

60 µg/L at hardness of 100 to 200 mg/L as CaCO₃

110 µg/L at hardness of 200 to 300 mg/L as CaCO₃

160 µg/L at hardness greater than 300 mg/L as CaCO₃

Note 1.7 for Nickel (dissolved):

The standard for nickel is as follows:

250 µg/L for hardness less than 60 mg/L as CaCO₃

650 µg/L at hardness of 60 to 120 mg/L as CaCO₃

1100 µg/L at hardness of 120 to 180mg/L as CaCO₃

1500 µg/L at hardness greater than 180 mg/L as CaCO₃

Note 1.8 for Nitrate (as N):

Standard may not protect all amphibians. Consult director for further advice.

Note 1.9 for Nitrate + Nitrite (as N):

Standard may not protect all amphibians. Consult director for further advice.

Old Dump Site
Water Quality Results

Note 1.10 for Nitrate + Nitrite (as N) (calculated):

Standard may not protect all amphibians. Consult director for further advice.

Note 1.11 for Nitrite (as N):

The standard for nitrite as N is:

200 µg/L if chloride less than 2 mg/L

400 µg/L if chloride is 2 to 4 mg/L

600 µg/L if chloride is 4 to 6 mg/L

800 µg/L if chloride is 6 to 8 mg/L

1000 µg/L if chloride is 8 to 10 mg/L

2000 µg/L if chloride is greater than 10 mg/L

Note 1.12 for Silver (dissolved):

The standard for silver is:

0.5 µg/L where water hardness is less than 100 mg/L as CaCO₃;

15 µg/L where water hardness is greater than or equal to 100 mg/L as CaCO₃

Note 1.13 for Zinc (dissolved):

The standard for zinc is as follows:

75 µg/L for hardness less than 90 mg/L as CaCO₃

150 µg/L at hardness of 90 to 100 mg/L as CaCO₃

900 µg/L at hardness of 100 to 200mg/L as CaCO₃

1650 µg/L at hardness of 200 to 300mg/L as CaCO₃

2400 µg/L at hardness of 300 to 400mg/L as CaCO₃

2400 µg/L at hardness greater than 400 mg/L as CaCO₃

Old Dump Site
Water Quality Results

Sampling Location			MW11-01	MW11-01	MW11-01	MW11-01	MW11-01	MW11-01	MW11-02	MW11-02	MW11-02	MW11-02	MW11-02	MW11-02	MW11-03	MW11-03
Date Sampled			06-Oct-11	25-Oct-11	14-Dec-11	21-Sep-12	07-Nov-12	12-Dec-12	07-Oct-11	25-Oct-11	12-Dec-11	26-Sep-12	06-Nov-12	12-Dec-12	07-Oct-11	25-Oct-11
Lab ID			K1J0330-01	K1J0963-01	K1L0610-01	2091291-01	2110447-01	2120762-03	K1J0330-02	K1J0963-02	K1L0610-02	2091499-03	2110447-02	2120762-04	K1J0330-03	K1J0963-03
Sample Type			Normal	Normal	Normal				Normal	Normal	Normal				Normal	Normal
Analyte	Unit	Guideline BC CSR AW														
Lab Results																
Alkalinity (total, as CaCO3)	mg/L	NG	242	290	343	284	314	301	271	287	385	852	592	418	481	504
Aluminum (dissolved)	mg/L	NG	<0.050	<0.005	0.054	<0.05	0.14	<0.05	<0.050	0.010	<0.050	<0.05	<0.05	<0.05	<0.050	0.029
Ammonia (total, as N)	mg/L	Calc ^{1.1}	0.03	0.02	0.02	0.024	0.036	0.025	0.22	0.22	0.30	0.099	0.045	0.031	0.07	0.06
Antimony (dissolved)	mg/L	0.200	<0.0200	<0.0020	<0.0200	0.002	0.002	0.001	<0.0200	0.0047	<0.0200	0.002	0.002	0.002	<0.0200	0.0025
Arsenic (dissolved)	mg/L	0.050	<0.0050	0.0009	<0.0050	<0.005	<0.005	<0.005	<0.0050	0.0023	<0.0050	<0.005	<0.005	<0.005	<0.0050	0.0006
Barium (dissolved)	mg/L	10.000	0.063	0.071	0.076	0.07	0.07	0.08	0.097	0.122	0.344	0.06	0.06	0.06	0.090	0.060
Benzene	mg/L	4.000		<0.000500		<0.0005				<0.000500		<0.0005				<0.000500
Beryllium (dissolved)	mg/L	0.053	<0.0010	<0.0001	<0.0010	<0.001	<0.001	<0.001	<0.0010	<0.0001	<0.0010	<0.001	<0.001	<0.001	<0.0010	<0.0001
Biochemical Oxygen Demand	mg/L	NG		<10		<10	<10	<10		<10		<10	11	<10		<10
Bismuth (dissolved)	mg/L	NG	<0.0010	<0.0001	<0.0010	<0.001	<0.001	<0.001	<0.0010	<0.0001	<0.0010	<0.001	<0.001	<0.001	<0.0010	<0.0001
Boron (dissolved)	mg/L	50.000	0.187	0.220	0.216	0.20	0.22	0.24	0.219	0.331	0.406	0.49	0.53	0.57	0.466	0.523
Bromodichloromethane	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Bromoform	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Cadmium (dissolved)	mg/L	Calc ^{1.2}	0.00012	0.00005	0.00012	0.0001	0.0002	0.0001	0.00018	0.00013	0.00017	<0.0001	<0.0001	<0.0001	<0.00010	0.00005
Calcium (dissolved)	mg/L	NG	70.1	74.0	85.8	85	83	82	71.2	59.9	73.7	75	74	71	104	91.7
Carbon tetrachloride	mg/L	0.130		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Chemical Oxygen Demand	mg/L	NG		<5		<5	<5	<5		<5		<5	<5	<5		<5
Chloride	mg/L	1500	25.3	27.8	26.3	21.6	23.5	22.5	37.6	40.8	37.6	33.3	36.1	38.3	42.3	50.9
Chloroethane	mg/L	NG		<0.00200		<0.0020				<0.00200		<0.0020				<0.00200
Chloroform	mg/L	0.020		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Chromium (dissolved)	mg/L	0.010 ^{1.3}	<0.0050	<0.0005	<0.0050	<0.005	<0.005	<0.005	<0.0050	<0.0005	<0.0050	<0.005	<0.005	<0.005	<0.0050	<0.0005
Cobalt (dissolved)	mg/L	0.040	0.00087	0.00033	<0.00050	0.0017	<0.0005	<0.0005	0.00258	0.00309	0.00250	0.0026	0.0007	<0.0005	0.00239	0.00308
Conductivity	µS/cm	NG	757	843	829	865	860	846	802	893	1010	1100	1120	1160	1180	1260
Copper (dissolved)	mg/L	Calc ^{1.4}	<0.0020	0.0006	<0.0020	0.003	0.008	0.003	0.0024	0.0018	0.0034	<0.002	<0.002	<0.002	0.0027	0.0014
Cyanide (total)	mg/L	NG				<0.010	<0.010	<0.010				<0.010	<0.010	<0.010		
Dibromochloromethane	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
1,2-Dibromoethane	mg/L	NG		<0.000300		<0.0003				<0.000300		<0.0003				<0.000300
Dibromomethane	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
1,2-Dichlorobenzene	mg/L	0.007		<0.000500		<0.0005				<0.000500		<0.0005				<0.000500
1,3-Dichlorobenzene	mg/L	1.500		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
1,4-Dichlorobenzene	mg/L	0.260		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
1,1-Dichloroethane	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
1,2-Dichloroethane	mg/L	1.000		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
1,1-Dichloroethylene	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
cis-1,2-Dichloroethylene	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
trans-1,2-Dichloroethylene	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Dichloromethane	mg/L	0.980		<0.00300		<0.0030				<0.00300		<0.0030				<0.00300
1,2-Dichloropropane	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
cis-1,3-Dichloropropene	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
trans-1,3-Dichloropropene	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Ethylbenzene	mg/L	2.000		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Fluoride	mg/L	Calc ^{1.5}				<0.10	0.16	0.17				0.12	0.33	0.30		
Hardness, Total (dissolved as CaCO3)	mg/L	NG	370	410	464	455	456	455	330	300	396	460	458	456	600	570
Hardness, Total (total as CaCO3)	mg/L	NG	379	472	608	512	582	620	5180	777	680	2140	1220	1630	844	776
Iron (dissolved)	mg/L	NG	<0.10	<0.01	<0.10	<0.1	0.3	<0.1	<0.10	0.01	3.46	<0.1	<0.1	<0.1	<0.10	0.04
Lead (dissolved)	mg/L	Calc ^{1.6}	<0.0010	<0.0001	0.0034	<0.001	<0.001	0.001	0.0010	<0.0001	0.0132	<0.001	<0.001	<0.001	<0.0010	<0.0001
Lithium (dissolved)	mg/L	NG	0.0107	0.0121	0.0121	0.013	0.014	0.013	0.0121	0.0025	0.0056	0.010	0.012	0.012	0.0184	0.0203
Magnesium (dissolved)	mg/L	NG	47.3	54.0	60.7	59.0	60.5	60.7	38.1	36.1	51.6	66.5	66.1	67.7	81.3	81.6
Manganese (dissolved)	mg/L	NG	0.190	0.0445	0.0219	0.255	0.041	0.044	1.50	1.76	1.34	0.569	0.163	0.101	0.532	0.436
Mercury (dissolved)	mg/L	0.001	<0.00020	<0.00002	0.00028	<0.0002	<0.0002	<0.0002	<0.00020	<0.00002	0.00039	<0.0002	<0.0002	<0.0002	<0.00020	<0.00002
Methyl tert-butyl ether (MTBE)	mg/L	34.000		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Molybdenum (dissolved)	mg/L	10.000	0.0227	0.0104	0.0100	0.017	0.011	0.011	0.0287	0.0186	0.0185	0.012	0.010	0.009	0.0065	0.0040
Monochlorobenzene	mg/L	0.013		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Nickel (dissolved)	mg/L	Calc ^{1.7}	0.0056	0.0038	0.0044	0.007	0.004	0.003	0.0196	0.0317	0.0168	0.006	0.005	0.004	0.0095	0.0094
Nitrate (as N)	mg/L	400 ^{1.8}	2.26	2.69	7.68	2.36	0.582	2.70	0.866	<0.010	<0.010	0.043	0.098	0.052	0.412	0.336
Nitrate + Nitrite (as N)	mg/L	400 ^{1.9}	2.36	2.76	7.71	2.36	0.606	2.84	0.892	<0.010	<0.010	0.043	0.098	0.052	0.412	0.336
Nitrate + Nitrite (as N) (calculated)	mg/L	400 ^{1.10}	2.35	2.76	7.71	2.36	0.606	2.84	0.90	<0.01	<0.01	0.043	0.098	0.052	0.412	0.336

Old Dump Site
Water Quality Results

Sampling Location			MW11-01	MW11-01	MW11-01	MW11-01	MW11-01	MW11-01	MW11-02	MW11-02	MW11-02	MW11-02	MW11-02	MW11-02	MW11-03	MW11-03
Date Sampled			06-Oct-11	25-Oct-11	14-Dec-11	21-Sep-12	07-Nov-12	12-Dec-12	07-Oct-11	25-Oct-11	12-Dec-11	26-Sep-12	06-Nov-12	12-Dec-12	07-Oct-11	25-Oct-11
Lab ID			K1J0330-01	K1J0963-01	K1L0610-01	2091291-01	2110447-01	2120762-03	K1J0330-02	K1J0963-02	K1L0610-02	2091499-03	2110447-02	2120762-04	K1J0330-03	K1J0963-03
Sample Type			Normal	Normal	Normal				Normal	Normal	Normal				Normal	Normal
Analyte	Unit	Guideline														
		BC CSR AW														
Nitrite (as N)	mg/L	Calc ^{1.11}	0.09	0.07	0.03	<0.010	0.024	0.136	0.03	<0.01	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01
Total Nitrogen	mg/L	NG		2.82	8.51					11.6	2.02					1.35
Total Kjeldahl Nitrogen	mg/L	NG	<0.05	0.06	0.81	0.42	0.57	1.68	6.43	11.6	2.02	5.24	2.05	6.46	1.14	1.02
pH		NG	7.97	7.91		7.90	7.94	7.56	7.27	7.72		7.85	7.89	7.72	7.71	7.72
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L	NG	<0.20	<0.02	<0.20	<0.2	<0.2	<0.2	0.24	<0.02	<0.20	<0.2	<0.2	<0.2	<0.20	<0.02
Phosphorus (total, by ICPMS/ICPOES)	mg/L	NG	<0.20		1.02				20.5		1.87				1.79	
Phosphorus (total, APHA 4500-P)	mg/L	NG			1.07	0.21	0.81	2.15			2.96	26.6	9.52	12.2		
Potassium (dissolved)	mg/L	NG	3.00	2.69	2.36	2.2	3.0	2.3	5.17	4.26	5.11	4.5	4.4	4.4	3.87	3.11
Potassium (total)	mg/L	NG	3.02		4.94				37.0		9.66				8.66	
Selenium (dissolved)	mg/L	0.010	<u>0.0102</u>	0.0029	0.0077	0.005	<0.005	<u>0.011</u>	<0.0050	0.0010	<0.0050	<0.005	<0.005	<0.005	<0.0050	0.0015
Silicon (dissolved, as Si)	mg/L	NG	6.0	7.0	6.3	<5	8	<5	5.1	5.4	5.8	8	7	<5	7.5	7.8
Silver (dissolved)	mg/L	Calc ^{1.12}	<0.00050	<0.00005	0.00060	<0.0005	<0.0005	<0.0005	<0.00050	<0.00005	<0.00050	<0.0005	<0.0005	<0.0005	<0.00050	<0.00005
Sodium (dissolved)	mg/L	NG	25.5	21.3	19.8	19.5	24.1	20.7	56.6	84.7	95.0	93.1	98.5	103	74.8	74.3
Strontium (dissolved)	mg/L	NG	0.774	1.12	1.13	1.08	1.01	1.12	0.883	0.686	1.01	1.56	1.39	1.57	1.64	2.30
Styrene	mg/L	0.720		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Sulphate	mg/L	1000	157	142	105	152	153	120	142	154	177	182	173	190	192	189
Sulphur (dissolved)	mg/L	NG				57	65	31				40	60	63		
Tellurium (dissolved)	mg/L	NG	<0.0020	<0.0002	<0.0020	<0.002	<0.002	<0.002	<0.0020	<0.0002	<0.0020	<0.002	<0.002	<0.002	<0.0020	<0.0002
1,1,2,2-Tetrachloroethane	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Tetrachloroethylene	mg/L	1.100		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Thallium (dissolved)	mg/L	0.003	<0.00020	0.00002	<0.00020	<0.0002	<0.0002	<0.0002	<0.00020	0.00017	<0.00020	<0.0002	<0.0002	<0.0002	<0.00020	0.00005
Thorium (dissolved)	mg/L	NG	<0.0010	<0.0001	<0.0010	<0.001	<0.001	<0.001	<0.0010	<0.0001	<0.0010	<0.001	<0.001	<0.001	<0.0010	<0.0001
Tin (dissolved)	mg/L	NG	<0.0020	<0.0002	0.0052	0.004	<0.002	0.003	<0.0020	0.0003	<0.0020	<0.002	<0.002	<0.002	<0.0020	<0.0002
Titanium (dissolved)	mg/L	1.000	<0.050	<0.005	<0.050	<0.05	<0.05	<0.05	<0.050	<0.005	<0.050	<0.05	<0.05	<0.05	<0.050	<0.005
Toluene	mg/L	0.390		<0.00100		0.0055				<0.00100		<0.0010				0.00182
Total Organic Carbon	mg/L	NG	2.3	0.6		0.8	1.3	1.6	82.0	6.6		5.2	4.0	5.3	4.0	2.9
Total Trihalomethanes (calculated)	mg/L	NG		<0.00200		<0.0020				<0.00200		<0.0020				<0.00200
1,1,1-Trichloroethane	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
1,1,2-Trichloroethane	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Trichloroethylene	mg/L	0.200		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Trichlorofluoromethane	mg/L	NG		<0.00100		<0.0010				<0.00100		<0.0010				<0.00100
Uranium (dissolved)	mg/L	3.000	0.00143	0.00107	0.00089	0.0009	0.0010	0.0008	0.00169	0.00416	0.00362	0.0025	0.0019	0.0015	0.00394	0.00255
Vanadium (dissolved)	mg/L	NG	<0.010	<0.001	<0.010	<0.01	<0.01	<0.01	<0.010	<0.001	<0.010	<0.01	<0.01	<0.01	<0.010	<0.001
Vinyl chloride	mg/L	NG		<0.00200		<0.0020				<0.00200		<0.0020				<0.00200
Xylenes	mg/L	NG		<0.00200		<0.0020				<0.00200		<0.0020				<0.00200
Zinc (dissolved)	mg/L	Calc ^{1.13}	<0.040	0.005	0.051	0.04	<0.04	<0.04	<0.040	0.004	0.079	<0.04	<0.04	<0.04	<0.040	0.050
Zirconium (dissolved)	mg/L	NG	<0.0010	<0.0001	<0.001	<0.001	0.001	<0.001	<0.0010	<0.0001	<0.001	<0.001	<0.001	0.002	<0.0010	0.0003



Old Dump Site
Water Quality Results

		Sample ID	MW11-03 12-Dec-11 K1L0610-03 Normal	MW11-03 26-Sep-12 2091499-04	MW11-03 06-Nov-12 2110447-03	MW11-03 12-Dec-12 2120762-05	MW12-05 21-Sep-12 2091291-02	MW12-05 06-Nov-12 2110447-04	MW12-05 12-Dec-12 2120762-06	SW1 (upstream – Fraser River) 26-Sep-12 2091499-01	SW1 (upstream – Fraser River) 06-Nov-12 2110447-05	SW1 (upstream – Fraser River) 12-Dec-12 2120762-01	SW2 (downstream – Fraser River) 26-Sep-12 2091499-02	SW2 (downstream – Fraser River) 06-Nov-12 2110447-06	SW2 (downstream – Fraser River) 12-Dec-12 2120762-02
Analyte	Unit														
Lab Results															
Alkalinity (total, as CaCO3)	mg/L		516	636	510	503	497	402	390	68	74	86	70	74	89
Aluminum (dissolved)	mg/L		<0.050	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	0.06			0.30		
Ammonia (total, as N)	mg/L		0.03	0.062	0.047	0.039	0.039	0.078	0.032	0.026	0.021	0.047	0.030	0.021	0.042
Antimony (dissolved)	mg/L		<0.0200	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001		
Arsenic (dissolved)	mg/L		<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005		
Barium (dissolved)	mg/L		0.273	<0.05	<0.05	<0.05	0.09	0.12	0.12	<0.05			<0.05		
Benzene	mg/L			<0.0005			<0.0005			<0.0005			<0.0005		
Beryllium (dissolved)	mg/L		<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001		
Biochemical Oxygen Demand	mg/L			<10	<10	<10	35	12	<10	<10	<10	<10	<10	<10	<10
Bismuth (dissolved)	mg/L		<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001		
Boron (dissolved)	mg/L		0.498	0.49	0.48	0.51	0.17	0.22	0.23	<0.04			<0.04		
Bromodichloromethane	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
Bromoform	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
Cadmium (dissolved)	mg/L		0.00018	0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001			<0.0001		
Calcium (dissolved)	mg/L		104	106	102	99	90	101	93	21			22		
Carbon tetrachloride	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
Chemical Oxygen Demand	mg/L			<5	<5	<5	<5	<5	<5	<5	6	<5	<5	<5	<5
Chloride	mg/L		43.3	40.5	40.0	51.6	32.0	33.4	36.4	2.02	1.93	2.29	1.73	1.49	3.17
Chloroethane	mg/L			<0.0020			<0.0020			<0.0020			<0.0020		
Chloroform	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
Chromium (dissolved)	mg/L		<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005		
Cobalt (dissolved)	mg/L		0.00168	0.0088	<0.0005	<0.0005	0.0008	0.0032	<0.0005	<0.0005			<0.0005		
Conductivity	µS/cm		1230	1280	1300	1320	841	964	952	154	172	198	162	176	210
Copper (dissolved)	mg/L		0.0034	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002			<0.002		
Cyanide (total)	mg/L			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Dibromochloromethane	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
1,2-Dibromoethane	mg/L			<0.0003			<0.0003			<0.0003			<0.0003		
Dibromomethane	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
1,2-Dichlorobenzene	mg/L			<0.0005			<0.0005			<0.0005			<0.0005		
1,3-Dichlorobenzene	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
1,4-Dichlorobenzene	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
1,1-Dichloroethane	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
1,2-Dichloroethane	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
1,1-Dichloroethylene	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
cis-1,2-Dichloroethylene	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
trans-1,2-Dichloroethylene	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
Dichloromethane	mg/L			<0.0030			<0.0030			<0.0030			<0.0030		
1,2-Dichloropropane	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
cis-1,3-Dichloropropene	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
trans-1,3-Dichloropropene	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
Ethylbenzene	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
Fluoride	mg/L			0.14	0.23	0.27	<0.10	<0.10	0.11	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Hardness, Total (dissolved as CaCO3)	mg/L		593	620	643	620	431	522	499	74.7			78.8		
Hardness, Total (total as CaCO3)	mg/L		851	1120	913	974	1380	1520	2030	71.6	80.6	94.1	79.3	77.3	91.3
Iron (dissolved)	mg/L		<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			0.3		
Lead (dissolved)	mg/L		0.0152	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001		
Lithium (dissolved)	mg/L		0.0124	0.024	0.027	0.024	0.012	0.014	0.013	0.001			0.002		
Magnesium (dissolved)	mg/L		80.9	86.4	94.4	90.3	50.0	65.4	64.9	5.3			5.8		
Manganese (dissolved)	mg/L		0.537	1.15	0.015	0.084	0.115	0.171	0.010	0.005			0.011		
Mercury (dissolved)	mg/L		0.00025	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			<0.0002		
Methyl tert-butyl ether (MTBE)	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
Molybdenum (dissolved)	mg/L		0.0045	0.007	0.004	0.003	0.011	0.006	0.005	0.001			0.002		
Monochlorobenzene	mg/L			<0.0010			<0.0010			<0.0010			<0.0010		
Nickel (dissolved)	mg/L		0.0093	0.013	0.003	0.003	0.005	0.011	0.004	0.003			0.003		
Nitrate (as N)	mg/L		<0.010	0.139	0.192	0.015	3.89	4.03	1.79	0.036	0.056	0.087	0.019	0.116	0.152
Nitrate + Nitrite (as N)	mg/L		<0.010	0.139	0.192	<0.020	3.89	4.03	1.79	0.036	0.056	0.087	<0.020	0.116	0.152
Nitrate + Nitrite (as N) (calculated)	mg/L		<0.01	0.139	0.192	0.015	3.89	4.03	1.79	0.036	0.056	0.087	0.019	0.116	0.152

Old Dump Site
Water Quality Results

Sample		MW11-03 12-Dec-11 K1L0610-03 Normal	MW11-03 26-Sep-12 2091499-04	MW11-03 06-Nov-12 2110447-03	MW11-03 12-Dec-12 2120762-05	MW12-05 21-Sep-12 2091291-02	MW12-05 06-Nov-12 2110447-04	MW12-05 12-Dec-12 2120762-06	SW1 (upstream – Fraser River) 26-Sep-12 2091499-01	SW1 (upstream – Fraser River) 06-Nov-12 2110447-05	SW1 (upstream – Fraser River) 12-Dec-12 2120762-01	SW2 (downstream – Fraser River) 26-Sep-12 2091499-02	SW2 (downstream – Fraser River) 06-Nov-12 2110447-06	SW2 (downstream – Fraser River) 12-Dec-12 2120762-02
Analyte	Unit													
Nitrite (as N)	mg/L	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total Nitrogen	mg/L	1.88												
Total Kjeldahl Nitrogen	mg/L	1.88	2.11	1.34	1.68	2.47	4.73	6.20	0.22	0.21	0.31	0.18	0.14	0.32
pH			7.88	7.81	7.61	7.90	7.85	7.56	7.85	8.00	7.26	7.87	7.97	7.23
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2			<0.2		
Phosphorus (total, by ICPMS/ICPOES)	mg/L	2.32								<0.2	<0.2		<0.2	<0.2
Phosphorus (total, APHA 4500-P)	mg/L	4.49	7.11	5.39	3.50	11.0	14.3	12.3	0.03	0.05	0.04	0.02	0.04	0.03
Potassium (dissolved)	mg/L	3.38	2.5	3.0	2.8	3.3	2.8	2.8	0.8			0.7		
Potassium (total)	mg/L	8.35								0.7	0.9		0.5	0.8
Selenium (dissolved)	mg/L	<0.0050	<0.005	<0.005	<0.005	0.006	0.006	0.007	<0.005			<0.005		
Silicon (dissolved, as Si)	mg/L	6.8	<5	8	<5	<5	10	7	<5			<5		
Silver (dissolved)	mg/L	<0.00050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			<0.0005		
Sodium (dissolved)	mg/L	75.7	74.5	80.1	76.3	21.3	22.5	23.2	4.1			4.4		
Strontium (dissolved)	mg/L	1.95	2.35	2.36	2.50	1.23	1.54	1.68	0.11			0.13		
Styrene	mg/L		<0.0010			<0.0010			<0.0010			<0.0010		
Sulphate	mg/L	188	174	177	206	92.3	95.9	76.7	11.8	12.9	14.5	12.5	13.2	16.0
Sulphur (dissolved)	mg/L		17	82	61	40	34	23	<10			<10		
Tellurium (dissolved)	mg/L	<0.0020	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002			<0.002		
1,1,2,2-Tetrachloroethane	mg/L		<0.0010			<0.0010			<0.0010			<0.0010		
Tetrachloroethylene	mg/L		<0.0010			<0.0010			<0.0010			<0.0010		
Thallium (dissolved)	mg/L	<0.00020	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			<0.0002		
Thorium (dissolved)	mg/L	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001		
Tin (dissolved)	mg/L	<0.0020	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002			<0.002		
Titanium (dissolved)	mg/L	<0.050	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05		
Toluene	mg/L		<0.0010			0.0012			<0.0010			<0.0010		
Total Organic Carbon	mg/L		3.3	3.7	2.4	1.4	4.0	2.6	2.3	3.9	4.4	2.2	3.5	4.4
Total Trihalomethanes (calculated)	mg/L		<0.0020			<0.0020			<0.0020			<0.0020		
1,1,1-Trichloroethane	mg/L		<0.0010			<0.0010			<0.0010			<0.0010		
1,1,2-Trichloroethane	mg/L		<0.0010			<0.0010			<0.0010			<0.0010		
Trichloroethylene	mg/L		<0.0010			<0.0010			<0.0010			<0.0010		
Trichlorofluoromethane	mg/L		<0.0010			<0.0010			<0.0010			<0.0010		
Uranium (dissolved)	mg/L	0.00673	0.0018	0.0011	0.0012	0.0015	0.0012	0.0009	0.0003			0.0003		
Vanadium (dissolved)	mg/L	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01		
Vinyl chloride	mg/L		<0.0020			<0.0020			<0.0020			<0.0020		
Xylenes	mg/L		<0.0020			<0.0020			<0.0020			<0.0020		
Zinc (dissolved)	mg/L	0.089	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04		
Zirconium (dissolved)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001		



Appendix C

Summary of Soils Sampling Results



Summary of Soils Analysis

		Urban Park	Residential	RDL	TP 1	TP 3	TP 5	TP 6	TP 7	TP 8	TP 9	TP 10	TP 11	TP 12	TP 13	TP 14	Fill
Date				21-Sep-12	21-Sep-12	21-Sep-12	21-Sep-12	21-Sep-12	21-Sep-12	21-Sep-12	21-Sep-12	21-Sep-12	21-Sep-12	21-Sep-12	21-Sep-12	21-Sep-12	21-Sep-12
Analyte	Units				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Moisture	% rec			0.1	1.9	4.2	1.7	10	10	3.2	1.9	5.4	1.6	3.3	4.7	8.4	0.2
Conductivity (EC)	ds/m			0.01	0.11	0.16	0.09	0.16	0.12	0.14	0.15	0.14	0.1	0.15	0.13	0.18	0.18
pH	pH units			0.1	7.7	6.7	7.6	7.2	7.7	7.6	7.6	7.4	7.8	7.2	7.9	7.9	8.1
VPHs	mg/kg	200	200	20	<20		<20		<20		<20		<20		<20		<20
LEPHs	mg/kg	1 000	1 000	250		<250		<250		<250		<250		<250		<250	
HEPHs	mg/kg	1 000	1 000	250		283		547		<250		369		335		<250	
Total PAH	mg/kg			0.1		3.67		4.92		2.7		0.33		<0.10		<0.10	
Aluminum	mg/kg dry			20	14000	15000	16000	13000	17000	14000	14000	12000	18000	13000	14000	15000	11000
Antimony	mg/kg dry	20	20	0.1	0.7	0.7	0.6	0.6	0.6	0.5	0.7	0.5	1	0.8	1	1.2	0.4
Arsenic	mg/kg dry			0.4	6	8.1	6.1	6.1	5.8	4.5	6.9	6.2	6.8	8	7	6.6	4.5
Barium	mg/kg dry			1	92	120	110	130	120	87	89	110	150	210	180	210	65
Beryllium	mg/kg dry	4	4	0.1	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.4	0.2	0.3	0.3	0.2
Bismuth	mg/kg dry			0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	0.1	<0.1
Boron	mg/kg dry			2	8	7	11	8	7	10	9	8	8	12	13	13	33
Cadmium	mg/kg dry			0.04	0.28	0.43	0.28	0.32	0.34	0.26	0.29	0.23	0.49	0.31	0.44	0.33	0.18
Calcium	mg/kg dry			100	21000	12000	43000	13000	11000	23000	30000	15000	11000	20000	16000	16000	17000
Chromium	mg/kg dry			1	110	93	160	54	95	200	150	110	67	60	86	60	49
Cobalt	mg/kg dry	50	50	0.1	19	14	23	13	20	26	18	16	15	12	17	14	12
Copper	mg/kg dry			0.2	39	39	44	36	39	38	38	33	75	40	40	45	33
Iron	mg/kg dry			20	29000	28000	33000	25000	34000	30000	29000	23000	36000	22000	29000	26000	23000
Lead	mg/kg dry			0.2	10	35	19	5.4	6.6	19	17	7.3	46	9.5	26	24	29
Lithium	mg/kg dry			0.1	14	17	13	15	21	13	14	11	21	13	15	15	11
Magnesium	mg/kg dry			10	23000	14000	25000	14000	24000	41000	27000	21000	13000	10000	18000	13000	12000
Manganese	mg/kg dry			0.4	640	690	700	590	610	610	590	530	630	880	710	750	490
Mercury	mg/kg dry			0.05	0.07	0.16	0.27	<0.05	0.06	0.14	0.08	0.06	0.08	0.06	0.12	0.17	<0.05
Molybdenum	mg/kg dry	10	10	0.1	1.2	1	1	1.2	1.4	0.8	0.9	0.8	2.6	1.3	1.7	1.9	0.9
Nickel	mg/kg dry	100	100	0.4	170	84	180	93	180	330	200	150	85	51	140	96	56
Phosphorus	mg/kg dry			10	600	620	720	620	500	530	610	550	600	950	830	940	490
Potassium	mg/kg dry			10	1100	1600	1200	1900	1700	1100	1100	1300	1800	2500	2100	3600	780
Selenium	mg/kg dry	3	3	0.5	0.6	<0.5	0.6	<0.5	0.7	<0.5	0.5	0.5	0.7	<0.5	0.6	<0.5	0.5
Silicon	mg/kg dry			3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000
Silver	mg/kg dry	20	20	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.4	<0.2	<0.2	<0.2	<0.2
Sodium	mg/kg dry			40	280	240	240	360	260	220	250	410	190	580	520	780	520
Strontium	mg/kg dry			0.2	49	47	79	51	37	52	67	50	34	90	82	76	60
Sulfur	mg/kg dry			1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Tellurium	mg/kg dry			0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Thallium	mg/kg dry			0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1
Thorium	mg/kg dry			0.5	0.9	0.8	0.9	0.7	0.9	0.8	0.9	1	1	0.8	0.8	0.8	1.9
Tin	mg/kg dry	50	50	0.2	1	15	0.9	0.6	0.9	2.4	0.7	0.6	2.8	1	2.7	3.8	0.5
Titanium	mg/kg dry			2	670	710	890	490	420	650	740	880	560	830	710	560	1100
Uranium	mg/kg dry			0.1	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.2	0.3
Vanadium	mg/kg dry	200	200	0.4	55	51	68	43	53	53	59	48	57	48	49	46	55
Zinc	mg/kg dry			2	79	97	81	79	94	78	77	64	120	91	100	110	68
Zirconium	mg/kg dry			2	2	3	2	4	3	3	2	4	3	4	3	2	4
VHs (6-10)	mg/kg			20	<20		<20		<20		<20		<20		<20		<20
EPHs (10-19)	mg/kg			250		<250		<250		<250		<250		<250		<250	
EPHs (19-32)	mg/kg			250		286		550		<250		369		335		<250	

		Urban Park	Residential	RDL	TP 1	TP 3	TP 5	TP 6	TP 7	TP 8	TP 9	TP 10	TP 11	TP 12	TP 13	TP 14	Fill
Acenaphthylene	mg/kg			0.1		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10	
Anthracene	mg/kg			0.1		<0.10		0.12		<0.10		<0.10		<0.10		<0.10	
Benzo (a) anthracene	mg/kg	1	1	0.1		0.3		0.51		0.28		<0.10		<0.10		<0.10	
Benzo (a) pyrene	mg/kg			0.1		0.64		0.57		0.28		0.1		<0.10		<0.10	
Benzo (b) fluoranthene	mg/kg	1	1	0.1		0.25		0.26		0.14		<0.10		<0.10		<0.10	
Benzo (g,h,i) perylene	mg/kg			0.1		0.51		0.34		0.18		<0.10		<0.10		<0.10	
Benzo (k) fluoranthene	mg/kg	1	1	0.1		0.4		0.48		0.21		<0.10		<0.10		<0.10	
Chrysene	mg/kg			0.1		0.29		0.51		0.26		<0.10		<0.10		<0.10	
Dibenz (a,h) anthracene	mg/kg	1	1	0.1		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10	
Fluoranthene	mg/kg			0.1		0.33		0.72		0.47		0.1		<0.10		<0.10	
Fluorene	mg/kg			0.1		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10	
Indeno (1,2,3-cd) pyrene	mg/kg	1	1	0.1		0.39		0.31		0.16		<0.10		<0.10		<0.10	
Naphthalene	mg/kg	5	5	0.1		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10	
Phenanthrene	mg/kg	5	5	0.1		0.1		0.25		0.23		<0.10		<0.10		<0.10	
Pyrene	mg/kg	10	10	0.1		0.46		0.84		0.5		0.13		<0.10		<0.10	
Benzene	mg/kg			0.03	<0.03		<0.03		<0.03		<0.03		<0.03		<0.03		<0.03
Bromodichloromethane	mg/kg			0.1	<0.10		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10
Bromoform	mg/kg			0.1	<0.10		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10
Carbon tetrachloride	mg/kg			0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
Chlorobenzene	mg/kg			0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
Chloroform	mg/kg	5	5	0.07	<0.07		<0.07		<0.07		<0.07		<0.07		<0.07		<0.07
Dibromochloromethane	mg/kg			0.1	<0.10		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10
1,2-Dibromoethane	mg/kg			0.1	<0.10		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10
Dibromomethane	mg/kg			0.1	<0.10		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10
1,2-Dichlorobenzene	mg/kg	1	1	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
1,3-Dichlorobenzene	mg/kg	1	1	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
1,4-Dichlorobenzene	mg/kg	1	1	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
1,1-Dichloroethane	mg/kg	5	5	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
1,2-Dichloroethane	mg/kg	5	5	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
1,1-Dichloroethene	mg/kg	5	5	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
cis-1,2-Dichloroethene	mg/kg	5	5	0.1	<0.10		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10
trans-1,2-Dichloroethene	mg/kg	5	5	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
1,2-Dichloropropane	mg/kg	5	5	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
cis-1,3-Dichloropropene	mg/kg	5	5	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
trans-1,3-Dichloropropene	mg/kg	5	5	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
Ethylbenzene	mg/kg			0.05	<0.05		<0.05		0.12		<0.05		<0.05		<0.05		<0.05
Methyl tert-butyl ether	mg/kg			0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
Methylene chloride	mg/kg			0.5	<0.50		<0.50		<0.50		<0.50		<0.50		<0.50		<0.50
Styrene	mg/kg	5	5	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
1,1,2,2-Tetrachloroethane	mg/kg			0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
Tetrachloroethene	mg/kg			0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
1,1,1-Trichloroethane	mg/kg	5	5	0.05	<0.05		<0.05		<0.05		<0.05		<0.05		<0.05		<0.05
Toluene	mg/kg			0.2	<0.20		<0.20		0.25		<0.20		<0.20		<0.20		<0.20
1,1,2-Trichloroethane	mg/kg	5	5	0.07	<0.07		<0.07		<0.07		<0.07		<0.07		<0.07		<0.07
Trichloroethene	mg/kg			0.01	<0.01		<0.01		<0.01		<0.01		<0.01		<0.01		<0.01
Trichlorofluoromethane	mg/kg			0.1	<0.10		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10
Vinyl chloride	mg/kg			0.1	<0.10		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10
Xylenes (total)	mg/kg			0.1	<0.10		<0.10		0.35		<0.10		<0.10		<0.10		<0.10

Appendix D

Summary of Soil Vapour Sampling Results



Soil Vapour Results with the OUTDOOR EXPOSURE LIMITS Attenuation Factor of 10X10-4 applied

	Agricultural, urban park, or residential use																					
Parameter		SVP-01	SVP-01	SVP-01	SVP-02	SVP-02	SVP-02	SVP-03	SVP-03	SVP-03	SVP-04	SVP-04	SVP-04	SVP-05	SVP-05	SVP-05	SVP-06	SVP-06	SVP-06	SVP-07	SVP-07	SVP-07
		25-Sep-12	08-Nov-12	12-Dec-12	25-Sep-12	08-Nov-12	12-Dec-12	25-Sep-12	08-Nov-12	12-Dec-12	25-Sep-12	08-Nov-12	12-Dec-12	25-Sep-12	08-Nov-12	12-Dec-12	25-Sep-12	08-Nov-12	12-Dec-12	25-Sep-12	08-Nov-12	12-Dec-12
VHv (6-13)		<DL	<DL	<DL	0.98	2.7	<DL	1.6	3.7	<DL	<DL	0.2	<DL	<DL	0.31	0.2	<DL	0.23	<DL	<DL	<DL	<DL
VPVh		<DL	<DL	<DL	0.81	2.5	<DL	1.3	3.7	<DL	<DL	0.2	<DL	<DL	0.31	0.24	<DL	0.23	<DL	<DL	<DL	<DL
Acetone	20	0.0029	<DL	0.0065	0.016	<DL	0.0097	0.0065	<DL	0.007	0.0015	<DL	0.0039	0.0072	<DL	0.0025	0.0011	<DL	0.0061	<DL	<DL	0.0025
Acrylonitrile	1.5	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	0.0002	<DL	<DL	<DL	<DL	<DL
Allyl chloride	1	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Benzene	1.5	0.00052	0.0002	0.00023	0.0055	0.00045	0.00038	0.0054	0.00039	0.00097	0.00047	0.00019	0.00025	0.00067	0.00019	0.00022	0.00041	0.00022	0.00027	0.00026	0.0002	0.00024
Bromobenzene	10	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Bromodichloromethane	1	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Bromoform	9	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
1,3-Butadiene	2	0	<DL	<DL	0	<DL	<DL	0	<DL	<DL	0	<DL	<DL	0	<DL	<DL	0	<DL	<DL	0	<DL	<DL
2-Butanone (MEK)	5 000	0.0005	<DL	0.00044	0.014	0.0036	0.00061	0.0033	<DL	0.00036	0.00042	<DL	0.0005	0.00063	<DL	0.00025	<DL	<DL	0.00058	<DL	<DL	0.00042
Carbon disulfide	700	0.00027	<DL	<DL	0.0019	<DL	0.00056	0.0022	<DL	<DL	0.00039	0.0019	<DL	0.0039	0.0012	<DL	<DL	0.0011	<DL	<DL	<DL	<DL
Carbon tetrachloride	0.65	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	0.00004	0.00004	<DL	<DL	<DL	0.00003	<DL	0.00004	<DL	<DL	<DL	0.00004
Chlorobenzene	50	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Chloroethane	10 000	<DL	<DL	0.0071	0.037	0.02	0.019	0.0073	0.0029	0.0027	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Chloroform	1	0.00096	<DL	<DL	0.00031	0.00011	<DL	<DL	<DL	<DL	0.0033	0.0016	<DL	0.00014	<DL	0.0003	0.00027	0.00078	<DL	<DL	<DL	<DL
2-Chlorotoluene	40	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
n-Decane	2 500	0.00035	<DL	<DL	0.0013	<DL	<DL	0.019	0.02	<DL	0.00031	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
1,2-Dibromo-3-chloropropane	15	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Dibromochloromethane	40	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
1,2-Dibromoethane	1	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Dibromomethane	5	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
trans-1,4-Dichloro-2-butene	0.4	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
1,2-Dichlorobenzene	200	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
1,3-Dichlorobenzene	80	<DL	<DL	0.00081	<DL	<DL	0.001	<DL	<DL	0.00063	<DL	<DL	0.00057	<DL	<DL	0.00066	<DL	<DL	0.00084	<DL	<DL	0.00059
1,4-Dichlorobenzene	800	<DL	<DL	<DL	<DL	0.0025	<DL	0.00064	0.00086	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Dichlorodifluoromethane	200	0.00054	0.0012	0.0037	0.0085	0.019	0.048	0.0072	0.013	0.013	0.0012	0.0038	0.0038	0.0029	0.017	0.0071	0.00046	0.0013	0.0019	<DL	0.00071	0.00057
1,1-Dichloroethane	500	<DL	<DL	0.00017	0.0028	0.0034	<DL	0.00037	0.00064	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
1,2-Dichloroethane	0.4	<DL	<DL	<DL	0.00013	<DL	<DL	0.00006	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
1,1-Dichloroethene	1	<DL	<DL	0.00007	0.00087	0.0002	0.00009	0.00011	0.00007	<DL	0.00003	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
cis-1,2-Dichloroethene	20	<DL	<DL	0.0026	0.43	0.062	0.00056	0.4	0.062	0.0019	<DL	<DL	0.002	0.00024	<DL	0.0063	<DL	<DL	<DL	0.00036	<DL	0.0022
trans-1,2-Dichloroethene	60	<DL	<DL	0.00021	0.013	<DL	<DL	0.015	0.001	<DL	<DL	<DL	<DL	<DL	<DL	0.00015	<DL	<DL	<DL	<DL	<DL	<DL
1,2-Dichloropropane	0.65	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
1,3-Dichloropropane	50	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
cis-1,3-Dichloropropene	0	<DL	<DL	0	0	<DL	0	0	<DL	0	0	<DL	0	0	<DL	0	0	<DL	0	0	<DL	0
trans-1,3-Dichloropropene	0	<DL	<DL	<DL	0	<DL	<DL	0	<DL	<DL	0	<DL	<DL	0	<DL	<DL	0	<DL	<DL	0	<DL	<DL
Ethyl acetate	2 000	<DL	<DL	0.001	<DL	<DL	0.0011	<DL	<DL	<DL	<DL	<DL	0.00082	<DL	<DL	<DL	<DL	<DL	0.00073	<DL	<DL	0.00057
Ethylbenzene	1 000	0.00019	<DL	0.00013	0.024	0.012	0.00016	0.044	0.0046	0.00073	0.00021	<DL	0.00059	0.00046	0.00015	0.00029	0.00019	<DL	0.00015	0.00032	0.00012	0.00015

	Agricultural, urban park, or residential use																					
Parameter		SVP-01	SVP-01	SVP-01	SVP-02	SVP-02	SVP-02	SVP-03	SVP-03	SVP-03	SVP-04	SVP-04	SVP-04	SVP-05	SVP-05	SVP-05	SVP-06	SVP-06	SVP-06	SVP-07	SVP-07	SVP-07
Hexachlorobutadiene	2	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	0.00006	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Ethyl methacrylate	200	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Hexachloroethane	2.5	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
n-Hexane	700	0.0015	<DL	0.0029	0.05	0.015	0.0014	0.019	0.0057	0.0044	<DL	<DL	0.0013	<DL	<DL	0.0016	<DL	<DL	<DL	<DL	<DL	0.0014
Isopropylbenzene (Cumene)	400	<DL	<DL	<DL	0.00045	0.0011	<DL	0.0025	0.0034	<DL	<DL	<DL	<DL	<DL	<DL	0.00016	<DL	<DL	<DL	<DL	<DL	<DL
Methacrylonitrile	10	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Methyl acrylate	60	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Methyl cyclohexane	3 000	<DL	<DL	0.00035	0.056	0.056	0.00045	0.032	0.032	0.0017	<DL	<DL	0.0011	0.00041	<DL	0.004	<DL	<DL	0.00035	<DL	<DL	0.00074
Methyl tert-butyl ether	3 000	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Methylene chloride	20	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Methyl methacrylate	700	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
4-Methyl-2-Pentanone (MIBK)	3 000	0.0005	<DL	<DL	0.0012	<DL	<DL	0.00047	<DL	<DL	0.00044	<DL	<DL	0.00048	<DL	<DL	0.00045	<DL	<DL	<DL	<DL	<DL
Naphthalene	3	0.00026	<DL	<DL	0.00022	0.00013	<DL	0.00016	0.00017	<DL	0.00017	0.00014	<DL	0.00016	<DL	<DL	0.0001	<DL	<DL	<DL	<DL	<DL
Nitrobenzene	2	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Styrene	1 000	0.00015	<DL	<DL	0.00018	<DL	<DL	0.00039	<DL	0.00016	<DL	<DL	0.00014	<DL	<DL	0.00011	<DL	<DL	<DL	<DL	<DL	0.00011
1,1,1,2-Tetrachloroethane	1.5	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
1,1,2,2-Tetrachloroethane	1	0.00007	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Tetrachloroethene	600	0.0019	<DL	<DL	0.0026	0.0083	<DL	0.0013	0.0007	<DL	0.0019	0.0008	<DL	0.0012	0.049	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Tetrahydrofuran	4	0.00033	<DL	0.00017	0.0023	0.00011	0.00023	0.002	0.00031	0.00012	0.00048	<DL	0.00011	0.00058	<DL	0.0001	0.00062	<DL	0.00017	<DL	<DL	0.00011
1,1,1-Trichloroethane	2 000	0.00011	<DL	<DL	0.00085	0.00016	<DL	<DL	<DL	<DL	0.00019	0.00011	<DL	<DL	0.00058	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Toluene	5 000	0.0014	<DL	<DL	0.019	0.0015	<DL	0.014	<DL	0.0022	0.0015	<DL	<DL	0.0021	<DL	<DL	0.0015	<DL	<DL	<DL	<DL	<DL
1,2,4-Trichlorobenzene	4	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
1,1,2-Trichloroethane	0.6	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Trichloroethene	0.5	0.00004	<DL	<DL	0.0025	0.0022	<DL	0.0015	0.0011	0.00004	0.00004	<DL	0.00003	0.00009	0.0007	0.00011	<DL	<DL	<DL	<DL	<DL	<DL
Trichlorofluoromethane	700	0.00017	0.00017	0.00019	0.03	0.0025	0.00036	0.00028	<DL	<DL	0.00043	0.00042	0.00019	0.00026	0.00071	0.00028	0.00013	0.00029	0.00021	<DL	0.00014	0.00012
1,2,3-Trichloropropane	10	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
1,2,4-Trimethylbenzene	6	0.0005	0.00025	<DL	0.0007	0.0027	<DL	0.0077	0.014	<DL	0.00049	0.00025	<DL	0.00047	0.00033	0.0004	0.00032	0.00028	<DL	<DL	0.0003	<DL
1,3,5-Trimethylbenzene	6	<DL	<DL	<DL	0.00031	0.0043	<DL	0.0033	0.013	<DL	<DL	<DL	<DL	<DL	<DL	0.00038	<DL	<DL	<DL	<DL	<DL	<DL
Vinyl chloride	1	<DL	<DL	0.0038	0.13	0.0086	0.065	0.074	0.0041	0.0025	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Xylenes (total)	100	0.00091	0.0006	0.00057	0.069	0.16	0.00068	0.17	0.041	0.0052	0.00099	<DL	0.0045	0.0019	0.00086	0.0018	0.00096	0.00053	0.00063	0.0016	0.00075	0.00062

Note: All parameters are mesrued in ug/m3

Note: The attenuation factors for subslab, preferential flow pathway, and subsurface (<1.0m) are all the same, and therefore this sheet can be applied to all

Appendix E

Laboratory Reports Water, Soil and Soil Vapour



CERTIFICATE OF ANALYSIS



CLIENT	Western Water Associates Ltd 10051 Hwy 97 N Lake Country BC V4VC 1P6	TEL 1-250-766-1030 FAX -
ATTENTION	Bryer Manwell	
RECEIVED / TEMP	Dec-15-11 14:45 / 3.0 °C	WORK ORDER K1L0610
REPORTED	Jan-16-12	PROJECT Lillooet - Old Landfill
COC #(s)	31803	PROJECT INFO 11-047-01

General Comments:

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; protocols published by the British Columbia Ministry of Environment (BCMOE); and/or CCME Canada-wide Standard Reference methods.

Methods not described in these publications are conducted according to procedures accepted by appropriate regulatory agencies, and/or are done in accordance with recognized professional standards using accepted testing methodologies and quality control efforts except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

- All solids results are reported on a dry weight basis unless otherwise noted
- Units:
 - mg/kg = milligrams per kilogram, equivalent to parts per million (ppm)
 - mg/L = milligrams per litre, equivalent to parts per million (ppm)
 - ug/L = micrograms per litre, equivalent to parts per billion (ppb)
 - ug/g = micrograms per gram, equivalent to parts per million (ppm)
 - ug/m3 = micrograms per cubic meter of air
- "RDL" Reported detection limit
- "<" Less than reported detection limit
- "AO" Aesthetic objective
- "MAC" Maximum acceptable concentration (health-related guideline)
- "LAB" RMD = Richmond location, KEL = Kelowna location, EDM = Edmonton location, SUB = Subcontracted

Please contact CARO if more information is needed or to provide feedback on our services.

CARO Analytical Services

A handwritten signature in blue ink, appearing to read "J Shanko".

Final Review Per: **Jennifer Shanko, ASCT**
Administration Coordinator

CARO Analytical Services

#120 12791 Clarke Place
Richmond, BC V6V 2H9
Tel: 604-279-1499 Fax: 604-279-1599

#102 3677 Highway 97N
Kelowna, BC V1X 5C3
Tel: 250-765-9646 Fax: 250-765-3893

17225 109 Avenue
Edmonton, AB T5S 1H7
Tel: 780-489-9100 Fax: 780-489-9700

www.caro.ca

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

WORK ORDER # K1L0610
REPORTED Jan-16-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters

MW-01-WW (K1L0610-01) Matrix: Water Sampled: Dec-14-11

Alkalinity, Total as CaCO ₃	343		1.0	mg/L	Jan-13-12	Jan-13-12	HT
Chloride	26.3	AO ≤ 250	0.10	mg/L	Dec-15-11	Dec-15-12	
Conductivity (EC)	829		2	uS/cm	Jan-13-12	Jan-13-12	HT
Hardness, Total (Total as CaCO ₃)	608		5.00	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	464		4.99	mg/L	N/A	N/A	
Nitrogen, Ammonia as N	0.02		0.01	mg/L	Dec-15-11	Dec-15-11	
Nitrogen, Nitrate+Nitrite as N	7.71		0.010	mg/L	N/A	N/A	
Nitrogen, Nitrate as N	7.68	MAC = 10	0.010	mg/L	Dec-15-11	Dec-16-11	
Nitrogen, Nitrite as N	0.03	MAC = 1	0.01	mg/L	Dec-15-11	Dec-16-11	
Nitrogen, Total Kjeldahl	0.81		0.05	mg/L	Dec-15-11	Dec-22-11	
Nitrogen, Total	8.51		0.050	mg/L	N/A	N/A	
Phosphorus, Total	1.07		0.05	mg/L	Dec-15-11	Dec-22-11	
Sulfate	105	AO ≤ 500	1.0	mg/L	Dec-15-11	Dec-15-12	

MW-02-WW (K1L0610-02) Matrix: Water Sampled: Dec-12-11

Alkalinity, Total as CaCO ₃	385		1.0	mg/L	Jan-13-12	Jan-13-12	HT
Chloride	37.6	AO ≤ 250	0.10	mg/L	Dec-15-11	Dec-15-12	
Conductivity (EC)	1010		2	uS/cm	Jan-13-12	Jan-13-12	HT
Hardness, Total (Total as CaCO ₃)	680		5.00	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	396		4.99	mg/L	N/A	N/A	
Nitrogen, Ammonia as N	0.30		0.01	mg/L	Dec-15-11	Dec-15-11	
Nitrogen, Nitrate+Nitrite as N	< 0.010		0.010	mg/L	N/A	N/A	
Nitrogen, Nitrate as N	< 0.010	MAC = 10	0.010	mg/L	Dec-15-11	Dec-16-11	
Nitrogen, Nitrite as N	< 0.01	MAC = 1	0.01	mg/L	Dec-15-11	Dec-16-11	
Nitrogen, Total Kjeldahl	2.02		0.05	mg/L	Dec-15-11	Dec-22-11	
Nitrogen, Total	2.02		0.050	mg/L	N/A	N/A	
Phosphorus, Total	2.96		0.10	mg/L	Dec-15-11	Dec-22-11	
Sulfate	177	AO ≤ 500	1.0	mg/L	Dec-15-11	Dec-15-12	

MW-03-WW (K1L0610-03) Matrix: Water Sampled: Dec-12-11

Alkalinity, Total as CaCO ₃	516		1.0	mg/L	Jan-13-12	Jan-13-12	HT
Chloride	43.3	AO ≤ 250	0.10	mg/L	Dec-15-11	Dec-15-12	
Conductivity (EC)	1230		2	uS/cm	Jan-13-12	Jan-13-12	HT
Hardness, Total (Total as CaCO ₃)	851		5.00	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	593		4.99	mg/L	N/A	N/A	
Nitrogen, Ammonia as N	0.03		0.01	mg/L	Dec-15-11	Dec-15-11	
Nitrogen, Nitrate+Nitrite as N	< 0.010		0.010	mg/L	N/A	N/A	
Nitrogen, Nitrate as N	< 0.010	MAC = 10	0.010	mg/L	Dec-15-11	Dec-16-11	
Nitrogen, Nitrite as N	< 0.01	MAC = 1	0.01	mg/L	Dec-15-11	Dec-16-11	
Nitrogen, Total Kjeldahl	1.88		0.05	mg/L	Dec-15-11	Dec-22-11	
Nitrogen, Total	1.88		0.050	mg/L	N/A	N/A	
Phosphorus, Total	4.49		0.20	mg/L	Dec-15-11	Dec-22-11	
Sulfate	188	AO ≤ 500	1.0	mg/L	Dec-15-11	Dec-15-12	

Dissolved Metals

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

WORK ORDER # K1L0610
REPORTED Jan-16-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

MW-01-WW (K1L0610-01) Matrix: Water Sampled: Dec-14-11

Aluminum, dissolved	0.054		0.050	mg/L	Dec-20-11	Dec-20-11	
Antimony, dissolved	< 0.0200		0.0200	mg/L	Dec-20-11	Dec-20-11	
Arsenic, dissolved	< 0.0050		0.0050	mg/L	Dec-20-11	Dec-20-11	
Barium, dissolved	0.076		0.050	mg/L	Dec-20-11	Dec-20-11	
Beryllium, dissolved	< 0.0010		0.0010	mg/L	Dec-20-11	Dec-20-11	
Bismuth, dissolved	< 0.0010		0.0010	mg/L	Dec-20-11	Dec-20-11	
Boron, dissolved	0.216		0.040	mg/L	Dec-20-11	Dec-20-11	
Cadmium, dissolved	0.00012		0.00010	mg/L	Dec-20-11	Dec-20-11	
Calcium, dissolved	85.8		2.0	mg/L	Dec-20-11	Dec-20-11	
Chromium, dissolved	< 0.0050		0.0050	mg/L	Dec-20-11	Dec-20-11	
Cobalt, dissolved	< 0.00050		0.00050	mg/L	Dec-20-11	Dec-20-11	
Copper, dissolved	< 0.0020		0.0020	mg/L	Dec-20-11	Dec-20-11	
Iron, dissolved	< 0.10		0.10	mg/L	Dec-20-11	Dec-20-11	
Lead, dissolved	0.0034		0.0010	mg/L	Dec-20-11	Dec-20-11	
Lithium, dissolved	0.0121		0.0010	mg/L	Dec-20-11	Dec-20-11	
Magnesium, dissolved	60.7		0.10	mg/L	Dec-20-11	Dec-20-11	
Manganese, dissolved	0.0219		0.0020	mg/L	Dec-20-11	Dec-20-11	
Mercury, dissolved	0.00028		0.00020	mg/L	Dec-20-11	Dec-20-11	
Molybdenum, dissolved	0.0100		0.0010	mg/L	Dec-20-11	Dec-20-11	
Nickel, dissolved	0.0044		0.0020	mg/L	Dec-20-11	Dec-20-11	
Phosphorus, dissolved	< 0.20		0.20	mg/L	Dec-20-11	Dec-20-11	
Potassium, dissolved	2.36		0.20	mg/L	Dec-20-11	Dec-20-11	
Selenium, dissolved	0.0077		0.0050	mg/L	Dec-20-11	Dec-20-11	
Silicon, dissolved	6.3		5.0	mg/L	Dec-20-11	Dec-20-11	
Silver, dissolved	0.00060		0.00050	mg/L	Dec-20-11	Dec-20-11	
Sodium, dissolved	19.8		0.20	mg/L	Dec-20-11	Dec-20-11	
Strontium, dissolved	1.13		0.010	mg/L	Dec-20-11	Dec-20-11	
Tellurium, dissolved	< 0.0020		0.0020	mg/L	Dec-20-11	Dec-20-11	
Thallium, dissolved	< 0.00020		0.00020	mg/L	Dec-20-11	Dec-20-11	
Thorium, dissolved	< 0.0010		0.0010	mg/L	Dec-20-11	Dec-20-11	
Tin, dissolved	0.0052		0.0020	mg/L	Dec-20-11	Dec-20-11	
Titanium, dissolved	< 0.050		0.050	mg/L	Dec-20-11	Dec-20-11	
Uranium, dissolved	0.00089		0.00020	mg/L	Dec-20-11	Dec-20-11	
Vanadium, dissolved	< 0.010		0.010	mg/L	Dec-20-11	Dec-20-11	
Zinc, dissolved	0.051		0.040	mg/L	Dec-20-11	Dec-20-11	
Zirconium, dissolved	< 0.001		0.001	mg/L	Dec-20-11	Dec-20-11	

MW-02-WW (K1L0610-02) Matrix: Water Sampled: Dec-12-11

Aluminum, dissolved	< 0.050		0.050	mg/L	Dec-20-11	Dec-20-11	
Antimony, dissolved	< 0.0200		0.0200	mg/L	Dec-20-11	Dec-20-11	
Arsenic, dissolved	< 0.0050		0.0050	mg/L	Dec-20-11	Dec-20-11	
Barium, dissolved	0.344		0.050	mg/L	Dec-20-11	Dec-20-11	
Beryllium, dissolved	< 0.0010		0.0010	mg/L	Dec-20-11	Dec-20-11	
Bismuth, dissolved	< 0.0010		0.0010	mg/L	Dec-20-11	Dec-20-11	
Boron, dissolved	0.406		0.040	mg/L	Dec-20-11	Dec-20-11	
Cadmium, dissolved	0.00017		0.00010	mg/L	Dec-20-11	Dec-20-11	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

WORK ORDER # K1L0610
REPORTED Jan-16-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

MW-02-WW (K1L0610-02) Matrix: Water Sampled: Dec-12-11, Continued

Calcium, dissolved	73.7		2.0	mg/L	Dec-20-11	Dec-20-11	
Chromium, dissolved	< 0.0050		0.0050	mg/L	Dec-20-11	Dec-20-11	
Cobalt, dissolved	0.00250		0.00050	mg/L	Dec-20-11	Dec-20-11	
Copper, dissolved	0.0034		0.0020	mg/L	Dec-20-11	Dec-20-11	
Iron, dissolved	3.46		0.10	mg/L	Dec-20-11	Dec-20-11	
Lead, dissolved	0.0132		0.0010	mg/L	Dec-20-11	Dec-20-11	
Lithium, dissolved	0.0056		0.0010	mg/L	Dec-20-11	Dec-20-11	
Magnesium, dissolved	51.6		0.10	mg/L	Dec-20-11	Dec-20-11	
Manganese, dissolved	1.34		0.0020	mg/L	Dec-20-11	Dec-20-11	
Mercury, dissolved	0.00039		0.00020	mg/L	Dec-20-11	Dec-20-11	
Molybdenum, dissolved	0.0185		0.0010	mg/L	Dec-20-11	Dec-20-11	
Nickel, dissolved	0.0168		0.0020	mg/L	Dec-20-11	Dec-20-11	
Phosphorus, dissolved	< 0.20		0.20	mg/L	Dec-20-11	Dec-20-11	
Potassium, dissolved	5.11		0.20	mg/L	Dec-20-11	Dec-20-11	
Selenium, dissolved	< 0.0050		0.0050	mg/L	Dec-20-11	Dec-20-11	
Silicon, dissolved	5.8		5.0	mg/L	Dec-20-11	Dec-20-11	
Silver, dissolved	< 0.00050		0.00050	mg/L	Dec-20-11	Dec-20-11	
Sodium, dissolved	95.0		0.20	mg/L	Dec-20-11	Dec-20-11	
Strontium, dissolved	1.01		0.010	mg/L	Dec-20-11	Dec-20-11	
Tellurium, dissolved	< 0.0020		0.0020	mg/L	Dec-20-11	Dec-20-11	
Thallium, dissolved	< 0.00020		0.00020	mg/L	Dec-20-11	Dec-20-11	
Thorium, dissolved	< 0.0010		0.0010	mg/L	Dec-20-11	Dec-20-11	
Tin, dissolved	< 0.0020		0.0020	mg/L	Dec-20-11	Dec-20-11	
Titanium, dissolved	< 0.050		0.050	mg/L	Dec-20-11	Dec-20-11	
Uranium, dissolved	0.00362		0.00020	mg/L	Dec-20-11	Dec-20-11	
Vanadium, dissolved	< 0.010		0.010	mg/L	Dec-20-11	Dec-20-11	
Zinc, dissolved	0.079		0.040	mg/L	Dec-20-11	Dec-20-11	
Zirconium, dissolved	< 0.001		0.001	mg/L	Dec-20-11	Dec-20-11	

MW-03-WW (K1L0610-03) Matrix: Water Sampled: Dec-12-11

Aluminum, dissolved	< 0.050		0.050	mg/L	Dec-20-11	Dec-20-11	
Antimony, dissolved	< 0.0200		0.0200	mg/L	Dec-20-11	Dec-20-11	
Arsenic, dissolved	< 0.0050		0.0050	mg/L	Dec-20-11	Dec-20-11	
Barium, dissolved	0.273		0.050	mg/L	Dec-20-11	Dec-20-11	
Beryllium, dissolved	< 0.0010		0.0010	mg/L	Dec-20-11	Dec-20-11	
Bismuth, dissolved	< 0.0010		0.0010	mg/L	Dec-20-11	Dec-20-11	
Boron, dissolved	0.498		0.040	mg/L	Dec-20-11	Dec-20-11	
Cadmium, dissolved	0.00018		0.00010	mg/L	Dec-20-11	Dec-20-11	
Calcium, dissolved	104		2.0	mg/L	Dec-20-11	Dec-20-11	
Chromium, dissolved	< 0.0050		0.0050	mg/L	Dec-20-11	Dec-20-11	
Cobalt, dissolved	0.00168		0.00050	mg/L	Dec-20-11	Dec-20-11	
Copper, dissolved	0.0034		0.0020	mg/L	Dec-20-11	Dec-20-11	
Iron, dissolved	< 0.10		0.10	mg/L	Dec-20-11	Dec-20-11	
Lead, dissolved	0.0152		0.0010	mg/L	Dec-20-11	Dec-20-11	
Lithium, dissolved	0.0124		0.0010	mg/L	Dec-20-11	Dec-20-11	
Magnesium, dissolved	80.9		0.10	mg/L	Dec-20-11	Dec-20-11	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

WORK ORDER # K1L0610
REPORTED Jan-16-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

MW-03-WW (K1L0610-03) Matrix: Water Sampled: Dec-12-11, Continued

Manganese, dissolved	0.537		0.0020	mg/L	Dec-20-11	Dec-20-11	
Mercury, dissolved	0.00025		0.00020	mg/L	Dec-20-11	Dec-20-11	
Molybdenum, dissolved	0.0045		0.0010	mg/L	Dec-20-11	Dec-20-11	
Nickel, dissolved	0.0093		0.0020	mg/L	Dec-20-11	Dec-20-11	
Phosphorus, dissolved	< 0.20		0.20	mg/L	Dec-20-11	Dec-20-11	
Potassium, dissolved	3.38		0.20	mg/L	Dec-20-11	Dec-20-11	
Selenium, dissolved	< 0.0050		0.0050	mg/L	Dec-20-11	Dec-20-11	
Silicon, dissolved	6.8		5.0	mg/L	Dec-20-11	Dec-20-11	
Silver, dissolved	< 0.00050		0.00050	mg/L	Dec-20-11	Dec-20-11	
Sodium, dissolved	75.7		0.20	mg/L	Dec-20-11	Dec-20-11	
Strontium, dissolved	1.95		0.010	mg/L	Dec-20-11	Dec-20-11	
Tellurium, dissolved	< 0.0020		0.0020	mg/L	Dec-20-11	Dec-20-11	
Thallium, dissolved	< 0.00020		0.00020	mg/L	Dec-20-11	Dec-20-11	
Thorium, dissolved	< 0.0010		0.0010	mg/L	Dec-20-11	Dec-20-11	
Tin, dissolved	< 0.0020		0.0020	mg/L	Dec-20-11	Dec-20-11	
Titanium, dissolved	< 0.050		0.050	mg/L	Dec-20-11	Dec-20-11	
Uranium, dissolved	0.00673		0.00020	mg/L	Dec-20-11	Dec-20-11	
Vanadium, dissolved	< 0.010		0.010	mg/L	Dec-20-11	Dec-20-11	
Zinc, dissolved	0.089		0.040	mg/L	Dec-20-11	Dec-20-11	
Zirconium, dissolved	< 0.001		0.001	mg/L	Dec-20-11	Dec-20-11	

Total Recoverable Metals

MW-01-WW (K1L0610-01) Matrix: Water Sampled: Dec-14-11

Aluminum	25.2	AO ≤ 0.1	0.050	mg/L	Dec-19-11	Dec-20-11	
Antimony	< 0.0200	MAC = 0.006	0.0200	mg/L	Dec-19-11	Dec-20-11	
Arsenic	0.0221	MAC = 0.01	0.0050	mg/L	Dec-19-11	Dec-20-11	
Barium	0.362	MAC = 1	0.050	mg/L	Dec-19-11	Dec-20-11	
Beryllium	< 0.0010		0.0010	mg/L	Dec-19-11	Dec-20-11	
Bismuth	< 0.0010		0.0010	mg/L	Dec-19-11	Dec-20-11	
Boron	0.234	MAC = 5	0.040	mg/L	Dec-19-11	Dec-20-11	
Cadmium	0.00133	MAC = 0.005	0.00010	mg/L	Dec-19-11	Dec-20-11	
Calcium	115		2.0	mg/L	Dec-19-11	Dec-20-11	
Chromium	0.0719	MAC = 0.05	0.0050	mg/L	Dec-19-11	Dec-20-11	
Cobalt	0.0377		0.00050	mg/L	Dec-19-11	Dec-20-11	
Copper	0.0951	AO ≤ 1	0.0020	mg/L	Dec-19-11	Dec-20-11	
Iron	61.6	AO ≤ 0.3	0.10	mg/L	Dec-19-11	Dec-20-11	
Lead	0.0133	MAC = 0.01	0.0010	mg/L	Dec-19-11	Dec-20-11	
Lithium	0.0279		0.0010	mg/L	Dec-19-11	Dec-20-11	
Magnesium	77.7		0.10	mg/L	Dec-19-11	Dec-20-11	
Manganese	1.99	AO ≤ 0.05	0.0020	mg/L	Dec-19-11	Dec-20-11	
Mercury	0.00036	MAC = 0.001	0.00020	mg/L	Dec-19-11	Dec-20-11	
Molybdenum	0.0117		0.0010	mg/L	Dec-19-11	Dec-20-11	
Nickel	0.118		0.0020	mg/L	Dec-19-11	Dec-20-11	
Phosphorus	1.02		0.20	mg/L	Dec-19-11	Dec-20-11	
Potassium	4.94		0.20	mg/L	Dec-19-11	Dec-20-11	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

WORK ORDER # K1L0610
REPORTED Jan-16-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Total Recoverable Metals, Continued

MW-01-WW (K1L0610-01) Matrix: Water Sampled: Dec-14-11, Continued

Selenium	0.0147	MAC = 0.01	0.0050	mg/L	Dec-19-11	Dec-20-11	
Silicon	48.0		5.0	mg/L	Dec-19-11	Dec-20-11	
Silver	< 0.00050		0.00050	mg/L	Dec-19-11	Dec-20-11	
Sodium	21.2	AO ≤ 200	0.20	mg/L	Dec-19-11	Dec-20-11	
Strontium	1.25		0.010	mg/L	Dec-19-11	Dec-20-11	
Tellurium	< 0.0020		0.0020	mg/L	Dec-19-11	Dec-20-11	
Thallium	< 0.00020		0.00020	mg/L	Dec-19-11	Dec-20-11	
Thorium	0.0025		0.0010	mg/L	Dec-19-11	Dec-20-11	
Tin	0.0126		0.0020	mg/L	Dec-19-11	Dec-20-11	
Titanium	1.52		0.050	mg/L	Dec-19-11	Dec-20-11	
Uranium	0.00160	MAC = 0.02	0.00020	mg/L	Dec-19-11	Dec-20-11	
Vanadium	0.085		0.010	mg/L	Dec-19-11	Dec-20-11	
Zinc	0.252	AO ≤ 5	0.040	mg/L	Dec-19-11	Dec-20-11	
Zirconium	0.0142		0.0010	mg/L	Dec-19-11	Dec-20-11	

MW-02-WW (K1L0610-02) Matrix: Water Sampled: Dec-12-11

Aluminum	43.6	AO ≤ 0.1	0.050	mg/L	Dec-19-11	Dec-20-11	
Antimony	< 0.0200	MAC = 0.006	0.0200	mg/L	Dec-19-11	Dec-20-11	
Arsenic	0.0403	MAC = 0.01	0.0050	mg/L	Dec-19-11	Dec-20-11	
Barium	0.826	MAC = 1	0.050	mg/L	Dec-19-11	Dec-20-11	
Beryllium	0.0011		0.0010	mg/L	Dec-19-11	Dec-20-11	
Bismuth	< 0.0010		0.0010	mg/L	Dec-19-11	Dec-20-11	
Boron	0.435	MAC = 5	0.040	mg/L	Dec-19-11	Dec-20-11	
Cadmium	0.00173	MAC = 0.005	0.00010	mg/L	Dec-19-11	Dec-20-11	
Calcium	131		2.0	mg/L	Dec-19-11	Dec-20-11	
Chromium	0.132	MAC = 0.05	0.0050	mg/L	Dec-19-11	Dec-20-11	
Cobalt	0.0574		0.00050	mg/L	Dec-19-11	Dec-20-11	
Copper	0.245	AO ≤ 1	0.0020	mg/L	Dec-19-11	Dec-20-11	
Iron	135	AO ≤ 0.3	0.10	mg/L	Dec-19-11	Dec-20-11	
Lead	0.0222	MAC = 0.01	0.0010	mg/L	Dec-19-11	Dec-20-11	
Lithium	0.0350		0.0010	mg/L	Dec-19-11	Dec-20-11	
Magnesium	85.6		0.10	mg/L	Dec-19-11	Dec-20-11	
Manganese	3.80	AO ≤ 0.05	0.0020	mg/L	Dec-19-11	Dec-20-11	
Mercury	0.00043	MAC = 0.001	0.00020	mg/L	Dec-19-11	Dec-20-11	
Molybdenum	0.0185		0.0010	mg/L	Dec-19-11	Dec-20-11	
Nickel	0.237		0.0020	mg/L	Dec-19-11	Dec-20-11	
Phosphorus	1.87		0.20	mg/L	Dec-19-11	Dec-20-11	
Potassium	9.66		0.20	mg/L	Dec-19-11	Dec-20-11	
Selenium	0.0082	MAC = 0.01	0.0050	mg/L	Dec-19-11	Dec-20-11	
Silicon	79.8		5.0	mg/L	Dec-19-11	Dec-20-11	
Silver	0.00058		0.00050	mg/L	Dec-19-11	Dec-20-11	
Sodium	93.5	AO ≤ 200	0.20	mg/L	Dec-19-11	Dec-20-11	
Strontium	1.35		0.010	mg/L	Dec-19-11	Dec-20-11	
Tellurium	< 0.0020		0.0020	mg/L	Dec-19-11	Dec-20-11	
Thallium	0.00060		0.00020	mg/L	Dec-19-11	Dec-20-11	
Thorium	0.0053		0.0010	mg/L	Dec-19-11	Dec-20-11	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet - Old Landfill

**WORK ORDER #
REPORTED**

K1L0610
Jan-16-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Total Recoverable Metals, Continued

MW-02-WW (K1L0610-02) Matrix: Water Sampled: Dec-12-11, Continued

Tin	0.0032		0.0020	mg/L	Dec-19-11	Dec-20-11	
Titanium	1.15		0.050	mg/L	Dec-19-11	Dec-20-11	
Uranium	0.00516	MAC = 0.02	0.00020	mg/L	Dec-19-11	Dec-20-11	
Vanadium	0.137		0.010	mg/L	Dec-19-11	Dec-20-11	
Zinc	0.254	AO ≤ 5	0.040	mg/L	Dec-19-11	Dec-20-11	
Zirconium	0.0209		0.0010	mg/L	Dec-19-11	Dec-20-11	

MW-03-WW (K1L0610-03) Matrix: Water Sampled: Dec-12-11

Aluminum	43.9	AO ≤ 0.1	0.050	mg/L	Dec-19-11	Dec-20-11	
Antimony	< 0.0200	MAC = 0.006	0.0200	mg/L	Dec-19-11	Dec-20-11	
Arsenic	0.0487	MAC = 0.01	0.0050	mg/L	Dec-19-11	Dec-20-11	
Barium	0.948	MAC = 1	0.050	mg/L	Dec-19-11	Dec-20-11	
Beryllium	0.0012		0.0010	mg/L	Dec-19-11	Dec-20-11	
Bismuth	< 0.0010		0.0010	mg/L	Dec-19-11	Dec-20-11	
Boron	0.525	MAC = 5	0.040	mg/L	Dec-19-11	Dec-20-11	
Cadmium	0.00201	MAC = 0.005	0.00010	mg/L	Dec-19-11	Dec-20-11	
Calcium	158		2.0	mg/L	Dec-19-11	Dec-20-11	
Chromium	0.142	MAC = 0.05	0.0050	mg/L	Dec-19-11	Dec-20-11	
Cobalt	0.0616		0.00050	mg/L	Dec-19-11	Dec-20-11	
Copper	0.214	AO ≤ 1	0.0020	mg/L	Dec-19-11	Dec-20-11	
Iron	127	AO ≤ 0.3	0.10	mg/L	Dec-19-11	Dec-20-11	
Lead	0.0317	MAC = 0.01	0.0010	mg/L	Dec-19-11	Dec-20-11	
Lithium	0.0461		0.0010	mg/L	Dec-19-11	Dec-20-11	
Magnesium	111		0.10	mg/L	Dec-19-11	Dec-20-11	
Manganese	3.28	AO ≤ 0.05	0.0020	mg/L	Dec-19-11	Dec-20-11	
Mercury	0.00045	MAC = 0.001	0.00020	mg/L	Dec-19-11	Dec-20-11	
Molybdenum	0.0079		0.0010	mg/L	Dec-19-11	Dec-20-11	
Nickel	0.223		0.0020	mg/L	Dec-19-11	Dec-20-11	
Phosphorus	2.32		0.20	mg/L	Dec-19-11	Dec-20-11	
Potassium	8.35		0.20	mg/L	Dec-19-11	Dec-20-11	
Selenium	0.0118	MAC = 0.01	0.0050	mg/L	Dec-19-11	Dec-20-11	
Silicon	88.7		5.0	mg/L	Dec-19-11	Dec-20-11	
Silver	0.00052		0.00050	mg/L	Dec-19-11	Dec-20-11	
Sodium	72.6	AO ≤ 200	0.20	mg/L	Dec-19-11	Dec-20-11	
Strontium	2.33		0.010	mg/L	Dec-19-11	Dec-20-11	
Tellurium	< 0.0020		0.0020	mg/L	Dec-19-11	Dec-20-11	
Thallium	0.00064		0.00020	mg/L	Dec-19-11	Dec-20-11	
Thorium	0.0065		0.0010	mg/L	Dec-19-11	Dec-20-11	
Tin	< 0.0020		0.0020	mg/L	Dec-19-11	Dec-20-11	
Titanium	2.13		0.050	mg/L	Dec-19-11	Dec-20-11	
Uranium	0.00833	MAC = 0.02	0.00020	mg/L	Dec-19-11	Dec-20-11	
Vanadium	0.167		0.010	mg/L	Dec-19-11	Dec-20-11	
Zinc	0.263	AO ≤ 5	0.040	mg/L	Dec-19-11	Dec-20-11	
Zirconium	0.0166		0.0010	mg/L	Dec-19-11	Dec-20-11	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

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Sample Qualifiers:

F1 The sample was not field-filtered and was therefore filtered (0.45um) in the laboratory prior to analysis.
HT Parameter(s) analyzed outside of the EPA/BCMOE/APHA recommended holding time.

ANALYSIS / REPORT INFORMATION

CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

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Analysis Description	Method Reference(s) (* = modified from)		LAB
	Preparation	Analysis	
Dissolved Metals	N/A	EPA 6020A	RMD
Alkalinity, total	N/A	APHA 2320 B *	KEL
Chloride by IC	N/A	APHA 4110 B	KEL
Conductivity-Water	N/A	APHA 2510 B	KEL
Ammonia-N	N/A	APHA 4500-NH3 G *	KEL
Nitrate by IC	N/A	APHA 4110 B	KEL
Nitrite by IC	N/A	APHA 4110 B	KEL
Total Nitrogen (TKN + NO3-N+NO2-N)		Calc	KEL
Total Kjeldahl Nitrogen	EPA 351.2 *	EPA 351.2 *	KEL
Phosphorus, Total (colour)	EPA 351.2 *	APHA 4500-P F *	KEL
Sulfate by IC	N/A	APHA 4110 B	KEL
Total Recoverable Metals	EPA 200.2 *	EPA 6020A	RMD

Additional Information:

Jan.9/12- This is a revised report of the original reported December 22, 2011. Please note the change in Project Name and Project Number.

Jan.16/12- This is an amended report. Alkalinity, Chloride, Conductivity and Sulfate have been added to all samples, as per clients request.

QUALITY CONTROL DATA



CLIENT
PROJECT

Western Water Associates Ltd
Lillooet - Old Landfill

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The following section reports quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with quality control samples that ensure your data is of the highest quality. Common QC types include:

- Method Blank (Blk): Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- Duplicate (Dup): Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- Blank Spike (BS): A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- Standard Reference Material (SRM): A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested for.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC	% REC Limits	% RPD	% RPD Limit	Notes
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Dissolved Metals, Batch B1L0252

Blank (B1L0252-BLK1)

Prepared: Dec-20-11, Analyzed: Dec-20-11

Aluminum, dissolved	< 0.050	0.050 mg/L
Antimony, dissolved	< 0.0200	0.0200 mg/L
Arsenic, dissolved	< 0.0050	0.0050 mg/L
Barium, dissolved	< 0.050	0.050 mg/L
Beryllium, dissolved	< 0.0010	0.0010 mg/L
Bismuth, dissolved	< 0.0010	0.0010 mg/L
Boron, dissolved	< 0.040	0.040 mg/L
Cadmium, dissolved	< 0.00010	0.00010 mg/L
Calcium, dissolved	< 2.0	2.0 mg/L
Chromium, dissolved	< 0.0050	0.0050 mg/L
Cobalt, dissolved	< 0.00050	0.00050 mg/L
Copper, dissolved	< 0.0020	0.0020 mg/L
Iron, dissolved	< 0.10	0.10 mg/L
Lead, dissolved	< 0.0010	0.0010 mg/L
Lithium, dissolved	< 0.0010	0.0010 mg/L
Magnesium, dissolved	< 0.10	0.10 mg/L
Manganese, dissolved	< 0.0020	0.0020 mg/L
Mercury, dissolved	< 0.00020	0.00020 mg/L
Molybdenum, dissolved	< 0.0010	0.0010 mg/L
Nickel, dissolved	< 0.0020	0.0020 mg/L
Phosphorus, dissolved	< 0.20	0.20 mg/L
Potassium, dissolved	< 0.20	0.20 mg/L
Selenium, dissolved	< 0.0050	0.0050 mg/L
Silicon, dissolved	< 5.0	5.0 mg/L
Silver, dissolved	< 0.00050	0.00050 mg/L
Sodium, dissolved	< 0.20	0.20 mg/L
Strontium, dissolved	< 0.010	0.010 mg/L
Tellurium, dissolved	< 0.0020	0.0020 mg/L
Thallium, dissolved	< 0.00020	0.00020 mg/L
Thorium, dissolved	< 0.0010	0.0010 mg/L
Tin, dissolved	< 0.0020	0.0020 mg/L
Titanium, dissolved	< 0.050	0.050 mg/L
Uranium, dissolved	< 0.00020	0.00020 mg/L
Vanadium, dissolved	< 0.010	0.010 mg/L
Zinc, dissolved	< 0.040	0.040 mg/L
Zirconium, dissolved	< 0.001	0.001 mg/L

Reference (B1L0252-SRM1)

Prepared: Dec-20-11, Analyzed: Dec-20-11

Aluminum, dissolved	0.230	0.050 mg/L	0.209	110	74-127
Antimony, dissolved	0.0457	0.0200 mg/L	0.0400	114	86-116
Arsenic, dissolved	0.419	0.0050 mg/L	0.404	104	84-111
Barium, dissolved	3.25	0.050 mg/L	3.12	104	87-114

QUALITY CONTROL DATA



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Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Dissolved Metals, Batch B1L0252, Continued

Reference (B1L0252-SRM1), Continued

Prepared: Dec-20-11, Analyzed: Dec-20-11

Beryllium, dissolved	0.205	0.0010 mg/L	0.197	104	78-127		
Boron, dissolved	1.63	0.040 mg/L	1.61	101	74-117		
Cadmium, dissolved	0.205	0.00010 mg/L	0.200	103	89-110		
Calcium, dissolved	7.6	2.0 mg/L	6.50	116	83-128		
Chromium, dissolved	0.442	0.0050 mg/L	0.401	110	87-112		
Cobalt, dissolved	0.119	0.00050 mg/L	0.119	100	88-113		
Copper, dissolved	0.821	0.0020 mg/L	0.781	105	91-115		
Iron, dissolved	1.27	0.10 mg/L	1.17	109	81-117		
Lead, dissolved	0.110	0.0010 mg/L	0.102	108	90-114		
Lithium, dissolved	0.107	0.0010 mg/L	0.0960	111	77-134		
Magnesium, dissolved	6.43	0.10 mg/L	6.11	105	79-122		
Manganese, dissolved	0.349	0.0020 mg/L	0.318	110	86-114		
Molybdenum, dissolved	0.434	0.0010 mg/L	0.387	112	92-113		
Nickel, dissolved	0.886	0.0020 mg/L	0.789	112	89-114		
Phosphorus, dissolved	0.32	0.20 mg/L	0.448	72	60-117		
Potassium, dissolved	2.94	0.20 mg/L	2.84	104	80-113		
Selenium, dissolved	0.0284	0.0050 mg/L	0.0300	95	84-120		
Sodium, dissolved	18.5	0.20 mg/L	17.4	106	78-118		
Strontium, dissolved	1.03	0.010 mg/L	0.979	105	88-113		
Thallium, dissolved	0.0425	0.00020 mg/L	0.0350	121	96-129		
Uranium, dissolved	0.206	0.00020 mg/L	0.244	84	68-95		
Vanadium, dissolved	0.835	0.010 mg/L	0.798	105	83-110		
Zinc, dissolved	0.836	0.040 mg/L	0.800	104	90-115		

General Parameters, Batch K105524

Blank (K105524-BLK1)

Prepared: Dec-15-11, Analyzed: Dec-15-11

Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
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Blank (K105524-BLK2)

Prepared: Dec-15-11, Analyzed: Dec-15-11

Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
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Blank (K105524-BLK3)

Prepared: Dec-15-11, Analyzed: Dec-15-11

Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
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Blank (K105524-BLK4)

Prepared: Dec-15-11, Analyzed: Dec-15-11

Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
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LCS (K105524-BS1)

Prepared: Dec-15-11, Analyzed: Dec-15-11

Nitrogen, Ammonia as N	9.90	0.10 mg/L	10.0	99	86-111		
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LCS (K105524-BS2)

Prepared: Dec-15-11, Analyzed: Dec-15-11

Nitrogen, Ammonia as N	9.99	0.10 mg/L	10.0	100	86-111		
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LCS (K105524-BS3)

Prepared: Dec-15-11, Analyzed: Dec-15-11

Nitrogen, Ammonia as N	9.91	0.10 mg/L	10.0	99	86-111		
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LCS (K105524-BS4)

Prepared: Dec-15-11, Analyzed: Dec-15-11

Nitrogen, Ammonia as N	9.70	0.10 mg/L	10.0	97	86-111		
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General Parameters, Batch K105526

Blank (K105526-BLK1)

Prepared: Dec-15-11, Analyzed: Dec-15-11

Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.01	0.01 mg/L					

Blank (K105526-BLK2)

Prepared: Dec-15-11, Analyzed: Dec-15-11

Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.01	0.01 mg/L					

QUALITY CONTROL DATA



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PROJECT Lillooet - Old Landfill

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Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch K105526, Continued

Blank (K105526-BLK3)		Prepared: Dec-15-11, Analyzed: Dec-15-11					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.01	0.01 mg/L					
Blank (K105526-BLK4)		Prepared: Dec-15-11, Analyzed: Dec-16-11					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.01	0.01 mg/L					
Blank (K105526-BLK5)		Prepared: Dec-15-11, Analyzed: Dec-16-11					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.01	0.01 mg/L					
LCS (K105526-BS1)		Prepared: Dec-15-11, Analyzed: Dec-15-11					
Nitrogen, Nitrate as N	4.30	0.010 mg/L	4.00		107	85-115	
Nitrogen, Nitrite as N	3.84	0.01 mg/L	4.00		96	85-115	
LCS (K105526-BS2)		Prepared: Dec-15-11, Analyzed: Dec-15-11					
Nitrogen, Nitrate as N	4.33	0.010 mg/L	4.00		108	85-115	
Nitrogen, Nitrite as N	3.85	0.01 mg/L	4.00		96	85-115	
LCS (K105526-BS3)		Prepared: Dec-15-11, Analyzed: Dec-15-11					
Nitrogen, Nitrate as N	4.34	0.010 mg/L	4.00		108	85-115	
Nitrogen, Nitrite as N	3.84	0.01 mg/L	4.00		96	85-115	
LCS (K105526-BS4)		Prepared: Dec-15-11, Analyzed: Dec-16-11					
Nitrogen, Nitrate as N	4.32	0.010 mg/L	4.00		108	85-115	
Nitrogen, Nitrite as N	3.83	0.01 mg/L	4.00		96	85-115	
LCS (K105526-BS5)		Prepared: Dec-15-11, Analyzed: Dec-16-11					
Nitrogen, Nitrate as N	4.33	0.010 mg/L	4.00		108	85-115	
Nitrogen, Nitrite as N	3.85	0.01 mg/L	4.00		96	85-115	

General Parameters, Batch K105611

Blank (K105611-BLK1)		Prepared: Dec-21-11, Analyzed: Dec-22-11					
Nitrogen, Total Kjeldahl	< 0.05	0.05 mg/L					
Blank (K105611-BLK2)		Prepared: Dec-21-11, Analyzed: Dec-22-11					
Nitrogen, Total Kjeldahl	< 0.05	0.05 mg/L					
Blank (K105611-BLK3)		Prepared: Dec-21-11, Analyzed: Dec-22-11					
Nitrogen, Total Kjeldahl	< 0.05	0.05 mg/L					
LCS (K105611-BS1)		Prepared: Dec-21-11, Analyzed: Dec-22-11					
Nitrogen, Total Kjeldahl	11.0	0.50 mg/L	10.0		110	89-116	
LCS (K105611-BS2)		Prepared: Dec-21-11, Analyzed: Dec-22-11					
Nitrogen, Total Kjeldahl	10.8	0.50 mg/L	10.0		108	89-116	
LCS (K105611-BS3)		Prepared: Dec-21-11, Analyzed: Dec-22-11					
Nitrogen, Total Kjeldahl	11.3	0.50 mg/L	10.0		113	89-116	

General Parameters, Batch K105612

Blank (K105612-BLK1)		Prepared: Dec-21-11, Analyzed: Dec-22-11					
Phosphorus, Total	< 0.01	0.01 mg/L					
Blank (K105612-BLK2)		Prepared: Dec-21-11, Analyzed: Dec-22-11					
Phosphorus, Total	< 0.01	0.01 mg/L					

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Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch K105612, Continued

Blank (K105612-BLK3)			Prepared: Dec-21-11, Analyzed: Dec-22-11				
Phosphorus, Total	< 0.01	0.01 mg/L					
LCS (K105612-BS1)			Prepared: Dec-21-11, Analyzed: Dec-22-11				
Phosphorus, Total	0.47	0.02 mg/L	0.500		95 75-120		
LCS (K105612-BS2)			Prepared: Dec-21-11, Analyzed: Dec-22-11				
Phosphorus, Total	0.44	0.02 mg/L	0.500		88 75-120		
LCS (K105612-BS3)			Prepared: Dec-21-11, Analyzed: Dec-22-11				
Phosphorus, Total	0.48	0.02 mg/L	0.500		95 75-120		

General Parameters, Batch K200170

Blank (K200170-BLK1)			Prepared: Jan-13-12, Analyzed: Jan-16-12				
Alkalinity, Total as CaCO3	< 1.0	1.0 mg/L					
Conductivity (EC)	< 2	2 uS/cm					
Blank (K200170-BLK2)			Prepared: Jan-13-12, Analyzed: Jan-13-12				
Alkalinity, Total as CaCO3	< 1.0	1.0 mg/L					
Conductivity (EC)	< 2	2 uS/cm					
Blank (K200170-BLK3)			Prepared: Jan-13-12, Analyzed: Jan-13-12				
Alkalinity, Total as CaCO3	< 1.0	1.0 mg/L					
Conductivity (EC)	< 2	2 uS/cm					
LCS (K200170-BS1)			Prepared: Jan-13-12, Analyzed: Jan-13-12				
Alkalinity, Total as CaCO3	102	1.0 mg/L	100		102 96-108		
LCS (K200170-BS2)			Prepared: Jan-13-12, Analyzed: Jan-13-12				
Alkalinity, Total as CaCO3	102	1.0 mg/L	100		102 96-108		
LCS (K200170-BS3)			Prepared: Jan-13-12, Analyzed: Jan-13-12				
Alkalinity, Total as CaCO3	102	1.0 mg/L	100		102 96-108		
LCS (K200170-BS4)			Prepared: Jan-13-12, Analyzed: Jan-13-12				
Conductivity (EC)	1390	2 uS/cm	1410		99 93-104		
LCS (K200170-BS5)			Prepared: Jan-13-12, Analyzed: Jan-13-12				
Conductivity (EC)	1400	2 uS/cm	1410		100 93-104		
LCS (K200170-BS6)			Prepared: Jan-13-12, Analyzed: Jan-13-12				
Conductivity (EC)	1410	2 uS/cm	1410		100 93-104		

General Parameters, Batch K200192

Blank (K200192-BLK1)			Prepared: Jan-14-12, Analyzed: Jan-16-12				
Chloride	< 0.10	0.10 mg/L					
Sulfate	< 1.0	1.0 mg/L					
Blank (K200192-BLK2)			Prepared: Jan-14-12, Analyzed: Jan-16-12				
Chloride	< 0.10	0.10 mg/L					
Sulfate	< 1.0	1.0 mg/L					
Blank (K200192-BLK3)			Prepared: Jan-14-12, Analyzed: Jan-16-12				
Chloride	< 0.10	0.10 mg/L					
Sulfate	< 1.0	1.0 mg/L					
LCS (K200192-BS1)			Prepared: Jan-14-12, Analyzed: Jan-16-12				
Chloride	4.01	0.10 mg/L	4.00		100 85-115		

QUALITY CONTROL DATA



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Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch K200192, Continued

LCS (K200192-BS1), Continued

Prepared: Jan-14-12, Analyzed: Jan-16-12

Sulfate	3.9	1.0 mg/L	4.00	98	85-115		
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LCS (K200192-BS2)

Prepared: Jan-14-12, Analyzed: Jan-16-12

Chloride	< 0.10	0.10 mg/L	4.00		85-115		
Sulfate	< 1.0	1.0 mg/L	4.00		85-115		

LCS (K200192-BS3)

Prepared: Jan-14-12, Analyzed: Jan-16-12

Chloride	< 0.10	0.10 mg/L	4.00		85-115		
Sulfate	< 1.0	1.0 mg/L	4.00		85-115		

Total Recoverable Metals, Batch B1L0236

Blank (B1L0236-BLK1)

Prepared: Dec-19-11, Analyzed: Dec-19-11

Aluminum	< 0.050	0.050 mg/L					
Antimony	< 0.0200	0.0200 mg/L					
Arsenic	< 0.0050	0.0050 mg/L					
Barium	< 0.050	0.050 mg/L					
Beryllium	< 0.0010	0.0010 mg/L					
Bismuth	< 0.0010	0.0010 mg/L					
Boron	< 0.040	0.040 mg/L					
Cadmium	< 0.00010	0.00010 mg/L					
Calcium	< 2.0	2.0 mg/L					
Chromium	< 0.0050	0.0050 mg/L					
Cobalt	< 0.00050	0.00050 mg/L					
Copper	< 0.0020	0.0020 mg/L					
Iron	< 0.10	0.10 mg/L					
Lead	< 0.0010	0.0010 mg/L					
Lithium	< 0.0010	0.0010 mg/L					
Magnesium	< 0.10	0.10 mg/L					
Manganese	< 0.0020	0.0020 mg/L					
Mercury	< 0.00020	0.00020 mg/L					
Molybdenum	< 0.0010	0.0010 mg/L					
Nickel	< 0.0020	0.0020 mg/L					
Phosphorus	< 0.20	0.20 mg/L					
Potassium	< 0.20	0.20 mg/L					
Selenium	< 0.0050	0.0050 mg/L					
Silicon	< 5.0	5.0 mg/L					
Silver	< 0.00050	0.00050 mg/L					
Sodium	< 0.20	0.20 mg/L					
Strontium	< 0.010	0.010 mg/L					
Tellurium	< 0.0020	0.0020 mg/L					
Thallium	< 0.00020	0.00020 mg/L					
Thorium	< 0.0010	0.0010 mg/L					
Tin	< 0.0020	0.0020 mg/L					
Titanium	< 0.050	0.050 mg/L					
Uranium	< 0.00020	0.00020 mg/L					
Vanadium	< 0.010	0.010 mg/L					
Zinc	< 0.040	0.040 mg/L					
Zirconium	< 0.0010	0.0010 mg/L					

Blank (B1L0236-BLK2)

Prepared: Dec-19-11, Analyzed: Dec-19-11

Aluminum	< 0.050	0.050 mg/L					
Antimony	< 0.0200	0.0200 mg/L					
Arsenic	< 0.0050	0.0050 mg/L					
Barium	< 0.050	0.050 mg/L					
Beryllium	< 0.0010	0.0010 mg/L					
Bismuth	< 0.0010	0.0010 mg/L					
Boron	< 0.040	0.040 mg/L					
Cadmium	< 0.00010	0.00010 mg/L					
Calcium	< 2.0	2.0 mg/L					
Chromium	< 0.0050	0.0050 mg/L					
Cobalt	< 0.00050	0.00050 mg/L					
Copper	< 0.0020	0.0020 mg/L					

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REPORTED

K1L0610
Jan-16-12

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Total Recoverable Metals, Batch B1L0236, Continued

Blank (B1L0236-BLK2), Continued

Prepared: Dec-19-11, Analyzed: Dec-19-11

Iron	< 0.10	0.10 mg/L
Lead	< 0.0010	0.0010 mg/L
Lithium	< 0.0010	0.0010 mg/L
Magnesium	< 0.10	0.10 mg/L
Manganese	< 0.0020	0.0020 mg/L
Mercury	< 0.00020	0.00020 mg/L
Molybdenum	< 0.0010	0.0010 mg/L
Nickel	< 0.0020	0.0020 mg/L
Phosphorus	< 0.20	0.20 mg/L
Potassium	< 0.20	0.20 mg/L
Selenium	< 0.0050	0.0050 mg/L
Silicon	< 5.0	5.0 mg/L
Silver	< 0.00050	0.00050 mg/L
Sodium	< 0.20	0.20 mg/L
Strontium	< 0.010	0.010 mg/L
Tellurium	< 0.0020	0.0020 mg/L
Thallium	< 0.00020	0.00020 mg/L
Thorium	< 0.0010	0.0010 mg/L
Tin	< 0.0020	0.0020 mg/L
Titanium	< 0.050	0.050 mg/L
Uranium	< 0.00020	0.00020 mg/L
Vanadium	< 0.010	0.010 mg/L
Zinc	< 0.040	0.040 mg/L
Zirconium	< 0.0010	0.0010 mg/L

Blank (B1L0236-BLK3)

Prepared: Dec-19-11, Analyzed: Dec-19-11

Aluminum	< 0.050	0.050 mg/L
Antimony	< 0.0200	0.0200 mg/L
Arsenic	< 0.0050	0.0050 mg/L
Barium	< 0.050	0.050 mg/L
Beryllium	< 0.0010	0.0010 mg/L
Bismuth	< 0.0010	0.0010 mg/L
Boron	< 0.040	0.040 mg/L
Cadmium	< 0.00010	0.00010 mg/L
Calcium	< 2.0	2.0 mg/L
Chromium	< 0.0050	0.0050 mg/L
Cobalt	< 0.00050	0.00050 mg/L
Copper	< 0.0020	0.0020 mg/L
Iron	< 0.10	0.10 mg/L
Lead	< 0.0010	0.0010 mg/L
Lithium	< 0.0010	0.0010 mg/L
Magnesium	< 0.10	0.10 mg/L
Manganese	< 0.0020	0.0020 mg/L
Mercury	< 0.00020	0.00020 mg/L
Molybdenum	< 0.0010	0.0010 mg/L
Nickel	< 0.0020	0.0020 mg/L
Phosphorus	< 0.20	0.20 mg/L
Potassium	< 0.20	0.20 mg/L
Selenium	< 0.0050	0.0050 mg/L
Silicon	< 5.0	5.0 mg/L
Silver	< 0.00050	0.00050 mg/L
Sodium	< 0.20	0.20 mg/L
Strontium	< 0.010	0.010 mg/L
Tellurium	< 0.0020	0.0020 mg/L
Thallium	< 0.00020	0.00020 mg/L
Thorium	< 0.0010	0.0010 mg/L
Tin	< 0.0020	0.0020 mg/L
Titanium	< 0.050	0.050 mg/L
Uranium	< 0.00020	0.00020 mg/L
Vanadium	< 0.010	0.010 mg/L
Zinc	< 0.040	0.040 mg/L
Zirconium	< 0.0010	0.0010 mg/L

QUALITY CONTROL DATA



CLIENT
PROJECT

Western Water Associates Ltd
Lillooet - Old Landfill

WORK ORDER #
REPORTED

K1L0610
Jan-16-12

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Total Recoverable Metals, Batch B1L0236, Continued

Blank (B1L0236-BLK4)

Prepared: Dec-19-11, Analyzed: Dec-20-11

Aluminum	< 0.050	0.050 mg/L
Antimony	< 0.0200	0.0200 mg/L
Arsenic	< 0.0050	0.0050 mg/L
Barium	< 0.050	0.050 mg/L
Beryllium	< 0.0010	0.0010 mg/L
Bismuth	< 0.0010	0.0010 mg/L
Boron	< 0.040	0.040 mg/L
Cadmium	< 0.00010	0.00010 mg/L
Calcium	< 2.0	2.0 mg/L
Chromium	< 0.0050	0.0050 mg/L
Cobalt	< 0.00050	0.00050 mg/L
Copper	< 0.0020	0.0020 mg/L
Iron	< 0.10	0.10 mg/L
Lead	< 0.0010	0.0010 mg/L
Lithium	< 0.0010	0.0010 mg/L
Magnesium	< 0.10	0.10 mg/L
Manganese	< 0.0020	0.0020 mg/L
Mercury	< 0.00020	0.00020 mg/L
Molybdenum	< 0.0010	0.0010 mg/L
Nickel	< 0.0020	0.0020 mg/L
Phosphorus	< 0.20	0.20 mg/L
Potassium	< 0.20	0.20 mg/L
Selenium	< 0.0050	0.0050 mg/L
Silicon	< 5.0	5.0 mg/L
Silver	< 0.00050	0.00050 mg/L
Sodium	< 0.20	0.20 mg/L
Strontium	< 0.010	0.010 mg/L
Tellurium	< 0.0020	0.0020 mg/L
Thallium	< 0.00020	0.00020 mg/L
Thorium	< 0.0010	0.0010 mg/L
Tin	< 0.0020	0.0020 mg/L
Titanium	< 0.050	0.050 mg/L
Uranium	< 0.00020	0.00020 mg/L
Vanadium	< 0.010	0.010 mg/L
Zinc	< 0.040	0.040 mg/L
Zirconium	< 0.0010	0.0010 mg/L

Reference (B1L0236-SRM1)

Prepared: Dec-19-11, Analyzed: Dec-19-11

Aluminum	0.293	0.050 mg/L	0.296	99	81-129
Antimony	0.0503	0.0200 mg/L	0.0505	100	88-114
Arsenic	0.117	0.0050 mg/L	0.122	96	88-114
Barium	0.751	0.050 mg/L	0.777	97	72-104
Beryllium	0.0503	0.0010 mg/L	0.0488	103	76-131
Boron	3.58	0.040 mg/L	3.40	105	75-121
Cadmium	0.0489	0.00010 mg/L	0.0490	100	89-111
Calcium	10.7	2.0 mg/L	10.2	105	86-121
Chromium	0.262	0.0050 mg/L	0.242	108	89-114
Cobalt	0.0372	0.00050 mg/L	0.0366	102	91-113
Copper	0.506	0.0020 mg/L	0.487	104	91-115
Iron	0.56	0.10 mg/L	0.469	120	77-124
Lead	0.208	0.0010 mg/L	0.193	108	92-113
Lithium	0.404	0.0010 mg/L	0.390	104	85-115
Magnesium	3.57	0.10 mg/L	3.31	108	78-120
Manganese	0.117	0.0020 mg/L	0.109	107	90-114
Mercury	0.00466	0.00020 mg/L	0.00456	102	50-150
Molybdenum	0.205	0.0010 mg/L	0.197	104	90-111
Nickel	0.243	0.0020 mg/L	0.242	100	90-111
Phosphorus	0.25	0.20 mg/L	0.233	109	85-115
Potassium	6.23	0.20 mg/L	5.93	105	84-113
Selenium	0.113	0.0050 mg/L	0.115	98	85-115
Sodium	8.23	0.20 mg/L	7.64	108	82-123
Strontium	0.361	0.010 mg/L	0.363	99	88-112
Thallium	0.0827	0.00020 mg/L	0.0794	104	91-114
Uranium	0.0200	0.00020 mg/L	0.0192	104	85-120

QUALITY CONTROL DATA



CLIENT
PROJECT

Western Water Associates Ltd
Lillooet - Old Landfill

WORK ORDER #
REPORTED

K1L0610
Jan-16-12

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Total Recoverable Metals, Batch B1L0236, Continued

Reference (B1L0236-SRM1), Continued

Prepared: Dec-19-11, Analyzed: Dec-19-11

Vanadium	0.388	0.010 mg/L	0.376	103	86-111		
Zinc	2.50	0.040 mg/L	2.42	103	85-111		

Reference (B1L0236-SRM2)

Prepared: Dec-19-11, Analyzed: Dec-19-11

Aluminum	0.360	0.050 mg/L	0.296	122	81-129		
Antimony	0.0561	0.0200 mg/L	0.0505	111	88-114		
Arsenic	0.116	0.0050 mg/L	0.122	95	88-114		
Barium	0.764	0.050 mg/L	0.777	98	72-104		
Beryllium	0.0511	0.0010 mg/L	0.0488	105	76-131		
Boron	3.63	0.040 mg/L	3.40	107	75-121		
Cadmium	0.0489	0.00010 mg/L	0.0490	100	89-111		
Calcium	10.7	2.0 mg/L	10.2	105	86-121		
Chromium	0.259	0.0050 mg/L	0.242	107	89-114		
Cobalt	0.0371	0.00050 mg/L	0.0366	101	91-113		
Copper	0.502	0.0020 mg/L	0.487	103	91-115		
Iron	0.56	0.10 mg/L	0.469	120	77-124		
Lead	0.209	0.0010 mg/L	0.193	108	92-113		
Lithium	0.412	0.0010 mg/L	0.390	106	85-115		
Magnesium	3.58	0.10 mg/L	3.31	108	78-120		
Manganese	0.121	0.0020 mg/L	0.109	111	90-114		
Mercury	0.00468	0.00020 mg/L	0.00456	103	50-150		
Molybdenum	0.205	0.0010 mg/L	0.197	104	90-111		
Nickel	0.234	0.0020 mg/L	0.242	96	90-111		
Phosphorus	0.24	0.20 mg/L	0.233	103	85-115		
Potassium	6.19	0.20 mg/L	5.93	104	84-113		
Selenium	0.112	0.0050 mg/L	0.115	98	85-115		
Sodium	8.16	0.20 mg/L	7.64	107	82-123		
Strontium	0.364	0.010 mg/L	0.363	100	88-112		
Thallium	0.0834	0.00020 mg/L	0.0794	105	91-114		
Uranium	0.0202	0.00020 mg/L	0.0192	105	85-120		
Vanadium	0.386	0.010 mg/L	0.376	103	86-111		
Zinc	2.47	0.040 mg/L	2.42	102	85-111		

Reference (B1L0236-SRM3)

Prepared: Dec-19-11, Analyzed: Dec-19-11

Aluminum	0.297	0.050 mg/L	0.296	100	81-129		
Antimony	0.0529	0.0200 mg/L	0.0505	105	88-114		
Arsenic	0.114	0.0050 mg/L	0.122	93	88-114		
Barium	0.747	0.050 mg/L	0.777	96	72-104		
Beryllium	0.0512	0.0010 mg/L	0.0488	105	76-131		
Boron	3.58	0.040 mg/L	3.40	105	75-121		
Cadmium	0.0481	0.00010 mg/L	0.0490	98	89-111		
Calcium	10.5	2.0 mg/L	10.2	103	86-121		
Chromium	0.256	0.0050 mg/L	0.242	106	89-114		
Cobalt	0.0369	0.00050 mg/L	0.0366	101	91-113		
Copper	0.492	0.0020 mg/L	0.487	101	91-115		
Iron	0.56	0.10 mg/L	0.469	118	77-124		
Lead	0.208	0.0010 mg/L	0.193	108	92-113		
Lithium	0.410	0.0010 mg/L	0.390	105	85-115		
Magnesium	3.53	0.10 mg/L	3.31	107	78-120		
Manganese	0.119	0.0020 mg/L	0.109	109	90-114		
Mercury	0.00465	0.00020 mg/L	0.00456	102	50-150		
Molybdenum	0.203	0.0010 mg/L	0.197	103	90-111		
Nickel	0.235	0.0020 mg/L	0.242	97	90-111		
Phosphorus	0.22	0.20 mg/L	0.233	96	85-115		
Potassium	5.97	0.20 mg/L	5.93	101	84-113		
Selenium	0.110	0.0050 mg/L	0.115	96	85-115		
Sodium	8.13	0.20 mg/L	7.64	106	82-123		
Strontium	0.362	0.010 mg/L	0.363	100	88-112		
Thallium	0.0826	0.00020 mg/L	0.0794	104	91-114		
Uranium	0.0198	0.00020 mg/L	0.0192	103	85-120		
Vanadium	0.380	0.010 mg/L	0.376	101	86-111		
Zinc	2.43	0.040 mg/L	2.42	101	85-111		

QUALITY CONTROL DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet - Old Landfill

**WORK ORDER #
REPORTED**

K1L0610
Jan-16-12

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Total Recoverable Metals, Batch B1L0236, Continued

Reference (B1L0236-SRM4)

Prepared: Dec-19-11, Analyzed: Dec-20-11

Aluminum	0.293	0.050 mg/L	0.296	99	81-129
Antimony	0.0525	0.0200 mg/L	0.0505	104	88-114
Arsenic	0.118	0.0050 mg/L	0.122	96	88-114
Barium	0.748	0.050 mg/L	0.777	96	72-104
Beryllium	0.0506	0.0010 mg/L	0.0488	104	76-131
Boron	3.60	0.040 mg/L	3.40	106	75-121
Cadmium	0.0489	0.00010 mg/L	0.0490	100	89-111
Calcium	10.7	2.0 mg/L	10.2	104	86-121
Chromium	0.261	0.0050 mg/L	0.242	108	89-114
Cobalt	0.0380	0.00050 mg/L	0.0366	104	91-113
Copper	0.503	0.0020 mg/L	0.487	103	91-115
Iron	0.56	0.10 mg/L	0.469	120	77-124
Lead	0.208	0.0010 mg/L	0.193	108	92-113
Lithium	0.398	0.0010 mg/L	0.390	102	85-115
Magnesium	3.57	0.10 mg/L	3.31	108	78-120
Manganese	0.119	0.0020 mg/L	0.109	109	90-114
Mercury	0.00471	0.00020 mg/L	0.00456	103	50-150
Molybdenum	0.204	0.0010 mg/L	0.197	104	90-111
Nickel	0.238	0.0020 mg/L	0.242	98	90-111
Phosphorus	0.24	0.20 mg/L	0.233	102	85-115
Potassium	6.20	0.20 mg/L	5.93	105	84-113
Selenium	0.112	0.0050 mg/L	0.115	98	85-115
Sodium	8.16	0.20 mg/L	7.64	107	82-123
Strontium	0.364	0.010 mg/L	0.363	100	88-112
Thallium	0.0831	0.00020 mg/L	0.0794	105	91-114
Uranium	0.0200	0.00020 mg/L	0.0192	104	85-120
Vanadium	0.387	0.010 mg/L	0.376	103	86-111
Zinc	2.50	0.040 mg/L	2.42	103	85-111

CERTIFICATE OF ANALYSIS

**CLIENT****Western Water Associates Ltd**#32 - 10042 Main Street
Lake Country BC
V4V 1P6TEL 1-250-766-1030
FAX -**ATTENTION****Bryer Manwell****RECEIVED / TEMP**

Sep-25-12 10:15 / 5.0 °C

WORK ORDER

2091290

REPORTED

Oct-12-12

PROJECT

Lillooet Old Dump Site

COC #(s)

00007

PROJECT INFO

11-047-02

General Comments:

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; protocols published by the British Columbia Ministry of Environment (BCMOE); and/or CCME Canada-wide Standard Reference methods.

Methods not described in these publications are conducted according to procedures accepted by appropriate regulatory agencies, and/or are done in accordance with recognized professional standards using accepted testing methodologies and quality control efforts except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

- All solids results are reported on a dry weight basis unless otherwise noted
- Units: mg/kg = milligrams per kilogram, equivalent to parts per million (ppm)
mg/L = milligrams per litre, equivalent to parts per million (ppm)
ug/L = micrograms per litre, equivalent to parts per billion (ppb)
ug/g = micrograms per gram, equivalent to parts per million (ppm)
ug/m3 = micrograms per cubic meter of air
- "RDL" Reported detection limit
- "<" Less than reported detection limit
- "AO" Aesthetic objective
- "MAC" Maximum acceptable concentration (health-related guideline)
- "LAB" RMD = Richmond location, KEL = Kelowna location, EDM = Edmonton location, SUB = Subcontracted

Please contact CARO if more information is needed or to provide feedback on our services.

CARO Analytical Services

A handwritten signature in blue ink, appearing to read "J Shanko".

Final Review Per:

Jennifer Shanko, ASCT

Administration Coordinator, Kelowna

Locations:#110 4011 Viking Way
Richmond, BC V6V 2K9
Tel: 604-279-1499 Fax: 604-279-1599#102 3677 Highway 97N
Kelowna, BC V1X 5C3
Tel: 250-765-9646 Fax: 250-765-389317225 109 Avenue
Edmonton, AB T5S 1H7
Tel: 780-489-9100 Fax: 780-489-9700www.caro.ca

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
REPORTED**

2091290
Oct-12-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters

TP 1 (2091290-01) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.11		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	1.9		0.1	% rec	Sep-26-12	Sep-27-12	
pH	7.7	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

TP 3 (2091290-02) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.16		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	4.2		0.1	% rec	Sep-26-12	Sep-27-12	
pH	6.7	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

TP 5 (2091290-03) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.09		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	1.7		0.1	% rec	Sep-26-12	Sep-27-12	
pH	7.6	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

TP 6 (2091290-04) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.16		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	10.0		0.1	% rec	Sep-26-12	Sep-27-12	
pH	7.2	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

TP 7 (2091290-05) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.12		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	10.0		0.1	% rec	Sep-26-12	Sep-27-12	
pH	7.7	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

TP 8 (2091290-06) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.14		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	3.2		0.1	% rec	Sep-26-12	Sep-27-12	
pH	7.6	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

TP 9 (2091290-07) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.15		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	1.9		0.1	% rec	Sep-26-12	Sep-27-12	
pH	7.6	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

TP 10 (2091290-08) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.14		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	5.4		0.1	% rec	Sep-26-12	Sep-27-12	
pH	7.4	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

TP 11 (2091290-09) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.10		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	1.6		0.1	% rec	Sep-26-12	Sep-27-12	
pH	7.8	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

TP 12 (2091290-10) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.15		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	3.3		0.1	% rec	Sep-26-12	Sep-27-12	
pH	7.2	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
REPORTED**

2091290
Oct-12-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters, Continued

TP 13 (2091290-11) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.13		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	4.7		0.1	% rec	Sep-26-12	Sep-27-12	
pH	7.9	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

TP 14 (2091290-12) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.18		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	8.4		0.1	% rec	Sep-26-12	Sep-27-12	
pH	7.9	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

Fill (2091290-13) Matrix: Solid Sampled: Sep-21-12

Conductivity (EC)	0.18		0.01	ds/m	Oct-01-12	Oct-01-12	
Moisture	0.2		0.1	% rec	Sep-26-12	Sep-27-12	
pH	8.1	AO = 6.5 - 8.5	0.1	pH units	Oct-01-12	Oct-01-12	

Calculated Parameters

TP 1 (2091290-01) Matrix: Solid Sampled: Sep-21-12

VPHs	< 20		20	mg/kg dry	N/A	N/A	
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TP 3 (2091290-02) Matrix: Solid Sampled: Sep-21-12

LEPHs	< 250		250	mg/kg dry	N/A	N/A	
HEPHs	283		250	mg/kg dry	N/A	N/A	
Total PAH	3.67		0.10	mg/kg dry	N/A	N/A	

TP 5 (2091290-03) Matrix: Solid Sampled: Sep-21-12

VPHs	< 20		20	mg/kg dry	N/A	N/A	
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TP 6 (2091290-04) Matrix: Solid Sampled: Sep-21-12

LEPHs	< 250		250	mg/kg dry	N/A	N/A	
HEPHs	547		250	mg/kg dry	N/A	N/A	
Total PAH	4.92		0.10	mg/kg dry	N/A	N/A	

TP 7 (2091290-05) Matrix: Solid Sampled: Sep-21-12

VPHs	< 20		20	mg/kg dry	N/A	N/A	
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TP 8 (2091290-06) Matrix: Solid Sampled: Sep-21-12

LEPHs	< 250		250	mg/kg dry	N/A	N/A	
HEPHs	< 250		250	mg/kg dry	N/A	N/A	
Total PAH	2.70		0.10	mg/kg dry	N/A	N/A	

TP 9 (2091290-07) Matrix: Solid Sampled: Sep-21-12

VPHs	< 20		20	mg/kg dry	N/A	N/A	
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TP 10 (2091290-08) Matrix: Solid Sampled: Sep-21-12

LEPHs	< 250		250	mg/kg dry	N/A	N/A	
HEPHs	369		250	mg/kg dry	N/A	N/A	
Total PAH	0.33		0.10	mg/kg dry	N/A	N/A	

SAMPLE DATA



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Lillooet Old Dump Site

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Calculated Parameters, Continued

TP 11 (2091290-09) Matrix: Solid Sampled: Sep-21-12

VPHs	< 20		20	mg/kg dry	N/A	N/A	
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TP 12 (2091290-10) Matrix: Solid Sampled: Sep-21-12

LEPHs	< 250		250	mg/kg dry	N/A	N/A	
HEPHs	335		250	mg/kg dry	N/A	N/A	
Total PAH	< 0.10		0.10	mg/kg dry	N/A	N/A	

TP 13 (2091290-11) Matrix: Solid Sampled: Sep-21-12

VPHs	< 20		20	mg/kg dry	N/A	N/A	
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TP 14 (2091290-12) Matrix: Solid Sampled: Sep-21-12

LEPHs	< 250		250	mg/kg dry	N/A	N/A	
HEPHs	< 250		250	mg/kg dry	N/A	N/A	
Total PAH	< 0.10		0.10	mg/kg dry	N/A	N/A	

Fill (2091290-13) Matrix: Solid Sampled: Sep-21-12

VPHs	< 20		20	mg/kg dry	N/A	N/A	
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Strong Acid Leachable Metals

TP 1 (2091290-01) Matrix: Solid Sampled: Sep-21-12

Aluminum	14000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	0.7		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	6.0		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	92		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	8		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.28		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	21000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	110		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	19		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	39		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	29000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	10		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	14		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	23000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	640		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	0.07		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	1.2		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	170		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	600		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	1100		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	0.6		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	280		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	49		0.2	mg/kg dry	Sep-27-12	Sep-29-12	

SAMPLE DATA



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Strong Acid Leachable Metals, Continued

TP 1 (2091290-01) Matrix: Solid Sampled: Sep-21-12, Continued

Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	0.9		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	1.0		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	670		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	55		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	79		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	2		2	mg/kg dry	Sep-27-12	Sep-29-12	

TP 3 (2091290-02) Matrix: Solid Sampled: Sep-21-12

Aluminum	15000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	0.7		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	8.1		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	120		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.2		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	7		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.43		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	12000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	93		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	14		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	39		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	28000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	35		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	17		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	14000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	690		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	0.16		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	1.0		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	84		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	620		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	1600		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	< 0.5		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	240		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	47		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	0.8		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	15		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	710		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	51		0.4	mg/kg dry	Sep-27-12	Sep-29-12	

SAMPLE DATA



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Strong Acid Leachable Metals, Continued

TP 3 (2091290-02) Matrix: Solid Sampled: Sep-21-12, Continued

Zinc	97		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	3		2	mg/kg dry	Sep-27-12	Sep-29-12	

TP 5 (2091290-03) Matrix: Solid Sampled: Sep-21-12

Aluminum	16000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	0.6		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	6.1		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	110		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	11		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.28		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	43000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	160		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	23		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	44		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	33000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	19		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	13		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	25000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	700		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	0.27		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	1.0		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	180		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	720		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	1200		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	0.6		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	240		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	79		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	0.9		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	0.9		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	890		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	68		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	81		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	2		2	mg/kg dry	Sep-27-12	Sep-29-12	

TP 6 (2091290-04) Matrix: Solid Sampled: Sep-21-12

Aluminum	13000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	0.6		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	6.1		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	130		1	mg/kg dry	Sep-27-12	Sep-29-12	

SAMPLE DATA



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Strong Acid Leachable Metals, Continued

TP 6 (2091290-04) Matrix: Solid Sampled: Sep-21-12, Continued

Beryllium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	8		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.32		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	13000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	54		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	13		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	36		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	25000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	5.4		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	15		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	14000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	590		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	< 0.05		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	1.2		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	93		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	620		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	1900		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	< 0.5		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	360		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	51		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	0.7		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	0.6		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	490		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	43		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	79		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	4		2	mg/kg dry	Sep-27-12	Sep-29-12	

TP 7 (2091290-05) Matrix: Solid Sampled: Sep-21-12

Aluminum	17000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	0.6		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	5.8		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	120		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	7		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.34		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	11000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	95		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	20		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	39		0.2	mg/kg dry	Sep-27-12	Sep-29-12	

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Strong Acid Leachable Metals, Continued

TP 7 (2091290-05) Matrix: Solid Sampled: Sep-21-12, Continued

Iron	34000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	6.6		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	21		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	24000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	610		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	0.06		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	1.4		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	180		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	500		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	1700		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	0.7		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	260		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	37		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	0.9		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	0.9		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	420		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.2		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	53		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	94		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	3		2	mg/kg dry	Sep-27-12	Sep-29-12	

TP 8 (2091290-06) Matrix: Solid Sampled: Sep-21-12

Aluminum	14000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	0.5		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	4.5		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	87		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	10		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.26		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	23000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	200		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	26		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	38		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	30000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	19		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	13		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	41000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	610		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	0.14		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	0.8		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	330		0.4	mg/kg dry	Sep-27-12	Sep-29-12	

SAMPLE DATA



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Strong Acid Leachable Metals, Continued

TP 8 (2091290-06) Matrix: Solid Sampled: Sep-21-12, Continued

Phosphorus	530		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	1100		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	< 0.5		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	220		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	52		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	0.8		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	2.4		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	650		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	53		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	78		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	3		2	mg/kg dry	Sep-27-12	Sep-29-12	

TP 9 (2091290-07) Matrix: Solid Sampled: Sep-21-12

Aluminum	14000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	0.7		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	6.9		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	89		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	9		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.29		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	30000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	150		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	18		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	38		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	29000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	17		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	14		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	27000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	590		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	0.08		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	0.9		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	200		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	610		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	1100		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	0.5		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	250		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	67		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
REPORTED**

2091290
Oct-12-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Strong Acid Leachable Metals, Continued

TP 9 (2091290-07) Matrix: Solid Sampled: Sep-21-12, Continued

Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	0.9		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	0.7		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	740		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	59		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	77		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	2		2	mg/kg dry	Sep-27-12	Sep-29-12	

TP 10 (2091290-08) Matrix: Solid Sampled: Sep-21-12

Aluminum	12000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	0.5		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	6.2		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	110		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.2		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	8		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.23		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	15000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	110		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	16		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	33		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	23000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	7.3		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	11		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	21000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	530		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	0.06		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	0.8		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	150		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	550		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	1300		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	0.5		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	410		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	50		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	1.0		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	0.6		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	880		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.4		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	48		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	64		2	mg/kg dry	Sep-27-12	Sep-29-12	

SAMPLE DATA

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Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
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2091290
Oct-12-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Strong Acid Leachable Metals, Continued

TP 10 (2091290-08) Matrix: Solid Sampled: Sep-21-12, Continued

Zirconium	4		2	mg/kg dry	Sep-27-12	Sep-29-12	
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TP 11 (2091290-09) Matrix: Solid Sampled: Sep-21-12

Aluminum	18000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	1.0		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	6.8		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	150		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.4		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	8		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.49		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	11000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	67		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	15		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	75		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	36000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	46		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	21		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	13000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	630		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	0.08		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	2.6		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	85		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	600		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	1800		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	0.7		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	0.4		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	190		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	34		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	0.2		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	1.0		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	2.8		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	560		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	57		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	120		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	3		2	mg/kg dry	Sep-27-12	Sep-29-12	

TP 12 (2091290-10) Matrix: Solid Sampled: Sep-21-12

Aluminum	13000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	0.8		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	8.0		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	210		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.2		0.1	mg/kg dry	Sep-27-12	Sep-29-12	

SAMPLE DATA



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Lillooet Old Dump Site

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Oct-12-12

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Strong Acid Leachable Metals, Continued

TP 12 (2091290-10) Matrix: Solid Sampled: Sep-21-12, Continued

Bismuth	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	12		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.31		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	20000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	60		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	12		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	40		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	22000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	9.5		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	13		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	10000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	880		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	0.06		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	1.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	51		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	950		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	2500		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	< 0.5		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	580		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	90		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	0.8		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	1.0		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	830		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	48		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	91		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	4		2	mg/kg dry	Sep-27-12	Sep-29-12	

TP 13 (2091290-11) Matrix: Solid Sampled: Sep-21-12

Aluminum	14000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	1.0		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	7.0		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	180		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	13		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.44		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	16000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	86		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	17		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	40		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	29000		20	mg/kg dry	Sep-27-12	Sep-29-12	

SAMPLE DATA



**CLIENT
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Strong Acid Leachable Metals, Continued

TP 13 (2091290-11) Matrix: Solid Sampled: Sep-21-12, Continued

Lead	26		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	15		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	18000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	710		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	0.12		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	1.7		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	140		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	830		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	2100		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	0.6		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	520		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	82		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	0.8		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	2.7		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	710		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	49		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	100		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	3		2	mg/kg dry	Sep-27-12	Sep-29-12	

TP 14 (2091290-12) Matrix: Solid Sampled: Sep-21-12

Aluminum	15000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	1.2		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	6.6		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	210		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	13		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.33		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	16000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	60		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	14		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	45		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	26000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	24		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	15		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	13000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	750		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	0.17		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	1.9		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	96		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	940		10	mg/kg dry	Sep-27-12	Sep-29-12	

SAMPLE DATA



**CLIENT
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Lillooet Old Dump Site

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Strong Acid Leachable Metals, Continued

TP 14 (2091290-12) Matrix: Solid Sampled: Sep-21-12, Continued

Potassium	3600		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	< 0.5		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	780		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	76		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thallium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	0.8		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	3.8		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	560		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.2		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	46		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	110		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	2		2	mg/kg dry	Sep-27-12	Sep-29-12	

Fill (2091290-13) Matrix: Solid Sampled: Sep-21-12

Aluminum	11000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Antimony	0.4		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Arsenic	4.5		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Barium	65		1	mg/kg dry	Sep-27-12	Sep-29-12	
Beryllium	0.2		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Bismuth	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Boron	33		2	mg/kg dry	Sep-27-12	Sep-29-12	
Cadmium	0.18		0.04	mg/kg dry	Sep-27-12	Sep-29-12	
Calcium	17000		100	mg/kg dry	Sep-27-12	Sep-29-12	
Chromium	49		1.0	mg/kg dry	Sep-27-12	Sep-29-12	
Cobalt	12		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Copper	33		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Iron	23000		20	mg/kg dry	Sep-27-12	Sep-29-12	
Lead	29		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Lithium	11		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Magnesium	12000		10	mg/kg dry	Sep-27-12	Sep-29-12	
Manganese	490		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Mercury	< 0.05		0.05	mg/kg dry	Sep-27-12	Sep-29-12	
Molybdenum	0.9		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Nickel	56		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Phosphorus	490		10	mg/kg dry	Sep-27-12	Sep-29-12	
Potassium	780		10	mg/kg dry	Sep-27-12	Sep-29-12	
Selenium	0.5		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Silicon	< 3000		3000	mg/kg dry	Sep-27-12	Sep-29-12	
Silver	< 0.2		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sodium	520		40	mg/kg dry	Sep-27-12	Sep-29-12	
Strontium	60		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Sulfur	< 1000		1000	mg/kg dry	Sep-27-12	Sep-29-12	
Tellurium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
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2091290
Oct-12-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Strong Acid Leachable Metals, Continued

Fill (2091290-13) Matrix: Solid Sampled: Sep-21-12, Continued

Thallium	< 0.1		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Thorium	1.9		0.5	mg/kg dry	Sep-27-12	Sep-29-12	
Tin	0.5		0.2	mg/kg dry	Sep-27-12	Sep-29-12	
Titanium	1100		2	mg/kg dry	Sep-27-12	Sep-29-12	
Uranium	0.3		0.1	mg/kg dry	Sep-27-12	Sep-29-12	
Vanadium	55		0.4	mg/kg dry	Sep-27-12	Sep-29-12	
Zinc	68		2	mg/kg dry	Sep-27-12	Sep-29-12	
Zirconium	4		2	mg/kg dry	Sep-27-12	Sep-29-12	

Aggregate Organic Parameters

TP 1 (2091290-01) Matrix: Solid Sampled: Sep-21-12

VHs (6-10)	< 20		20	mg/kg dry	Sep-26-12	Sep-29-12	
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TP 3 (2091290-02) Matrix: Solid Sampled: Sep-21-12

EPHs (10-19)	< 250		250	mg/kg dry	Sep-26-12	Sep-29-12	
EPHs (19-32)	286		250	mg/kg dry	Sep-26-12	Sep-29-12	

TP 5 (2091290-03) Matrix: Solid Sampled: Sep-21-12

VHs (6-10)	< 20		20	mg/kg dry	Sep-26-12	Sep-29-12	
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TP 6 (2091290-04) Matrix: Solid Sampled: Sep-21-12

EPHs (10-19)	< 250		250	mg/kg dry	Sep-26-12	Sep-29-12	
EPHs (19-32)	550		250	mg/kg dry	Sep-26-12	Sep-29-12	

TP 7 (2091290-05) Matrix: Solid Sampled: Sep-21-12

VHs (6-10)	< 20		20	mg/kg dry	Sep-26-12	Sep-29-12	
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TP 8 (2091290-06) Matrix: Solid Sampled: Sep-21-12

EPHs (10-19)	< 250		250	mg/kg dry	Sep-26-12	Sep-29-12	
EPHs (19-32)	< 250		250	mg/kg dry	Sep-26-12	Sep-29-12	

TP 9 (2091290-07) Matrix: Solid Sampled: Sep-21-12

VHs (6-10)	< 20		20	mg/kg dry	Sep-26-12	Sep-29-12	
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TP 10 (2091290-08) Matrix: Solid Sampled: Sep-21-12

EPHs (10-19)	< 250		250	mg/kg dry	Sep-26-12	Sep-29-12	
EPHs (19-32)	369		250	mg/kg dry	Sep-26-12	Sep-29-12	

TP 11 (2091290-09) Matrix: Solid Sampled: Sep-21-12

VHs (6-10)	< 20		20	mg/kg dry	Sep-26-12	Oct-03-12	
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TP 12 (2091290-10) Matrix: Solid Sampled: Sep-21-12

EPHs (10-19)	< 250		250	mg/kg dry	Sep-26-12	Sep-29-12	
EPHs (19-32)	335		250	mg/kg dry	Sep-26-12	Sep-29-12	

TP 13 (2091290-11) Matrix: Solid Sampled: Sep-21-12

VHs (6-10)	< 20		20	mg/kg dry	Sep-26-12	Oct-03-12	A-01
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SAMPLE DATA

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Aggregate Organic Parameters, Continued

TP 14 (2091290-12) Matrix: Solid Sampled: Sep-21-12

EPHs (10-19)	< 250		250	mg/kg dry	Sep-26-12	Sep-29-12	
EPHs (19-32)	< 250		250	mg/kg dry	Sep-26-12	Sep-29-12	

Fill (2091290-13) Matrix: Solid Sampled: Sep-21-12

VHs (6-10)	< 20		20	mg/kg dry	Sep-26-12	Oct-03-12	
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Polycyclic Aromatic Hydrocarbons (PAH)

TP 3 (2091290-02) Matrix: Solid Sampled: Sep-21-12

Acenaphthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Acenaphthylene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (a) anthracene	0.30		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (a) pyrene	0.64		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (b) fluoranthene	0.25		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (g,h,i) perylene	0.51		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (k) fluoranthene	0.40		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Chrysene	0.29		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Dibenz (a,h) anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Fluoranthene	0.33		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Fluorene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Indeno (1,2,3-cd) pyrene	0.39		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Naphthalene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Phenanthrene	0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Pyrene	0.46		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Surrogate: Naphthalene-d8	127 %		59-113		Sep-26-12	Oct-06-12	S02
Surrogate: Acenaphthene-d10	118 %		60-114		Sep-26-12	Oct-06-12	S02
Surrogate: Phenanthrene-d10	116 %		60-113		Sep-26-12	Oct-06-12	S02
Surrogate: Chrysene-d12	106 %		60-112		Sep-26-12	Oct-06-12	

TP 6 (2091290-04) Matrix: Solid Sampled: Sep-21-12

Acenaphthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Acenaphthylene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Anthracene	0.12		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (a) anthracene	0.51		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (a) pyrene	0.57		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (b) fluoranthene	0.26		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (g,h,i) perylene	0.34		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (k) fluoranthene	0.48		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Chrysene	0.51		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Dibenz (a,h) anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Fluoranthene	0.72		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Fluorene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Indeno (1,2,3-cd) pyrene	0.31		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Naphthalene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Phenanthrene	0.25		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Pyrene	0.84		0.10	mg/kg dry	Sep-26-12	Oct-06-12	

SAMPLE DATA

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Polycyclic Aromatic Hydrocarbons (PAH), Continued

TP 6 (2091290-04) Matrix: Solid Sampled: Sep-21-12, Continued

Surrogate: Naphthalene-d8	117 %		59-113		Sep-26-12	Oct-06-12	S02
Surrogate: Acenaphthene-d10	111 %		60-114		Sep-26-12	Oct-06-12	
Surrogate: Phenanthrene-d10	101 %		60-113		Sep-26-12	Oct-06-12	
Surrogate: Chrysene-d12	86 %		60-112		Sep-26-12	Oct-06-12	

TP 8 (2091290-06) Matrix: Solid Sampled: Sep-21-12

Acenaphthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Acenaphthylene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (a) anthracene	0.28		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (a) pyrene	0.28		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (b) fluoranthene	0.14		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (g,h,i) perylene	0.18		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Benzo (k) fluoranthene	0.21		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Chrysene	0.26		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Dibenz (a,h) anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Fluoranthene	0.47		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Fluorene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Indeno (1,2,3-cd) pyrene	0.16		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Naphthalene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Phenanthrene	0.23		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Pyrene	0.50		0.10	mg/kg dry	Sep-26-12	Oct-06-12	
Surrogate: Naphthalene-d8	118 %		59-113		Sep-26-12	Oct-06-12	S02
Surrogate: Acenaphthene-d10	112 %		60-114		Sep-26-12	Oct-06-12	
Surrogate: Phenanthrene-d10	104 %		60-113		Sep-26-12	Oct-06-12	
Surrogate: Chrysene-d12	102 %		60-112		Sep-26-12	Oct-06-12	

TP 10 (2091290-08) Matrix: Solid Sampled: Sep-21-12

Acenaphthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Acenaphthylene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (a) anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (a) pyrene	0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (b) fluoranthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (g,h,i) perylene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (k) fluoranthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Chrysene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Dibenz (a,h) anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Fluoranthene	0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Fluorene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Indeno (1,2,3-cd) pyrene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Naphthalene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Phenanthrene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Pyrene	0.13		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Surrogate: Naphthalene-d8	115 %		59-113		Sep-26-12	Oct-07-12	S02
Surrogate: Acenaphthene-d10	108 %		60-114		Sep-26-12	Oct-07-12	
Surrogate: Phenanthrene-d10	99 %		60-113		Sep-26-12	Oct-07-12	

SAMPLE DATA

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Lillooet Old Dump Site

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Polycyclic Aromatic Hydrocarbons (PAH), Continued

TP 10 (2091290-08) Matrix: Solid Sampled: Sep-21-12, Continued

Surrogate: Chrysene-d12	86 %		60-112		Sep-26-12	Oct-07-12	
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TP 12 (2091290-10) Matrix: Solid Sampled: Sep-21-12

Acenaphthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Acenaphthylene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (a) anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (a) pyrene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (b) fluoranthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (g,h,i) perylene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (k) fluoranthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Chrysene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Dibenz (a,h) anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Fluoranthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Fluorene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Indeno (1,2,3-cd) pyrene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Naphthalene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Phenanthrene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Pyrene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Surrogate: Naphthalene-d8	123 %		59-113		Sep-26-12	Oct-07-12	S02
Surrogate: Acenaphthene-d10	110 %		60-114		Sep-26-12	Oct-07-12	
Surrogate: Phenanthrene-d10	102 %		60-113		Sep-26-12	Oct-07-12	
Surrogate: Chrysene-d12	92 %		60-112		Sep-26-12	Oct-07-12	

TP 14 (2091290-12) Matrix: Solid Sampled: Sep-21-12

Acenaphthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Acenaphthylene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (a) anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (a) pyrene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (b) fluoranthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (g,h,i) perylene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Benzo (k) fluoranthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Chrysene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Dibenz (a,h) anthracene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Fluoranthene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Fluorene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Indeno (1,2,3-cd) pyrene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Naphthalene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Phenanthrene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Pyrene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-07-12	
Surrogate: Naphthalene-d8	117 %		59-113		Sep-26-12	Oct-07-12	S02
Surrogate: Acenaphthene-d10	111 %		60-114		Sep-26-12	Oct-07-12	
Surrogate: Phenanthrene-d10	101 %		60-113		Sep-26-12	Oct-07-12	
Surrogate: Chrysene-d12	88 %		60-112		Sep-26-12	Oct-07-12	

Volatile Organic Compounds (VOC)

SAMPLE DATA



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Volatile Organic Compounds (VOC), Continued

TP 1 (2091290-01) Matrix: Solid Sampled: Sep-21-12

Benzene	< 0.03		0.03	mg/kg dry	Sep-26-12	Sep-29-12	
Bromodichloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Bromoform	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Carbon tetrachloride	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Chlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Chloroform	< 0.07		0.07	mg/kg dry	Sep-26-12	Sep-29-12	
Dibromochloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dibromoethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Dibromomethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,3-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,4-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
cis-1,2-Dichloroethene	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
trans-1,2-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dichloropropane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
cis-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
trans-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Ethylbenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Methyl tert-butyl ether	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Methylene chloride	< 0.50		0.50	mg/kg dry	Sep-26-12	Sep-29-12	
Styrene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,2,2-Tetrachloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Tetrachloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,1-Trichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Toluene	< 0.20		0.20	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,2-Trichloroethane	< 0.07		0.07	mg/kg dry	Sep-26-12	Sep-29-12	
Trichloroethene	< 0.01		0.01	mg/kg dry	Sep-26-12	Sep-29-12	
Trichlorofluoromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Vinyl chloride	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Xylenes (total)	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Surrogate: Toluene-d8	71 %		71-124		Sep-26-12	Sep-29-12	
Surrogate: 4-Bromofluorobenzene	59 %		61-131		Sep-26-12	Sep-29-12	S02
Surrogate: 1,4-Dichlorobenzene-d4	59 %		60-129		Sep-26-12	Sep-29-12	S02

TP 5 (2091290-03) Matrix: Solid Sampled: Sep-21-12

Benzene	< 0.03		0.03	mg/kg dry	Sep-26-12	Sep-29-12	
Bromodichloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Bromoform	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Carbon tetrachloride	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Chlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Chloroform	< 0.07		0.07	mg/kg dry	Sep-26-12	Sep-29-12	
Dibromochloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dibromoethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Dibromomethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
REPORTED**

2091290
Oct-12-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Volatile Organic Compounds (VOC), Continued

TP 5 (2091290-03) Matrix: Solid Sampled: Sep-21-12, Continued

1,2-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,3-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,4-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
cis-1,2-Dichloroethene	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
trans-1,2-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dichloropropane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
cis-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
trans-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Ethylbenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Methyl tert-butyl ether	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Methylene chloride	< 0.50		0.50	mg/kg dry	Sep-26-12	Sep-29-12	
Styrene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,2,2-Tetrachloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Tetrachloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,1-Trichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Toluene	< 0.20		0.20	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,2-Trichloroethane	< 0.07		0.07	mg/kg dry	Sep-26-12	Sep-29-12	
Trichloroethene	< 0.01		0.01	mg/kg dry	Sep-26-12	Sep-29-12	
Trichlorofluoromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Vinyl chloride	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Xylenes (total)	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Surrogate: Toluene-d8	73 %		71-124		Sep-26-12	Sep-29-12	
Surrogate: 4-Bromofluorobenzene	61 %		61-131		Sep-26-12	Sep-29-12	
Surrogate: 1,4-Dichlorobenzene-d4	62 %		60-129		Sep-26-12	Sep-29-12	

TP 7 (2091290-05) Matrix: Solid Sampled: Sep-21-12

Benzene	< 0.03		0.03	mg/kg dry	Sep-26-12	Sep-29-12	
Bromodichloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Bromoform	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Carbon tetrachloride	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Chlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Chloroform	< 0.07		0.07	mg/kg dry	Sep-26-12	Sep-29-12	
Dibromochloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dibromoethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Dibromomethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,3-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,4-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
cis-1,2-Dichloroethene	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
trans-1,2-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dichloropropane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	

SAMPLE DATA

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Western Water Associates Ltd
Lillooet Old Dump Site

WORK ORDER #
REPORTED

2091290
Oct-12-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Volatile Organic Compounds (VOC), Continued

TP 7 (2091290-05) Matrix: Solid Sampled: Sep-21-12, Continued

cis-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
trans-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Ethylbenzene	0.12		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Methyl tert-butyl ether	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Methylene chloride	< 0.50		0.50	mg/kg dry	Sep-26-12	Sep-29-12	
Styrene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,2,2-Tetrachloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Tetrachloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,1-Trichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Toluene	0.25		0.20	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,2-Trichloroethane	< 0.07		0.07	mg/kg dry	Sep-26-12	Sep-29-12	
Trichloroethene	< 0.01		0.01	mg/kg dry	Sep-26-12	Sep-29-12	
Trichlorofluoromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Vinyl chloride	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Xylenes (total)	0.35		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Surrogate: Toluene-d8	76 %		71-124		Sep-26-12	Sep-29-12	
Surrogate: 4-Bromofluorobenzene	63 %		61-131		Sep-26-12	Sep-29-12	
Surrogate: 1,4-Dichlorobenzene-d4	64 %		60-129		Sep-26-12	Sep-29-12	

TP 9 (2091290-07) Matrix: Solid Sampled: Sep-21-12

Benzene	< 0.03		0.03	mg/kg dry	Sep-26-12	Sep-29-12	
Bromodichloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Bromoform	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Carbon tetrachloride	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Chlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Chloroform	< 0.07		0.07	mg/kg dry	Sep-26-12	Sep-29-12	
Dibromochloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dibromoethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Dibromomethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,3-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,4-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
cis-1,2-Dichloroethene	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
trans-1,2-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,2-Dichloropropane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
cis-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
trans-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Ethylbenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Methyl tert-butyl ether	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Methylene chloride	< 0.50		0.50	mg/kg dry	Sep-26-12	Sep-29-12	
Styrene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,2,2-Tetrachloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
Tetrachloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,1-Trichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Sep-29-12	

SAMPLE DATA

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Western Water Associates Ltd
Lillooet Old Dump Site

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REPORTED**

2091290
Oct-12-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Volatile Organic Compounds (VOC), Continued

TP 9 (2091290-07) Matrix: Solid Sampled: Sep-21-12, Continued

Toluene	< 0.20		0.20	mg/kg dry	Sep-26-12	Sep-29-12	
1,1,2-Trichloroethane	< 0.07		0.07	mg/kg dry	Sep-26-12	Sep-29-12	
Trichloroethene	< 0.01		0.01	mg/kg dry	Sep-26-12	Sep-29-12	
Trichlorofluoromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Vinyl chloride	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Xylenes (total)	< 0.10		0.10	mg/kg dry	Sep-26-12	Sep-29-12	
Surrogate: Toluene-d8	71 %		71-124		Sep-26-12	Sep-29-12	
Surrogate: 4-Bromofluorobenzene	60 %		61-131		Sep-26-12	Sep-29-12	S02
Surrogate: 1,4-Dichlorobenzene-d4	60 %		60-129		Sep-26-12	Sep-29-12	

TP 11 (2091290-09) Matrix: Solid Sampled: Sep-21-12

Benzene	< 0.03		0.03	mg/kg dry	Sep-26-12	Oct-03-12	
Bromodichloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Bromoform	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Carbon tetrachloride	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Chlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Chloroform	< 0.07		0.07	mg/kg dry	Sep-26-12	Oct-03-12	
Dibromochloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
1,2-Dibromoethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Dibromomethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
1,2-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,3-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,4-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,2-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
cis-1,2-Dichloroethene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
trans-1,2-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,2-Dichloropropane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
cis-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
trans-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Ethylbenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Methyl tert-butyl ether	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Methylene chloride	< 0.50		0.50	mg/kg dry	Sep-26-12	Oct-03-12	
Styrene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1,2,2-Tetrachloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Tetrachloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1,1-Trichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Toluene	< 0.20		0.20	mg/kg dry	Sep-26-12	Oct-03-12	
1,1,2-Trichloroethane	< 0.07		0.07	mg/kg dry	Sep-26-12	Oct-03-12	
Trichloroethene	< 0.01		0.01	mg/kg dry	Sep-26-12	Oct-03-12	
Trichlorofluoromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Vinyl chloride	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Xylenes (total)	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Surrogate: Toluene-d8	78 %		71-124		Sep-26-12	Oct-03-12	
Surrogate: 4-Bromofluorobenzene	69 %		61-131		Sep-26-12	Oct-03-12	
Surrogate: 1,4-Dichlorobenzene-d4	71 %		60-129		Sep-26-12	Oct-03-12	

SAMPLE DATA



**CLIENT
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Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
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2091290
Oct-12-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Volatile Organic Compounds (VOC), Continued

TP 13 (2091290-11) Matrix: Solid Sampled: Sep-21-12						A-01	
Benzene	< 0.03		0.03	mg/kg dry	Sep-26-12	Oct-03-12	
Bromodichloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Bromoform	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Carbon tetrachloride	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Chlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Chloroform	< 0.07		0.07	mg/kg dry	Sep-26-12	Oct-03-12	
Dibromochloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
1,2-Dibromoethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Dibromomethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
1,2-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,3-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,4-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,2-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
cis-1,2-Dichloroethene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
trans-1,2-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,2-Dichloropropane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
cis-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
trans-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Ethylbenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Methyl tert-butyl ether	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Methylene chloride	< 0.50		0.50	mg/kg dry	Sep-26-12	Oct-03-12	
Styrene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1,2,2-Tetrachloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Tetrachloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1,1-Trichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Toluene	< 0.20		0.20	mg/kg dry	Sep-26-12	Oct-03-12	
1,1,2-Trichloroethane	< 0.07		0.07	mg/kg dry	Sep-26-12	Oct-03-12	
Trichloroethene	< 0.01		0.01	mg/kg dry	Sep-26-12	Oct-03-12	
Trichlorofluoromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Vinyl chloride	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Xylenes (total)	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Surrogate: Toluene-d8	69 %		71-124		Sep-26-12	Oct-03-12	
Surrogate: 4-Bromofluorobenzene	58 %		61-131		Sep-26-12	Oct-03-12	
Surrogate: 1,4-Dichlorobenzene-d4	58 %		60-129		Sep-26-12	Oct-03-12	

Fill (2091290-13) Matrix: Solid Sampled: Sep-21-12

Benzene	< 0.03		0.03	mg/kg dry	Sep-26-12	Oct-03-12	
Bromodichloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Bromoform	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Carbon tetrachloride	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Chlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Chloroform	< 0.07		0.07	mg/kg dry	Sep-26-12	Oct-03-12	
Dibromochloromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
1,2-Dibromoethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Dibromomethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	

SAMPLE DATA



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Western Water Associates Ltd
Lillooet Old Dump Site

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Volatile Organic Compounds (VOC), Continued

Fill (2091290-13) Matrix: Solid Sampled: Sep-21-12, Continued

1,2-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,3-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,4-Dichlorobenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,2-Dichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
cis-1,2-Dichloroethene	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
trans-1,2-Dichloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,2-Dichloropropane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
cis-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
trans-1,3-Dichloropropene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Ethylbenzene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Methyl tert-butyl ether	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Methylene chloride	< 0.50		0.50	mg/kg dry	Sep-26-12	Oct-03-12	
Styrene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1,2,2-Tetrachloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Tetrachloroethene	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
1,1,1-Trichloroethane	< 0.05		0.05	mg/kg dry	Sep-26-12	Oct-03-12	
Toluene	< 0.20		0.20	mg/kg dry	Sep-26-12	Oct-03-12	
1,1,2-Trichloroethane	< 0.07		0.07	mg/kg dry	Sep-26-12	Oct-03-12	
Trichloroethene	< 0.01		0.01	mg/kg dry	Sep-26-12	Oct-03-12	
Trichlorofluoromethane	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Vinyl chloride	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Xylenes (total)	< 0.10		0.10	mg/kg dry	Sep-26-12	Oct-03-12	
Surrogate: Toluene-d8	72 %		71-124		Sep-26-12	Oct-03-12	
Surrogate: 4-Bromofluorobenzene	63 %		61-131		Sep-26-12	Oct-03-12	
Surrogate: 1,4-Dichlorobenzene-d4	64 %		60-129		Sep-26-12	Oct-03-12	

Sample Qualifiers:

- A-01 Surrogate recovery outside of established control limits. Sample was rerun and surrogate recovery was still outside limits, possibly a sample matrix effect.
- S02 Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate(s).

ANALYSIS / REPORT INFORMATION

CLIENT Western Water Associates Ltd
PROJECT Lillooet Old Dump Site

WORK ORDER # 2091290
REPORTED Oct-12-12

Analysis Description	Method Reference(s) (* = modified from)		LAB
	Preparation	Analysis	
EPH in Soil	EPA 3570 *	BCMOE	RMD
VH in Soil	EPA 5035	BCMOE	RMD
L/HEPH in Soil	N/A	BCMOE	RMD
VOC/VH/VPH in Soil	N/A	BCMOE	RMD
pH in Solids	N/A	EPA 9045D	KEL
Dry Weight (moisture)	N/A	ASTM D2216	RMD
Conductivity in Solids	Carter 15.2.2	APHA 2510 B	KEL
PAH in Soil	EPA 3570 *	EPA 8270D	RMD
Strong Acid Leachable Metals	EPA 3050B *	EPA 6020A	RMD
VOC in Soil	EPA 5035	EPA 8260B	RMD

CERTIFICATE OF ANALYSIS

**CLIENT****Western Water Associates Ltd**#32 - 10042 Main Street
Lake Country BC
V4V 1P6TEL 1-250-766-1030
FAX -**ATTENTION****Bryer Manwell****RECEIVED / TEMP**

Sep-25-12 10:15 / 5.0 °C

WORK ORDER

2091291

REPORTED

Oct-02-12

PROJECT

Lillooet Old Dump Site

COC #(s)

00007

PROJECT INFO

11-047-02

General Comments:

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; protocols published by the British Columbia Ministry of Environment (BCMOE); and/or CCME Canada-wide Standard Reference methods.

Methods not described in these publications are conducted according to procedures accepted by appropriate regulatory agencies, and/or are done in accordance with recognized professional standards using accepted testing methodologies and quality control efforts except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

- All solids results are reported on a dry weight basis unless otherwise noted
- Units: mg/kg = milligrams per kilogram, equivalent to parts per million (ppm)
mg/L = milligrams per litre, equivalent to parts per million (ppm)
ug/L = micrograms per litre, equivalent to parts per billion (ppb)
ug/g = micrograms per gram, equivalent to parts per million (ppm)
ug/m3 = micrograms per cubic meter of air
- "RDL" Reported detection limit
- "<" Less than reported detection limit
- "AO" Aesthetic objective
- "MAC" Maximum acceptable concentration (health-related guideline)
- "LAB" RMD = Richmond location, KEL = Kelowna location, EDM = Edmonton location, SUB = Subcontracted

Please contact CARO if more information is needed or to provide feedback on our services.

CARO Analytical Services

A handwritten signature in blue ink, appearing to read "J Shanko".

Final Review Per:

Jennifer Shanko, ASCT

Administration Coordinator, Kelowna

Locations:#110 4011 Viking Way
Richmond, BC V6V 2K9
Tel: 604-279-1499 Fax: 604-279-1599#102 3677 Highway 97N
Kelowna, BC V1X 5C3
Tel: 250-765-9646 Fax: 250-765-389317225 109 Avenue
Edmonton, AB T5S 1H7
Tel: 780-489-9100 Fax: 780-489-9700www.caro.ca

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
REPORTED**

2091291
Oct-02-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters

MW11-01 (2091291-01) Matrix: Water Sampled: Sep-21-12 13:00

Alkalinity, Total as CaCO ₃	284		1	mg/L	Sep-25-12	Sep-25-12	
BOD, 5-day	< 10		10	mg/L	Sep-26-12	Oct-01-12	HT
Carbon, Total Organic	0.8		0.5	mg/L	Sep-27-12	Sep-27-12	
Chloride	21.6	AO ≤ 250	0.10	mg/L	Sep-26-12	Sep-27-12	
Chemical Oxygen Demand	< 5		5	mg/L	Sep-26-12	Sep-27-12	
Conductivity (EC)	865		2	uS/cm	Sep-25-12	Sep-25-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Oct-01-12	Oct-01-12	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	Sep-26-12	Sep-27-12	
Nitrogen, Ammonia as N	0.024		0.020	mg/L	Sep-25-12	Oct-02-12	HT
Nitrogen, Nitrate as N	2.36	MAC = 10	0.010	mg/L	Sep-26-12	Sep-27-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Sep-26-12	Sep-27-12	HT
Nitrogen, Total Kjeldahl	0.42		0.05	mg/L	Sep-25-12	Oct-02-12	HT
pH	7.90	AO = 6.5 - 8.5	0.01	pH units	Sep-25-12	Sep-25-12	HT
Phosphorus, Total Kjeldahl	0.21		0.01	mg/L	Sep-25-12	Oct-02-12	HT
Sulfate	152	AO ≤ 500	10.0	mg/L	Sep-26-12	Sep-27-12	

MW12-05 (2091291-02) Matrix: Water Sampled: Sep-21-12 16:00

Alkalinity, Total as CaCO ₃	497		1	mg/L	Sep-25-12	Sep-25-12	
BOD, 5-day	35		10	mg/L	Sep-26-12	Oct-01-12	HT
Carbon, Total Organic	1.4		0.5	mg/L	Sep-27-12	Sep-27-12	
Chloride	32.0	AO ≤ 250	0.10	mg/L	Sep-26-12	Sep-27-12	
Chemical Oxygen Demand	< 5		5	mg/L	Sep-26-12	Sep-27-12	
Conductivity (EC)	841		2	uS/cm	Sep-25-12	Sep-25-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Oct-01-12	Oct-01-12	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	Sep-26-12	Sep-27-12	
Nitrogen, Ammonia as N	0.039		0.020	mg/L	Sep-25-12	Oct-02-12	HT
Nitrogen, Nitrate as N	3.89	MAC = 10	0.010	mg/L	Sep-26-12	Sep-27-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Sep-26-12	Sep-27-12	HT
Nitrogen, Total Kjeldahl	2.47		0.25	mg/L	Sep-25-12	Oct-02-12	HT
pH	7.90	AO = 6.5 - 8.5	0.01	pH units	Sep-25-12	Sep-25-12	HT
Phosphorus, Total Kjeldahl	11.0		0.80	mg/L	Sep-25-12	Oct-02-12	HT
Sulfate	92.3	AO ≤ 500	10.0	mg/L	Sep-26-12	Sep-27-12	

Calculated Parameters

MW11-01 (2091291-01) Matrix: Water Sampled: Sep-21-12 13:00

Hardness, Total (Total as CaCO ₃)	512		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	455		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	2.36		0.020	mg/L	N/A	N/A	

MW12-05 (2091291-02) Matrix: Water Sampled: Sep-21-12 16:00

Hardness, Total (Total as CaCO ₃)	1380		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	431		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	3.89		0.020	mg/L	N/A	N/A	

Dissolved Metals

SAMPLE DATA



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Lillooet Old Dump Site

**WORK ORDER #
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2091291
Oct-02-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

MW11-01 (2091291-01) Matrix: Water Sampled: Sep-21-12 13:00

Aluminum, dissolved	< 0.05		0.05	mg/L	Sep-28-12	Sep-28-12	
Antimony, dissolved	0.002		0.001	mg/L	Sep-28-12	Sep-28-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Sep-28-12	Sep-28-12	
Barium, dissolved	0.07		0.05	mg/L	Sep-28-12	Sep-28-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Sep-28-12	Sep-28-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Sep-28-12	Sep-28-12	
Boron, dissolved	0.20		0.04	mg/L	Sep-28-12	Sep-28-12	
Cadmium, dissolved	0.0001		0.0001	mg/L	Sep-28-12	Sep-28-12	
Calcium, dissolved	85		2	mg/L	Sep-28-12	Sep-28-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Sep-28-12	Sep-28-12	
Cobalt, dissolved	0.0017		0.0005	mg/L	Sep-28-12	Sep-28-12	
Copper, dissolved	0.003		0.002	mg/L	Sep-28-12	Sep-28-12	
Iron, dissolved	< 0.1		0.1	mg/L	Sep-28-12	Sep-28-12	
Lead, dissolved	< 0.001		0.001	mg/L	Sep-28-12	Sep-28-12	
Lithium, dissolved	0.013		0.001	mg/L	Sep-28-12	Sep-28-12	
Magnesium, dissolved	59.0		0.1	mg/L	Sep-28-12	Sep-28-12	
Manganese, dissolved	0.255		0.002	mg/L	Sep-28-12	Sep-28-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Sep-28-12	Sep-28-12	
Molybdenum, dissolved	0.017		0.001	mg/L	Sep-28-12	Sep-28-12	
Nickel, dissolved	0.007		0.002	mg/L	Sep-28-12	Sep-28-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Sep-28-12	Sep-28-12	
Potassium, dissolved	2.2		0.2	mg/L	Sep-28-12	Sep-28-12	
Selenium, dissolved	0.005		0.005	mg/L	Sep-28-12	Sep-28-12	
Silicon, dissolved	< 5		5	mg/L	Sep-28-12	Sep-28-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Sep-28-12	Sep-28-12	
Sodium, dissolved	19.5		0.2	mg/L	Sep-28-12	Sep-28-12	
Strontium, dissolved	1.08		0.01	mg/L	Sep-28-12	Sep-28-12	
Sulfur, dissolved	57		10	mg/L	Sep-28-12	Sep-28-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Sep-28-12	Sep-28-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Sep-28-12	Sep-28-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Sep-28-12	Sep-28-12	
Tin, dissolved	0.004		0.002	mg/L	Sep-28-12	Sep-28-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Sep-28-12	Sep-28-12	
Uranium, dissolved	0.0009		0.0002	mg/L	Sep-28-12	Sep-28-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Sep-28-12	Sep-28-12	
Zinc, dissolved	0.04		0.04	mg/L	Sep-28-12	Sep-28-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Sep-28-12	Sep-28-12	

MW12-05 (2091291-02) Matrix: Water Sampled: Sep-21-12 16:00

Aluminum, dissolved	< 0.05		0.05	mg/L	Sep-28-12	Sep-28-12	
Antimony, dissolved	< 0.001		0.001	mg/L	Sep-28-12	Sep-28-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Sep-28-12	Sep-28-12	
Barium, dissolved	0.09		0.05	mg/L	Sep-28-12	Sep-28-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Sep-28-12	Sep-28-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Sep-28-12	Sep-28-12	
Boron, dissolved	0.17		0.04	mg/L	Sep-28-12	Sep-28-12	
Cadmium, dissolved	< 0.0001		0.0001	mg/L	Sep-28-12	Sep-28-12	

SAMPLE DATA



**CLIENT
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Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
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2091291
Oct-02-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

MW12-05 (2091291-02) Matrix: Water Sampled: Sep-21-12 16:00, Continued

Calcium, dissolved	90		2	mg/L	Sep-28-12	Sep-28-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Sep-28-12	Sep-28-12	
Cobalt, dissolved	0.0008		0.0005	mg/L	Sep-28-12	Sep-28-12	
Copper, dissolved	< 0.002		0.002	mg/L	Sep-28-12	Sep-28-12	
Iron, dissolved	< 0.1		0.1	mg/L	Sep-28-12	Sep-28-12	
Lead, dissolved	< 0.001		0.001	mg/L	Sep-28-12	Sep-28-12	
Lithium, dissolved	0.012		0.001	mg/L	Sep-28-12	Sep-28-12	
Magnesium, dissolved	50.0		0.1	mg/L	Sep-28-12	Sep-28-12	
Manganese, dissolved	0.115		0.002	mg/L	Sep-28-12	Sep-28-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Sep-28-12	Sep-28-12	
Molybdenum, dissolved	0.011		0.001	mg/L	Sep-28-12	Sep-28-12	
Nickel, dissolved	0.005		0.002	mg/L	Sep-28-12	Sep-28-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Sep-28-12	Sep-28-12	
Potassium, dissolved	3.3		0.2	mg/L	Sep-28-12	Sep-28-12	
Selenium, dissolved	0.006		0.005	mg/L	Sep-28-12	Sep-28-12	
Silicon, dissolved	< 5		5	mg/L	Sep-28-12	Sep-28-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Sep-28-12	Sep-28-12	
Sodium, dissolved	21.3		0.2	mg/L	Sep-28-12	Sep-28-12	
Strontium, dissolved	1.23		0.01	mg/L	Sep-28-12	Sep-28-12	
Sulfur, dissolved	40		10	mg/L	Sep-28-12	Sep-28-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Sep-28-12	Sep-28-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Sep-28-12	Sep-28-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Sep-28-12	Sep-28-12	
Tin, dissolved	< 0.002		0.002	mg/L	Sep-28-12	Sep-28-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Sep-28-12	Sep-28-12	
Uranium, dissolved	0.0015		0.0002	mg/L	Sep-28-12	Sep-28-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Sep-28-12	Sep-28-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Sep-28-12	Sep-28-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Sep-28-12	Sep-28-12	

Total Recoverable Metals

MW11-01 (2091291-01) Matrix: Water Sampled: Sep-21-12 13:00

Calcium, total	95		2	mg/L	Sep-27-12	Sep-28-12	
Magnesium, total	67.0		0.1	mg/L	Sep-27-12	Sep-28-12	

MW12-05 (2091291-02) Matrix: Water Sampled: Sep-21-12 16:00

Calcium, total	331		2	mg/L	Sep-27-12	Sep-28-12	
Magnesium, total	135		0.1	mg/L	Sep-27-12	Sep-28-12	

Volatile Organic Compounds (VOC)

MW11-01 (2091291-01) Matrix: Water Sampled: Sep-21-12 13:00

S03

Benzene	< 0.5	MAC = 5	0.5	ug/L	Sep-27-12	Sep-28-12	
Bromodichloromethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
Bromoform	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
Carbon tetrachloride	< 1.0	MAC = 5	1.0	ug/L	Sep-27-12	Sep-28-12	
Chlorobenzene	< 1.0	MAC = 80	1.0	ug/L	Sep-27-12	Sep-28-12	

SAMPLE DATA



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2091291
Oct-02-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Volatile Organic Compounds (VOC), Continued

MW11-01 (2091291-01) Matrix: Water Sampled: Sep-21-12 13:00, Continued							S03
Chloroethane	< 2.0		2.0	ug/L	Sep-27-12	Sep-28-12	
Chloroform	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
Dibromochloromethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
1,2-Dibromoethane	< 0.3		0.3	ug/L	Sep-27-12	Sep-28-12	
Dibromomethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
1,2-Dichlorobenzene	< 0.5	MAC = 200	0.5	ug/L	Sep-27-12	Sep-28-12	
1,3-Dichlorobenzene	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
1,4-Dichlorobenzene	< 1.0	MAC = 5	1.0	ug/L	Sep-27-12	Sep-28-12	
1,1-Dichloroethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	ug/L	Sep-27-12	Sep-28-12	
1,1-Dichloroethene	< 1.0	MAC = 14	1.0	ug/L	Sep-27-12	Sep-28-12	
cis-1,2-Dichloroethene	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
trans-1,2-Dichloroethene	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
1,2-Dichloropropane	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
cis-1,3-Dichloropropene	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
trans-1,3-Dichloropropene	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
Ethylbenzene	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
Methyl tert-butyl ether	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
Methylene chloride	< 3.0	MAC = 50	3.0	ug/L	Sep-27-12	Sep-28-12	
Styrene	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
1,1,2,2-Tetrachloroethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
Tetrachloroethene	< 1.0	MAC = 30	1.0	ug/L	Sep-27-12	Sep-28-12	
1,1,1-Trichloroethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
Toluene	5.5		1.0	ug/L	Sep-27-12	Sep-28-12	
1,1,2-Trichloroethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
Trichloroethene	< 1.0	MAC = 5	1.0	ug/L	Sep-27-12	Sep-28-12	
Trichlorofluoromethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-28-12	
Vinyl chloride	< 2.0	MAC = 2	2.0	ug/L	Sep-27-12	Sep-28-12	
Xylenes (total)	< 2.0		2.0	ug/L	Sep-27-12	Sep-28-12	
Surrogate: Toluene-d8	67 %		80-120		Sep-27-12	Sep-28-12	
Surrogate: 4-Bromofluorobenzene	65 %		80-120		Sep-27-12	Sep-28-12	
Surrogate: 1,4-Dichlorobenzene-d4	64 %		80-120		Sep-27-12	Sep-28-12	

MW12-05 (2091291-02) Matrix: Water Sampled: Sep-21-12 16:00							S03
Benzene	< 0.5	MAC = 5	0.5	ug/L	Sep-27-12	Sep-29-12	
Bromodichloromethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
Bromoform	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
Carbon tetrachloride	< 1.0	MAC = 5	1.0	ug/L	Sep-27-12	Sep-29-12	
Chlorobenzene	< 1.0	MAC = 80	1.0	ug/L	Sep-27-12	Sep-29-12	
Chloroethane	< 2.0		2.0	ug/L	Sep-27-12	Sep-29-12	
Chloroform	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
Dibromochloromethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
1,2-Dibromoethane	< 0.3		0.3	ug/L	Sep-27-12	Sep-29-12	
Dibromomethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
1,2-Dichlorobenzene	< 0.5	MAC = 200	0.5	ug/L	Sep-27-12	Sep-29-12	
1,3-Dichlorobenzene	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
1,4-Dichlorobenzene	< 1.0	MAC = 5	1.0	ug/L	Sep-27-12	Sep-29-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

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Oct-02-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Volatile Organic Compounds (VOC), Continued

MW12-05 (2091291-02) Matrix: Water Sampled: Sep-21-12 16:00, Continued							S03
1,1-Dichloroethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	ug/L	Sep-27-12	Sep-29-12	
1,1-Dichloroethene	< 1.0	MAC = 14	1.0	ug/L	Sep-27-12	Sep-29-12	
cis-1,2-Dichloroethene	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
trans-1,2-Dichloroethene	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
1,2-Dichloropropane	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
cis-1,3-Dichloropropene	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
trans-1,3-Dichloropropene	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
Ethylbenzene	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
Methyl tert-butyl ether	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
Methylene chloride	< 3.0	MAC = 50	3.0	ug/L	Sep-27-12	Sep-29-12	
Styrene	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
1,1,2,2-Tetrachloroethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
Tetrachloroethene	< 1.0	MAC = 30	1.0	ug/L	Sep-27-12	Sep-29-12	
1,1,1-Trichloroethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
Toluene	1.2		1.0	ug/L	Sep-27-12	Sep-29-12	
1,1,2-Trichloroethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
Trichloroethene	< 1.0	MAC = 5	1.0	ug/L	Sep-27-12	Sep-29-12	
Trichlorofluoromethane	< 1.0		1.0	ug/L	Sep-27-12	Sep-29-12	
Vinyl chloride	< 2.0	MAC = 2	2.0	ug/L	Sep-27-12	Sep-29-12	
Xylenes (total)	< 2.0		2.0	ug/L	Sep-27-12	Sep-29-12	
Surrogate: Toluene-d8	77 %		80-120		Sep-27-12	Sep-29-12	
Surrogate: 4-Bromofluorobenzene	72 %		80-120		Sep-27-12	Sep-29-12	
Surrogate: 1,4-Dichlorobenzene-d4	72 %		80-120		Sep-27-12	Sep-29-12	

Sample Qualifiers:

HT Parameter(s) analyzed outside of the recommended holding time.
S03 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

ANALYSIS / REPORT INFORMATION

CLIENT Western Water Associates Ltd
PROJECT Lillooet Old Dump Site

WORK ORDER # 2091291
REPORTED Oct-02-12

Analysis Description	Method Reference(s) (* = modified from)		LAB
	Preparation	Analysis	
Hardness (Calc)	N/A	APHA 2340 B	RMD
Dissolved Metals	APHA 3030B	APHA 3125 B	RMD
Phosphorus, Total Kjeldahl	N/A	EPA 365.4 *	KEL
Total Kjeldahl Nitrogen	N/A	EPA 351.2 *	KEL
Total Organic Carbon	N/A	APHA 5310 B	KEL
Chemical Oxygen Demand (low level)	N/A	APHA 5220 D	KEL
BOD, 5-day	N/A	APHA 5210 B	KEL
Ammonia-N, colorimetric	N/A	APHA 4500-NH3 G	KEL
pH in Water	N/A	APHA 4500-H+ B	KEL
Cyanide, Total	APHA 4500-CN C	APHA 4500-CN E	KEL
Chloride by IC	N/A	APHA 4110 B	KEL
Fluoride by IC	N/A	APHA 4110 B	KEL
Nitrite-N by IC	N/A	APHA 4110 B	KEL
Nitrate-N by IC	N/A	APHA 4110 B	KEL
Sulfate by IC	N/A	APHA 4110 B	KEL
Conductivity in Water	N/A	APHA 2510 B	KEL
Alkalinity, total	N/A	APHA 2320 B	KEL
Total Recoverable Metals	APHA 3030E *	APHA 3125 B	RMD
VOC in Water	EPA 5030B / 5021A	EPA 8260B	RMD

Additional Information:

Oct.2/12- Sample 2091291-02 has high solids which could be contributing to the Total Hardness value.

QUALITY CONTROL DATA

**CLIENT
PROJECT**

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Lillooet Old Dump Site

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The following section reports quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with quality control samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk):** Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- **Duplicate (Dup):** Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- **Blank Spike (BS):** A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- **Standard Reference Material (SRM):** A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested for.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC % REC	% REC Limits	% RPD % RPD	% RPD Limit	Notes
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Dissolved Metals, Batch B2I1136

Blank (B2I1136-BLK1)

Prepared: Sep-28-12, Analyzed: Sep-28-12

Aluminum, dissolved	< 0.05	0.05 mg/L
Antimony, dissolved	< 0.001	0.001 mg/L
Arsenic, dissolved	< 0.005	0.005 mg/L
Barium, dissolved	< 0.05	0.05 mg/L
Beryllium, dissolved	< 0.001	0.001 mg/L
Bismuth, dissolved	< 0.001	0.001 mg/L
Boron, dissolved	< 0.04	0.04 mg/L
Cadmium, dissolved	< 0.0001	0.0001 mg/L
Calcium, dissolved	< 2	2 mg/L
Chromium, dissolved	< 0.005	0.005 mg/L
Cobalt, dissolved	< 0.0005	0.0005 mg/L
Copper, dissolved	< 0.002	0.002 mg/L
Iron, dissolved	< 0.1	0.1 mg/L
Lead, dissolved	< 0.001	0.001 mg/L
Lithium, dissolved	< 0.001	0.001 mg/L
Magnesium, dissolved	< 0.1	0.1 mg/L
Manganese, dissolved	< 0.002	0.002 mg/L
Mercury, dissolved	< 0.0002	0.0002 mg/L
Molybdenum, dissolved	< 0.001	0.001 mg/L
Nickel, dissolved	< 0.002	0.002 mg/L
Phosphorus, dissolved	< 0.2	0.2 mg/L
Potassium, dissolved	< 0.2	0.2 mg/L
Selenium, dissolved	< 0.005	0.005 mg/L
Silicon, dissolved	< 5	5 mg/L
Silver, dissolved	< 0.0005	0.0005 mg/L
Sodium, dissolved	< 0.2	0.2 mg/L
Strontium, dissolved	< 0.01	0.01 mg/L
Sulfur, dissolved	< 10	10 mg/L
Tellurium, dissolved	< 0.002	0.002 mg/L
Thallium, dissolved	< 0.0002	0.0002 mg/L
Thorium, dissolved	< 0.001	0.001 mg/L
Tin, dissolved	< 0.002	0.002 mg/L
Titanium, dissolved	< 0.05	0.05 mg/L
Uranium, dissolved	< 0.0002	0.0002 mg/L
Vanadium, dissolved	< 0.01	0.01 mg/L
Zinc, dissolved	< 0.04	0.04 mg/L
Zirconium, dissolved	< 0.001	0.001 mg/L

Reference (B2I1136-SRM1)

Prepared: Sep-28-12, Analyzed: Sep-28-12

Aluminum, dissolved	0.22	0.05 mg/L	0.209	107	58-142
Antimony, dissolved	0.049	0.001 mg/L	0.0400	122	75-125
Arsenic, dissolved	0.417	0.005 mg/L	0.404	103	81-119
Barium, dissolved	3.19	0.05 mg/L	3.12	102	83-117

QUALITY CONTROL DATA



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Western Water Associates Ltd
Lillooet Old Dump Site

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Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Dissolved Metals, Batch B2I1136, Continued

Reference (B2I1136-SRM1), Continued

Prepared: Sep-28-12, Analyzed: Sep-28-12

Beryllium, dissolved	0.209	0.001 mg/L	0.197	106	80-120		
Boron, dissolved	1.53	0.04 mg/L	1.61	95	74-117		
Cadmium, dissolved	0.201	0.0001 mg/L	0.200	101	83-117		
Calcium, dissolved	7	2 mg/L	6.50	107	76-124		
Chromium, dissolved	0.443	0.005 mg/L	0.401	111	81-119		
Cobalt, dissolved	0.137	0.0005 mg/L	0.119	115	76-124		
Copper, dissolved	0.879	0.002 mg/L	0.781	113	84-116		
Iron, dissolved	1.4	0.1 mg/L	1.17	121	74-126		
Lead, dissolved	0.106	0.001 mg/L	0.102	104	72-128		
Lithium, dissolved	0.109	0.001 mg/L	0.0960	113	60-140		
Magnesium, dissolved	6.7	0.1 mg/L	6.11	110	81-119		
Manganese, dissolved	0.347	0.002 mg/L	0.318	109	84-116		
Molybdenum, dissolved	0.412	0.001 mg/L	0.387	106	83-117		
Nickel, dissolved	0.906	0.002 mg/L	0.789	115	74-126		
Phosphorus, dissolved	0.3	0.2 mg/L	0.448	68	68-132		
Potassium, dissolved	2.9	0.2 mg/L	2.84	103	74-126		
Selenium, dissolved	0.028	0.005 mg/L	0.0300	92	70-130		
Sodium, dissolved	18.6	0.2 mg/L	17.4	107	72-128		
Strontium, dissolved	1.00	0.01 mg/L	0.979	102	84-113		
Thallium, dissolved	0.0406	0.0002 mg/L	0.0350	116	57-143		
Uranium, dissolved	0.196	0.0002 mg/L	0.192	102	85-115		
Vanadium, dissolved	0.87	0.01 mg/L	0.798	109	87-113		
Zinc, dissolved	0.88	0.04 mg/L	0.800	110	72-128		

General Parameters, Batch B2I0848

Blank (B2I0848-BLK1)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	< 0.5	0.5 mg/L					
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Blank (B2I0848-BLK2)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	< 0.5	0.5 mg/L					
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Blank (B2I0848-BLK3)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	< 0.5	0.5 mg/L					
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Blank (B2I0848-BLK4)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	< 0.5	0.5 mg/L					
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Blank (B2I0848-BLK5)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	< 0.5	0.5 mg/L					
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Blank (B2I0848-BLK6)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	< 0.5	0.5 mg/L					
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Blank (B2I0848-BLK7)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	< 0.5	0.5 mg/L					
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LCS (B2I0848-BS1)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	8.3	0.5 mg/L	10.0	83	80-120		
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LCS (B2I0848-BS2)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	9.9	0.5 mg/L	10.0	99	80-120		
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LCS (B2I0848-BS3)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	9.5	0.5 mg/L	10.0	95	80-120		
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LCS (B2I0848-BS4)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	9.1	0.5 mg/L	10.0	91	80-120		
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LCS (B2I0848-BS5)

Prepared: Sep-21-12, Analyzed: Sep-27-12

Carbon, Total Organic	8.6	0.5 mg/L	10.0	86	80-120		
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QUALITY CONTROL DATA



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Lillooet Old Dump Site

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Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch B2I0848, Continued

LCS (B2I0848-BS6)			Prepared: Sep-21-12, Analyzed: Sep-27-12				
Carbon, Total Organic	9.5	0.5 mg/L	10.0	95	80-120		
LCS (B2I0848-BS7)			Prepared: Sep-21-12, Analyzed: Sep-27-12				
Carbon, Total Organic	8.3	0.5 mg/L	10.0	83	80-120		
Duplicate (B2I0848-DUP2)			Source: 2091291-01		Prepared: Sep-21-12, Analyzed: Sep-27-12		
Carbon, Total Organic	0.7	0.5 mg/L		0.8		15	

General Parameters, Batch B2I0981

Blank (B2I0981-BLK1)			Prepared: Sep-25-12, Analyzed: Sep-25-12				
Alkalinity, Total as CaCO3	< 1	1 mg/L					
Conductivity (EC)	< 2	2 uS/cm					
LCS (B2I0981-BS1)			Prepared: Sep-25-12, Analyzed: Sep-25-12				
Alkalinity, Total as CaCO3	100	1 mg/L	100	100	96-108		
LCS (B2I0981-BS2)			Prepared: Sep-25-12, Analyzed: Sep-25-12				
Conductivity (EC)	1410	2 uS/cm	1410	100	93-104		
Reference (B2I0981-SRM1)			Prepared: Sep-25-12, Analyzed: Sep-25-12				
pH	7.00	0.01 pH units	7.00	100	98-102		

General Parameters, Batch B2I1017

Blank (B2I1017-BLK1)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Nitrogen, Total Kjeldahl	< 0.05	0.05 mg/L					
Blank (B2I1017-BLK2)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Nitrogen, Total Kjeldahl	< 0.05	0.05 mg/L					
LCS (B2I1017-BS1)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Nitrogen, Total Kjeldahl	10.4	0.50 mg/L	10.0	104	89-116		
LCS (B2I1017-BS2)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Nitrogen, Total Kjeldahl	10.0	0.50 mg/L	10.0	100	89-116		
Duplicate (B2I1017-DUP1)			Source: 2091291-01		Prepared: Sep-26-12, Analyzed: Oct-02-12		
Nitrogen, Total Kjeldahl	0.41	0.05 mg/L		0.42		3	15

General Parameters, Batch B2I1019

Blank (B2I1019-BLK1)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Phosphorus, Total Kjeldahl	< 0.01	0.01 mg/L					
Blank (B2I1019-BLK2)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Phosphorus, Total Kjeldahl	< 0.01	0.01 mg/L					
LCS (B2I1019-BS1)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Phosphorus, Total Kjeldahl	0.54	0.02 mg/L	0.500	107	75-120		
LCS (B2I1019-BS2)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Phosphorus, Total Kjeldahl	0.48	0.02 mg/L	0.500	95	75-120		
Duplicate (B2I1019-DUP2)			Source: 2091291-01		Prepared: Sep-26-12, Analyzed: Oct-02-12		
Phosphorus, Total Kjeldahl	0.21	0.01 mg/L		0.21		< 1	19

General Parameters, Batch B2I1024

Blank (B2I1024-BLK1)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Nitrogen, Ammonia as N	< 0.020	0.020 mg/L					

QUALITY CONTROL DATA



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Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch B2I1024, Continued

Blank (B2I1024-BLK1), Continued			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Blank (B2I1024-BLK2)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Nitrogen, Ammonia as N	< 0.020	0.020 mg/L					
LCS (B2I1024-BS1)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Nitrogen, Ammonia as N	10.2	0.200 mg/L	10.0	102	86-111		
LCS (B2I1024-BS2)			Prepared: Sep-26-12, Analyzed: Oct-02-12				
Nitrogen, Ammonia as N	9.73	0.200 mg/L	10.0	97	86-111		
Duplicate (B2I1024-DUP1)			Source: 2091291-02 Prepared: Sep-26-12, Analyzed: Oct-02-12				
Nitrogen, Ammonia as N	0.042	0.020 mg/L		0.039		15	

General Parameters, Batch B2I1032

Blank (B2I1032-BLK1)			Prepared: Sep-26-12, Analyzed: Oct-01-12				
BOD, 5-day	< 10	10 mg/L					
LCS (B2I1032-BS1)			Prepared: Sep-26-12, Analyzed: Oct-01-12				
BOD, 5-day	213	10 mg/L	198	108	85-115		

General Parameters, Batch B2I1034

Blank (B2I1034-BLK1)			Prepared: Sep-26-12, Analyzed: Sep-27-12				
Chemical Oxygen Demand	< 5	5 mg/L					
Blank (B2I1034-BLK2)			Prepared: Sep-26-12, Analyzed: Sep-27-12				
Chemical Oxygen Demand	< 5	5 mg/L					
LCS (B2I1034-BS1)			Prepared: Sep-26-12, Analyzed: Sep-27-12				
Chemical Oxygen Demand	50	5 mg/L	50.0	100	82-119		
LCS (B2I1034-BS2)			Prepared: Sep-26-12, Analyzed: Sep-27-12				
Chemical Oxygen Demand	50	5 mg/L	50.0	100	82-119		

General Parameters, Batch B2I1036

Blank (B2I1036-BLK1)			Prepared: Sep-26-12, Analyzed: Sep-26-12				
Chloride	< 0.10	0.10 mg/L					
Fluoride	< 0.10	0.10 mg/L					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.010	0.010 mg/L					
Sulfate	< 1.0	1.0 mg/L					
Blank (B2I1036-BLK2)			Prepared: Sep-26-12, Analyzed: Sep-26-12				
Chloride	< 0.10	0.10 mg/L					
Fluoride	< 0.10	0.10 mg/L					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.010	0.010 mg/L					
Sulfate	< 1.0	1.0 mg/L					
Blank (B2I1036-BLK3)			Prepared: Sep-26-12, Analyzed: Sep-27-12				
Chloride	< 0.10	0.10 mg/L					
Fluoride	< 0.10	0.10 mg/L					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.010	0.010 mg/L					
Sulfate	< 1.0	1.0 mg/L					
Blank (B2I1036-BLK4)			Prepared: Sep-26-12, Analyzed: Sep-27-12				
Chloride	< 0.10	0.10 mg/L					
Fluoride	< 0.10	0.10 mg/L					

QUALITY CONTROL DATA



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Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch B2I1036, Continued

Blank (B2I1036-BLK4), Continued

Prepared: Sep-26-12, Analyzed: Sep-27-12

Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.010	0.010 mg/L					
Sulfate	< 1.0	1.0 mg/L					

Blank (B2I1036-BLK5)

Prepared: Sep-26-12, Analyzed: Sep-27-12

Chloride	< 0.10	0.10 mg/L					
Fluoride	< 0.10	0.10 mg/L					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.010	0.010 mg/L					
Sulfate	< 1.0	1.0 mg/L					

LCS (B2I1036-BS1)

Prepared: Sep-26-12, Analyzed: Sep-26-12

Chloride	3.83	0.10 mg/L	4.00		96	85-115	
Fluoride	3.76	0.10 mg/L	4.00		94	85-115	
Nitrogen, Nitrate as N	3.91	0.010 mg/L	4.00		98	85-115	
Nitrogen, Nitrite as N	3.60	0.010 mg/L	4.00		90	85-115	
Sulfate	4.1	1.0 mg/L	4.00		102	85-115	

LCS (B2I1036-BS2)

Prepared: Sep-26-12, Analyzed: Sep-26-12

Chloride	3.81	0.10 mg/L	4.00		95	85-115	
Fluoride	3.84	0.10 mg/L	4.00		96	85-115	
Nitrogen, Nitrate as N	3.88	0.010 mg/L	4.00		97	85-115	
Nitrogen, Nitrite as N	3.50	0.010 mg/L	4.00		88	85-115	
Sulfate	3.8	1.0 mg/L	4.00		95	85-115	

LCS (B2I1036-BS3)

Prepared: Sep-26-12, Analyzed: Sep-27-12

Chloride	3.73	0.10 mg/L	4.00		93	85-115	
Fluoride	3.91	0.10 mg/L	4.00		98	85-115	
Nitrogen, Nitrate as N	3.86	0.010 mg/L	4.00		96	85-115	
Nitrogen, Nitrite as N	3.45	0.010 mg/L	4.00		86	85-115	
Sulfate	3.9	1.0 mg/L	4.00		98	85-115	

LCS (B2I1036-BS4)

Prepared: Sep-26-12, Analyzed: Sep-27-12

Chloride	3.93	0.10 mg/L	4.00		98	85-115	
Fluoride	3.90	0.10 mg/L	4.00		97	85-115	
Nitrogen, Nitrate as N	3.86	0.010 mg/L	4.00		96	85-115	
Nitrogen, Nitrite as N	3.67	0.010 mg/L	4.00		92	85-115	
Sulfate	3.9	1.0 mg/L	4.00		98	85-115	

LCS (B2I1036-BS5)

Prepared: Sep-26-12, Analyzed: Sep-27-12

Chloride	3.99	0.10 mg/L	4.00		100	85-115	
Fluoride	3.95	0.10 mg/L	4.00		99	85-115	
Nitrogen, Nitrate as N	3.85	0.010 mg/L	4.00		96	85-115	
Nitrogen, Nitrite as N	3.60	0.010 mg/L	4.00		90	85-115	
Sulfate	3.9	1.0 mg/L	4.00		97	85-115	

General Parameters, Batch B2J0035

Blank (B2J0035-BLK1)

Prepared: Oct-01-12, Analyzed: Oct-01-12

Cyanide, total	< 0.010	0.010 mg/L					
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Blank (B2J0035-BLK2)

Prepared: Oct-01-12, Analyzed: Oct-01-12

Cyanide, total	< 0.010	0.010 mg/L					
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LCS (B2J0035-BS1)

Prepared: Oct-01-12, Analyzed: Oct-01-12

Cyanide, total	9.78	2.50 mg/L	10.0		98	85-110	
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LCS (B2J0035-BS2)

Prepared: Oct-01-12, Analyzed: Oct-01-12

Cyanide, total	9.80	2.50 mg/L	10.0		98	85-110	
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Duplicate (B2J0035-DUP2)

Source: 2091291-01

Prepared: Oct-01-12, Analyzed: Oct-01-12

Cyanide, total	< 0.010	0.010 mg/L		< 0.010			15
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QUALITY CONTROL DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
REPORTED**

2091291
Oct-02-12

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Total Recoverable Metals, Batch B2I1068

Blank (B2I1068-BLK1)

Prepared: Sep-27-12, Analyzed: Sep-28-12

Calcium, total	< 2	2 mg/L					
Magnesium, total	< 0.1	0.1 mg/L					

Blank (B2I1068-BLK2)

Prepared: Sep-27-12, Analyzed: Sep-28-12

Calcium, total	< 2	2 mg/L					
Magnesium, total	< 0.1	0.1 mg/L					

Reference (B2I1068-SRM1)

Prepared: Sep-27-12, Analyzed: Sep-28-12

Calcium, total	11	2 mg/L	10.2	105	86-121		
Magnesium, total	3.6	0.1 mg/L	3.31	110	78-120		

Reference (B2I1068-SRM2)

Prepared: Sep-27-12, Analyzed: Sep-28-12

Calcium, total	10	2 mg/L	10.2	103	86-121		
Magnesium, total	3.6	0.1 mg/L	3.31	108	78-120		

Volatile Organic Compounds (VOC), Batch B2I1112

Blank (B2I1112-BLK1)

Prepared: Sep-27-12, Analyzed: Sep-28-12

Benzene	< 0.5	0.5 ug/L					
Bromodichloromethane	< 1.0	1.0 ug/L					
Bromoform	< 1.0	1.0 ug/L					
Carbon tetrachloride	< 1.0	1.0 ug/L					
Chlorobenzene	< 1.0	1.0 ug/L					
Chloroethane	< 2.0	2.0 ug/L					
Chloroform	< 1.0	1.0 ug/L					
Dibromochloromethane	< 1.0	1.0 ug/L					
1,2-Dibromoethane	< 0.3	0.3 ug/L					
Dibromomethane	< 1.0	1.0 ug/L					
1,2-Dichlorobenzene	< 0.5	0.5 ug/L					
1,3-Dichlorobenzene	< 1.0	1.0 ug/L					
1,4-Dichlorobenzene	< 1.0	1.0 ug/L					
1,1-Dichloroethane	< 1.0	1.0 ug/L					
1,2-Dichloroethane	< 1.0	1.0 ug/L					
1,1-Dichloroethene	< 1.0	1.0 ug/L					
cis-1,2-Dichloroethene	< 1.0	1.0 ug/L					
trans-1,2-Dichloroethene	< 1.0	1.0 ug/L					
1,2-Dichloropropane	< 1.0	1.0 ug/L					
cis-1,3-Dichloropropene	< 1.0	1.0 ug/L					
trans-1,3-Dichloropropene	< 1.0	1.0 ug/L					
Ethylbenzene	< 1.0	1.0 ug/L					
Methyl tert-butyl ether	< 1.0	1.0 ug/L					
Methylene chloride	< 3.0	3.0 ug/L					
Styrene	< 1.0	1.0 ug/L					
1,1,2,2-Tetrachloroethane	< 1.0	1.0 ug/L					
Tetrachloroethene	< 1.0	1.0 ug/L					
1,1,1-Trichloroethane	< 1.0	1.0 ug/L					
Toluene	< 1.0	1.0 ug/L					
1,1,2-Trichloroethane	< 1.0	1.0 ug/L					
Trichloroethene	< 1.0	1.0 ug/L					
Trichlorofluoromethane	< 1.0	1.0 ug/L					
Vinyl chloride	< 2.0	2.0 ug/L					
Xylenes (total)	< 2.0	2.0 ug/L					
Surrogate: Toluene-d8	21.7	ug/L	25.0	87	80-120		
Surrogate: 4-Bromofluorobenzene	20.1	ug/L	25.0	80	80-120		
Surrogate: 1,4-Dichlorobenzene-d4	20.1	ug/L	25.0	80	80-120		

LCS (B2I1112-BS1)

Prepared: Sep-27-12, Analyzed: Sep-28-12

Benzene	20.2	0.5 ug/L	20.0	101	90-122		
Bromodichloromethane	20.6	1.0 ug/L	20.0	103	84-124		
Bromoform	21.2	1.0 ug/L	20.0	106	70-121		
Carbon tetrachloride	21.7	1.0 ug/L	20.0	109	87-125		
Chlorobenzene	19.8	1.0 ug/L	20.0	99	89-118		
Chloroethane	22.5	2.0 ug/L	20.0	112	70-127		
Chloroform	20.3	1.0 ug/L	20.0	102	88-125		

QUALITY CONTROL DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
REPORTED**

2091291
Oct-02-12

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Volatile Organic Compounds (VOC), Batch B211112, Continued

LCS (B211112-BS1), Continued			Prepared: Sep-27-12, Analyzed: Sep-28-12				
Dibromochloromethane	20.6	1.0 ug/L	20.0	103	77-125		
1,2-Dibromoethane	20.4	0.3 ug/L	20.0	102	75-127		
Dibromomethane	21.8	1.0 ug/L	20.0	109	85-123		
1,2-Dichlorobenzene	19.4	0.5 ug/L	20.0	97	82-118		
1,3-Dichlorobenzene	19.3	1.0 ug/L	20.0	96	87-121		
1,4-Dichlorobenzene	19.2	1.0 ug/L	20.0	96	85-119		
1,1-Dichloroethane	20.8	1.0 ug/L	20.0	104	92-126		
1,2-Dichloroethane	21.5	1.0 ug/L	20.0	108	87-123		
1,1-Dichloroethene	21.0	1.0 ug/L	20.0	105	79-123		
cis-1,2-Dichloroethene	19.9	1.0 ug/L	20.0	100	86-121		
trans-1,2-Dichloroethene	20.5	1.0 ug/L	20.0	103	85-124		
1,2-Dichloropropane	20.1	1.0 ug/L	20.0	101	88-120		
cis-1,3-Dichloropropene	18.2	1.0 ug/L	20.0	91	74-120		
trans-1,3-Dichloropropene	18.7	1.0 ug/L	20.0	94	77-120		
Ethylbenzene	19.8	1.0 ug/L	20.0	99	85-118		
Methyl tert-butyl ether	27.9	1.0 ug/L	20.0	139	79-128		SPK
Methylene chloride	20.2	3.0 ug/L	20.0	101	87-125		
Styrene	19.1	1.0 ug/L	20.0	96	85-114		
1,1,2,2-Tetrachloroethane	19.2	1.0 ug/L	20.0	96	79-117		
Tetrachloroethene	20.8	1.0 ug/L	20.0	104	82-130		
1,1,1-Trichloroethane	21.0	1.0 ug/L	20.0	105	88-124		
Toluene	20.3	1.0 ug/L	20.0	101	90-126		
1,1,2-Trichloroethane	20.6	1.0 ug/L	20.0	103	83-124		
Trichloroethene	21.0	1.0 ug/L	20.0	105	90-122		
Trichlorofluoromethane	23.2	1.0 ug/L	20.0	116	79-128		
Vinyl chloride	24.9	2.0 ug/L	20.0	125	70-125		
Xylenes (total)	58.0	2.0 ug/L	60.0	97	86-115		
Surrogate: Toluene-d8	16.1	ug/L	25.0	64	80-120		S02
Surrogate: 4-Bromofluorobenzene	15.5	ug/L	25.0	62	80-120		S02
Surrogate: 1,4-Dichlorobenzene-d4	15.5	ug/L	25.0	62	80-120		S02

S02	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate(s).
SPK	Recovery of one or more analytes on Blank Spike (BS) analysis are outside of control limits. Data accepted based on acceptable performance of other batch QC.

REPORTED TO Western Water Associates Ltd
106 - 5145 26th Street
Vernon, BC V1T 8G4

TEL (250) 541-1030
FAX (250) 575-4764

ATTENTION Bryer Manwell

WORK ORDER 2091499

PO NUMBER

RECEIVED / TEMP Sep-27-12 11:40 / 8.0 °C

PROJECT 12-047-02

REPORTED Jan-16-13

PROJECT INFO Lillooet Old Dump Site

COC NUMBER 00029

General Comments:

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the Chain of Custody or Sample Requisition document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.



Issued By:

Jennifer Shanko, ASCT
Administration Coordinator, Kelowna

Please contact CARO if more information is needed or to provide feedback on our services.

Locations:

#110 4011 Viking Way
Richmond, BC V6V 2K9
Tel: 604-279-1499 Fax: 604-279-1599

#102 3677 Highway 97N
Kelowna, BC V1X 5C3
Tel: 250-765-9646 Fax: 250-765-3893

17225 109 Avenue
Edmonton, AB T5S 1H7
Tel: 780-489-9100 Fax: 780-489-9700

www.caro.ca

REPORTED TO Western Water Associates Ltd
PROJECT 12-047-02

WORK ORDER 2091499
REPORTED Jan-16-13

Analysis Description	Method Reference (* = modified from)		Location
	Preparation	Analysis	
Alkalinity, total	N/A	APHA 2320 B	Kelowna
Ammonia-N, colorimetric	N/A	APHA 4500-NH ₃ G	Kelowna
BOD, 5-day	N/A	APHA 5210 B	Kelowna
Carbon, Total Organic in Water	N/A	APHA 5310 B	Kelowna
Chemical Oxygen Demand (low level)	N/A	APHA 5220 D	Kelowna
Chloride in Water by IC	N/A	APHA 4110 B	Kelowna
Conductivity in Water	N/A	APHA 2510 B	Kelowna
Cyanide, Total in Liquids	APHA 4500-CN C	APHA 4500-CN E	Kelowna
Dissolved Metals	APHA 3030 B	APHA 3125 B	Richmond
Fluoride in Water by IC	N/A	APHA 4110 B	Kelowna
Hardness as CaCO ₃ (CALC)	N/A	APHA 2340 B	Richmond
Nitrate-N in Water by IC	N/A	APHA 4110 B	Kelowna
Nitrite-N in Water by IC	N/A	APHA 4110 B	Kelowna
pH in Water	N/A	APHA 4500-H+ B	Kelowna
Phosphorus, Total Kjeldahl	N/A	EPA 365.4 (1974)*	Kelowna
Sulfate in Water by IC	N/A	APHA 4110 B	Kelowna
Total Kjeldahl Nitrogen	N/A	EPA 351.2 (1993) *	Kelowna
Total Recoverable Metals	APHA 3030E *	APHA 3125 B	Richmond
VOC in Water	EPA 5030B / 5021A	EPA 8260B (1996)	Richmond

Note: The numbers in brackets represent the year that the method was published/approved

Method Reference Descriptions:

APHA	Standard Methods for the Examination of Water and Wastewater, American Public Health Association
EPA	United States Environmental Protection Agency Test Methods

Glossary of Terms:

RDL	Reported Detection Limit
<	Less than the Reported Detection Limit
AO	Aesthetic objective
MAC	Maximum acceptable concentration (health-related guideline)
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, pH > 7 = basic
ug/L	Micrograms per litre
uS/cm	Microsiemens per centimeter

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Western Water Associates Ltd
12-047-02

WORK ORDER REPORTED 2091499
Jan-16-13

Analyte	Result / Recovery	Canadian DW Guideline	RDL / Limit	Units	Prepared	Analyzed	Notes
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General Parameters

Sample ID: SW1 (Fraser River Upstream) (2091499-01) [Surface Water] Sampled: Sep-26-12

Alkalinity, Total as CaCO ₃	68		1	mg/L	Sep-28-12	Sep-28-12	
BOD, 5-day	< 10		10	mg/L	Sep-27-12	Oct-02-12	
Carbon, Total Organic	2.3		0.5	mg/L	Sep-27-12	Sep-27-12	
Chloride	2.02	AO ≤ 250	0.10	mg/L	Sep-28-12	Sep-28-12	
Chemical Oxygen Demand	< 5		5	mg/L	Oct-04-12	Oct-04-12	
Conductivity (EC)	154		2	uS/cm	Sep-28-12	Sep-28-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Oct-03-12	Oct-03-12	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Ammonia as N	0.026		0.020	mg/L	Sep-26-12	Oct-03-12	
Nitrogen, Nitrate as N	0.036	MAC = 10	0.010	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Total Kjeldahl	0.22		0.05	mg/L	Sep-27-12	Oct-03-12	
pH	7.85	AO = 6.5 - 8.5	0.01	pH units	Sep-28-12	Sep-28-12	
Phosphorus, Total Kjeldahl	0.03		0.01	mg/L	Sep-27-12	Oct-01-12	
Sulfate	11.8	AO ≤ 500	1.0	mg/L	Sep-28-12	Sep-28-12	

Sample ID: SW2 (Fraser River Downstream) (2091499-02) [Surface Water] Sampled: Sep-26-12

Alkalinity, Total as CaCO ₃	70		1	mg/L	Sep-28-12	Sep-28-12	
BOD, 5-day	< 10		10	mg/L	Sep-27-12	Oct-02-12	
Carbon, Total Organic	2.2		0.5	mg/L	Sep-27-12	Sep-27-12	
Chloride	1.73	AO ≤ 250	0.10	mg/L	Sep-28-12	Sep-28-12	
Chemical Oxygen Demand	< 5		5	mg/L	Oct-04-12	Oct-04-12	
Conductivity (EC)	162		2	uS/cm	Sep-28-12	Sep-28-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Oct-03-12	Oct-03-12	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Ammonia as N	0.030		0.020	mg/L	Sep-27-12	Oct-03-12	
Nitrogen, Nitrate as N	0.019	MAC = 10	0.010	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Total Kjeldahl	0.18		0.05	mg/L	Sep-27-12	Oct-03-12	
pH	7.87	AO = 6.5 - 8.5	0.01	pH units	Sep-28-12	Sep-28-12	
Phosphorus, Total Kjeldahl	0.02		0.01	mg/L	Sep-27-12	Oct-01-12	
Sulfate	12.5	AO ≤ 500	1.0	mg/L	Sep-28-12	Sep-28-12	

Sample ID: MW11-02 (2091499-03) [Ground Water] Sampled: Sep-26-12

Alkalinity, Total as CaCO ₃	852		1	mg/L	Sep-28-12	Sep-28-12	
BOD, 5-day	< 10		10	mg/L	Sep-27-12	Oct-02-12	
Carbon, Total Organic	5.2		0.5	mg/L	Sep-27-12	Sep-27-12	
Chloride	33.3	AO ≤ 250	0.10	mg/L	Sep-28-12	Sep-28-12	
Chemical Oxygen Demand	< 5		5	mg/L	Oct-04-12	Oct-04-12	
Conductivity (EC)	1100		2	uS/cm	Sep-28-12	Sep-28-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Oct-03-12	Oct-03-12	
Fluoride	0.12	MAC = 1.5	0.10	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Ammonia as N	0.099		0.020	mg/L	Sep-27-12	Oct-03-12	
Nitrogen, Nitrate as N	0.043	MAC = 10	0.010	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Total Kjeldahl	5.24		0.25	mg/L	Sep-27-12	Oct-03-12	

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Western Water Associates Ltd
12-047-02

WORK ORDER REPORTED 2091499
Jan-16-13

Analyte	Result / Recovery	Canadian DW Guideline	RDL / Limit	Units	Prepared	Analyzed	Notes
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General Parameters, Continued

Sample ID: MW11-02 (2091499-03) [Ground Water] Sampled: Sep-26-12, Continued

pH	7.85	AO = 6.5 - 8.5	0.01	pH units	Sep-28-12	Sep-28-12	
Phosphorus, Total Kjeldahl	26.6		1.00	mg/L	Sep-27-12	Oct-05-12	
Sulfate	182	AO ≤ 500	10.0	mg/L	Sep-28-12	Sep-28-12	

Sample ID: MW11-03 (2091499-04) [Ground Water] Sampled: Sep-26-12

Alkalinity, Total as CaCO ₃	636		1	mg/L	Sep-28-12	Sep-28-12	
BOD, 5-day	< 10		10	mg/L	Sep-28-12	Oct-03-12	
Carbon, Total Organic	3.3		0.5	mg/L	Sep-27-12	Sep-27-12	
Chloride	40.5	AO ≤ 250	0.10	mg/L	Sep-28-12	Sep-28-12	
Chemical Oxygen Demand	< 5		5	mg/L	Oct-04-12	Oct-04-12	
Conductivity (EC)	1280		2	uS/cm	Sep-28-12	Sep-28-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Oct-03-12	Oct-03-12	
Fluoride	0.14	MAC = 1.5	0.10	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Ammonia as N	0.062		0.020	mg/L	Sep-27-12	Oct-03-12	
Nitrogen, Nitrate as N	0.139	MAC = 10	0.010	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Sep-28-12	Sep-28-12	
Nitrogen, Total Kjeldahl	2.11		0.05	mg/L	Sep-27-12	Oct-03-12	
pH	7.88	AO = 6.5 - 8.5	0.01	pH units	Sep-28-12	Sep-28-12	
Phosphorus, Total Kjeldahl	7.11		0.50	mg/L	Sep-27-12	Oct-01-12	
Sulfate	174	AO ≤ 500	10.0	mg/L	Sep-28-12	Sep-28-12	

Calculated Parameters

Sample ID: SW1 (Fraser River Upstream) (2091499-01) [Surface Water] Sampled: Sep-26-12

Hardness, Total (Total as CaCO ₃)	71.6		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	74.7		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.036		0.020	mg/L	N/A	N/A	

Sample ID: SW2 (Fraser River Downstream) (2091499-02) [Surface Water] Sampled: Sep-26-12

Hardness, Total (Total as CaCO ₃)	79.3		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	78.8		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	< 0.020		0.020	mg/L	N/A	N/A	

Sample ID: MW11-02 (2091499-03) [Ground Water] Sampled: Sep-26-12

Hardness, Total (Total as CaCO ₃)	2140		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	460		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.043		0.020	mg/L	N/A	N/A	

Sample ID: MW11-03 (2091499-04) [Ground Water] Sampled: Sep-26-12

Hardness, Total (Total as CaCO ₃)	1120		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	620		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.139		0.020	mg/L	N/A	N/A	

Dissolved Metals

Sample ID: SW1 (Fraser River Upstream) (2091499-01) [Surface Water] Sampled: Sep-26-12

Aluminum, dissolved	0.06		0.05	mg/L	Oct-01-12	Oct-01-12	
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SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Western Water Associates Ltd
12-047-02

WORK ORDER REPORTED 2091499
Jan-16-13

Analyte	Result / Recovery	Canadian DW Guideline	RDL / Limit	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

Sample ID: SW1 (Fraser River Upstream) (2091499-01) [Surface Water] Sampled: Sep-26-12, Continued

Antimony, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Barium, dissolved	< 0.05		0.05	mg/L	Oct-01-12	Oct-01-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Boron, dissolved	< 0.04		0.04	mg/L	Oct-01-12	Oct-01-12	
Cadmium, dissolved	< 0.0001		0.0001	mg/L	Oct-01-12	Oct-01-12	
Calcium, dissolved	21		2	mg/L	Oct-01-12	Oct-01-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Cobalt, dissolved	< 0.0005		0.0005	mg/L	Oct-01-12	Oct-01-12	
Copper, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Iron, dissolved	< 0.1		0.1	mg/L	Oct-01-12	Oct-01-12	
Lead, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Lithium, dissolved	0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Magnesium, dissolved	5.3		0.1	mg/L	Oct-01-12	Oct-01-12	
Manganese, dissolved	0.005		0.002	mg/L	Oct-01-12	Oct-01-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Oct-01-12	Oct-01-12	
Molybdenum, dissolved	0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Nickel, dissolved	0.003		0.002	mg/L	Oct-01-12	Oct-01-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Oct-01-12	Oct-01-12	
Potassium, dissolved	0.8		0.2	mg/L	Oct-01-12	Oct-01-12	
Selenium, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Silicon, dissolved	< 5		5	mg/L	Oct-01-12	Oct-01-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Oct-01-12	Oct-01-12	
Sodium, dissolved	4.1		0.2	mg/L	Oct-01-12	Oct-01-12	
Strontium, dissolved	0.11		0.01	mg/L	Oct-01-12	Oct-01-12	
Sulfur, dissolved	< 10		10	mg/L	Oct-01-12	Oct-01-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Oct-01-12	Oct-01-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Tin, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Oct-01-12	Oct-01-12	
Uranium, dissolved	0.0003		0.0002	mg/L	Oct-01-12	Oct-01-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Oct-01-12	Oct-01-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Oct-01-12	Oct-01-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	

Sample ID: SW2 (Fraser River Downstream) (2091499-02) [Surface Water] Sampled: Sep-26-12

Aluminum, dissolved	0.30		0.05	mg/L	Oct-01-12	Oct-01-12	
Antimony, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Barium, dissolved	< 0.05		0.05	mg/L	Oct-01-12	Oct-01-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Boron, dissolved	< 0.04		0.04	mg/L	Oct-01-12	Oct-01-12	
Cadmium, dissolved	< 0.0001		0.0001	mg/L	Oct-01-12	Oct-01-12	

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Western Water Associates Ltd
12-047-02

WORK ORDER REPORTED 2091499
Jan-16-13

Analyte	Result / Recovery	Canadian DW Guideline	RDL / Limit	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

Sample ID: SW2 (Fraser River Downstream) (2091499-02) [Surface Water] Sampled: Sep-26-12, Continued

Calcium, dissolved	22		2	mg/L	Oct-01-12	Oct-01-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Cobalt, dissolved	< 0.0005		0.0005	mg/L	Oct-01-12	Oct-01-12	
Copper, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Iron, dissolved	0.3		0.1	mg/L	Oct-01-12	Oct-01-12	
Lead, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Lithium, dissolved	0.002		0.001	mg/L	Oct-01-12	Oct-01-12	
Magnesium, dissolved	5.8		0.1	mg/L	Oct-01-12	Oct-01-12	
Manganese, dissolved	0.011		0.002	mg/L	Oct-01-12	Oct-01-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Oct-01-12	Oct-01-12	
Molybdenum, dissolved	0.002		0.001	mg/L	Oct-01-12	Oct-01-12	
Nickel, dissolved	0.003		0.002	mg/L	Oct-01-12	Oct-01-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Oct-01-12	Oct-01-12	
Potassium, dissolved	0.7		0.2	mg/L	Oct-01-12	Oct-01-12	
Selenium, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Silicon, dissolved	< 5		5	mg/L	Oct-01-12	Oct-01-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Oct-01-12	Oct-01-12	
Sodium, dissolved	4.4		0.2	mg/L	Oct-01-12	Oct-01-12	
Strontium, dissolved	0.13		0.01	mg/L	Oct-01-12	Oct-01-12	
Sulfur, dissolved	< 10		10	mg/L	Oct-01-12	Oct-01-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Oct-01-12	Oct-01-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Tin, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Oct-01-12	Oct-01-12	
Uranium, dissolved	0.0003		0.0002	mg/L	Oct-01-12	Oct-01-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Oct-01-12	Oct-01-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Oct-01-12	Oct-01-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	

Sample ID: MW11-02 (2091499-03) [Ground Water] Sampled: Sep-26-12

Aluminum, dissolved	< 0.05		0.05	mg/L	Oct-01-12	Oct-01-12	
Antimony, dissolved	0.002		0.001	mg/L	Oct-01-12	Oct-01-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Barium, dissolved	0.06		0.05	mg/L	Oct-01-12	Oct-01-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Boron, dissolved	0.49		0.04	mg/L	Oct-01-12	Oct-01-12	
Cadmium, dissolved	< 0.0001		0.0001	mg/L	Oct-01-12	Oct-01-12	
Calcium, dissolved	75		2	mg/L	Oct-01-12	Oct-01-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Cobalt, dissolved	0.0026		0.0005	mg/L	Oct-01-12	Oct-01-12	
Copper, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Iron, dissolved	< 0.1		0.1	mg/L	Oct-01-12	Oct-01-12	
Lead, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	

SAMPLE ANALYTICAL DATA

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12-047-02

WORK ORDER REPORTED 2091499
Jan-16-13

Analyte	Result / Recovery	Canadian DW Guideline	RDL / Limit	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

Sample ID: MW11-02 (2091499-03) [Ground Water] Sampled: Sep-26-12, Continued

Lithium, dissolved	0.010		0.001	mg/L	Oct-01-12	Oct-01-12	
Magnesium, dissolved	66.5		0.1	mg/L	Oct-01-12	Oct-01-12	
Manganese, dissolved	0.569		0.002	mg/L	Oct-01-12	Oct-01-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Oct-01-12	Oct-01-12	
Molybdenum, dissolved	0.012		0.001	mg/L	Oct-01-12	Oct-01-12	
Nickel, dissolved	0.006		0.002	mg/L	Oct-01-12	Oct-01-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Oct-01-12	Oct-01-12	
Potassium, dissolved	4.5		0.2	mg/L	Oct-01-12	Oct-01-12	
Selenium, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Silicon, dissolved	8		5	mg/L	Oct-01-12	Oct-01-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Oct-01-12	Oct-01-12	
Sodium, dissolved	93.1		0.2	mg/L	Oct-01-12	Oct-01-12	
Strontium, dissolved	1.56		0.01	mg/L	Oct-01-12	Oct-01-12	
Sulfur, dissolved	40		10	mg/L	Oct-01-12	Oct-01-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Oct-01-12	Oct-01-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Tin, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Oct-01-12	Oct-01-12	
Uranium, dissolved	0.0025		0.0002	mg/L	Oct-01-12	Oct-01-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Oct-01-12	Oct-01-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Oct-01-12	Oct-01-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	

Sample ID: MW11-03 (2091499-04) [Ground Water] Sampled: Sep-26-12

Aluminum, dissolved	< 0.05		0.05	mg/L	Oct-01-12	Oct-01-12	
Antimony, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Barium, dissolved	< 0.05		0.05	mg/L	Oct-01-12	Oct-01-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Boron, dissolved	0.49		0.04	mg/L	Oct-01-12	Oct-01-12	
Cadmium, dissolved	0.0001		0.0001	mg/L	Oct-01-12	Oct-01-12	
Calcium, dissolved	106		2	mg/L	Oct-01-12	Oct-01-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Cobalt, dissolved	0.0088		0.0005	mg/L	Oct-01-12	Oct-01-12	
Copper, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Iron, dissolved	< 0.1		0.1	mg/L	Oct-01-12	Oct-01-12	
Lead, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Lithium, dissolved	0.024		0.001	mg/L	Oct-01-12	Oct-01-12	
Magnesium, dissolved	86.4		0.1	mg/L	Oct-01-12	Oct-01-12	
Manganese, dissolved	1.15		0.002	mg/L	Oct-01-12	Oct-01-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Oct-01-12	Oct-01-12	
Molybdenum, dissolved	0.007		0.001	mg/L	Oct-01-12	Oct-01-12	
Nickel, dissolved	0.013		0.002	mg/L	Oct-01-12	Oct-01-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Oct-01-12	Oct-01-12	

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Western Water Associates Ltd
12-047-02

WORK ORDER REPORTED 2091499
Jan-16-13

Analyte	Result / Recovery	Canadian DW Guideline	RDL / Limit	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

Sample ID: MW11-03 (2091499-04) [Ground Water] Sampled: Sep-26-12, Continued

Potassium, dissolved	2.5		0.2	mg/L	Oct-01-12	Oct-01-12	
Selenium, dissolved	< 0.005		0.005	mg/L	Oct-01-12	Oct-01-12	
Silicon, dissolved	< 5		5	mg/L	Oct-01-12	Oct-01-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Oct-01-12	Oct-01-12	
Sodium, dissolved	74.5		0.2	mg/L	Oct-01-12	Oct-01-12	
Strontium, dissolved	2.35		0.01	mg/L	Oct-01-12	Oct-01-12	
Sulfur, dissolved	17		10	mg/L	Oct-01-12	Oct-01-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Oct-01-12	Oct-01-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	
Tin, dissolved	< 0.002		0.002	mg/L	Oct-01-12	Oct-01-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Oct-01-12	Oct-01-12	
Uranium, dissolved	0.0018		0.0002	mg/L	Oct-01-12	Oct-01-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Oct-01-12	Oct-01-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Oct-01-12	Oct-01-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Oct-01-12	Oct-01-12	

Total Recoverable Metals

Sample ID: SW1 (Fraser River Upstream) (2091499-01) [Surface Water] Sampled: Sep-26-12

Calcium, total	20		2	mg/L	Oct-01-12	Oct-02-12	
Magnesium, total	5.3		0.1	mg/L	Oct-01-12	Oct-02-12	

Sample ID: SW2 (Fraser River Downstream) (2091499-02) [Surface Water] Sampled: Sep-26-12

Calcium, total	22		2	mg/L	Oct-01-12	Oct-02-12	
Magnesium, total	6.1		0.1	mg/L	Oct-01-12	Oct-02-12	

Sample ID: MW11-02 (2091499-03) [Ground Water] Sampled: Sep-26-12

Calcium, total	475		2	mg/L	Oct-01-12	Oct-02-12	
Magnesium, total	231		0.1	mg/L	Oct-01-12	Oct-02-12	

Sample ID: MW11-03 (2091499-04) [Ground Water] Sampled: Sep-26-12

Calcium, total	221		2	mg/L	Oct-01-12	Oct-02-12	
Magnesium, total	137		0.1	mg/L	Oct-01-12	Oct-02-12	

Volatile Organic Compounds (VOC)

Sample ID: SW1 (Fraser River Upstream) (2091499-01) [Surface Water] Sampled: Sep-26-12

Benzene	< 0.5	MAC = 5	0.5	ug/L	Oct-02-12	Oct-05-12	
Bromodichloromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Bromoform	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Carbon tetrachloride	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
Chlorobenzene	< 1.0	MAC = 80	1.0	ug/L	Oct-02-12	Oct-05-12	
Chloroethane	< 2.0		2.0	ug/L	Oct-02-12	Oct-05-12	
Chloroform	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Dibromochloromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dibromoethane	< 0.3		0.3	ug/L	Oct-02-12	Oct-05-12	

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Volatile Organic Compounds (VOC), Continued

Sample ID: SW1 (Fraser River Upstream) (2091499-01) [Surface Water] Sampled: Sep-26-12, Continued

Dibromomethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichlorobenzene	< 0.5	MAC = 200	0.5	ug/L	Oct-02-12	Oct-05-12	
1,3-Dichlorobenzene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,4-Dichlorobenzene	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1-Dichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1-Dichloroethene	< 1.0	MAC = 14	1.0	ug/L	Oct-02-12	Oct-05-12	
cis-1,2-Dichloroethene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
trans-1,2-Dichloroethene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichloropropane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
cis-1,3-Dichloropropene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
trans-1,3-Dichloropropene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Ethylbenzene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Methyl tert-butyl ether	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Methylene chloride	< 3.0	MAC = 50	3.0	ug/L	Oct-02-12	Oct-05-12	
Styrene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,1,2,2-Tetrachloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Tetrachloroethene	< 1.0	MAC = 30	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1,1-Trichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Toluene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,1,2-Trichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Trichloroethene	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
Trichlorofluoromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Vinyl chloride	< 2.0	MAC = 2	2.0	ug/L	Oct-02-12	Oct-05-12	
Xylenes (total)	< 2.0		2.0	ug/L	Oct-02-12	Oct-05-12	
Surrogate: Toluene-d8	118 %		80-120		Oct-02-12	Oct-05-12	
Surrogate: 4-Bromofluorobenzene	80 %		80-120		Oct-02-12	Oct-05-12	
Surrogate: 1,4-Dichlorobenzene-d4	103 %		80-120		Oct-02-12	Oct-05-12	

Sample ID: SW2 (Fraser River Downstream) (2091499-02) [Surface Water] Sampled: Sep-26-12

Benzene	< 0.5	MAC = 5	0.5	ug/L	Oct-02-12	Oct-05-12	
Bromodichloromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Bromoform	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Carbon tetrachloride	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
Chlorobenzene	< 1.0	MAC = 80	1.0	ug/L	Oct-02-12	Oct-05-12	
Chloroethane	< 2.0		2.0	ug/L	Oct-02-12	Oct-05-12	
Chloroform	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Dibromochloromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dibromoethane	< 0.3		0.3	ug/L	Oct-02-12	Oct-05-12	
Dibromomethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichlorobenzene	< 0.5	MAC = 200	0.5	ug/L	Oct-02-12	Oct-05-12	
1,3-Dichlorobenzene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,4-Dichlorobenzene	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1-Dichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1-Dichloroethene	< 1.0	MAC = 14	1.0	ug/L	Oct-02-12	Oct-05-12	

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Volatile Organic Compounds (VOC), Continued

Sample ID: SW2 (Fraser River Downstream) (2091499-02) [Surface Water] Sampled: Sep-26-12, Continued

cis-1,2-Dichloroethene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
trans-1,2-Dichloroethene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichloropropane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
cis-1,3-Dichloropropene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
trans-1,3-Dichloropropene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Ethylbenzene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Methyl tert-butyl ether	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Methylene chloride	< 3.0	MAC = 50	3.0	ug/L	Oct-02-12	Oct-05-12	
Styrene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,1,2,2-Tetrachloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Tetrachloroethene	< 1.0	MAC = 30	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1,1-Trichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Toluene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,1,2-Trichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Trichloroethene	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
Trichlorofluoromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Vinyl chloride	< 2.0	MAC = 2	2.0	ug/L	Oct-02-12	Oct-05-12	
Xylenes (total)	< 2.0		2.0	ug/L	Oct-02-12	Oct-05-12	
Surrogate: Toluene-d8	122 %		80-120		Oct-02-12	Oct-05-12	S02
Surrogate: 4-Bromofluorobenzene	89 %		80-120		Oct-02-12	Oct-05-12	
Surrogate: 1,4-Dichlorobenzene-d4	113 %		80-120		Oct-02-12	Oct-05-12	

Sample ID: MW11-02 (2091499-03) [Ground Water] Sampled: Sep-26-12

Benzene	< 0.5	MAC = 5	0.5	ug/L	Oct-02-12	Oct-05-12	
Bromodichloromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Bromoform	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Carbon tetrachloride	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
Chlorobenzene	< 1.0	MAC = 80	1.0	ug/L	Oct-02-12	Oct-05-12	
Chloroethane	< 2.0		2.0	ug/L	Oct-02-12	Oct-05-12	
Chloroform	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Dibromochloromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dibromoethane	< 0.3		0.3	ug/L	Oct-02-12	Oct-05-12	
Dibromomethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichlorobenzene	< 0.5	MAC = 200	0.5	ug/L	Oct-02-12	Oct-05-12	
1,3-Dichlorobenzene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,4-Dichlorobenzene	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1-Dichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1-Dichloroethene	< 1.0	MAC = 14	1.0	ug/L	Oct-02-12	Oct-05-12	
cis-1,2-Dichloroethene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
trans-1,2-Dichloroethene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichloropropane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
cis-1,3-Dichloropropene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
trans-1,3-Dichloropropene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Ethylbenzene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Western Water Associates Ltd
12-047-02

WORK ORDER REPORTED 2091499
Jan-16-13

Analyte	Result / Recovery	Canadian DW Guideline	RDL / Limit	Units	Prepared	Analyzed	Notes
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Volatile Organic Compounds (VOC), Continued

Sample ID: MW11-02 (2091499-03) [Ground Water] Sampled: Sep-26-12, Continued

Methyl tert-butyl ether	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Methylene chloride	< 3.0	MAC = 50	3.0	ug/L	Oct-02-12	Oct-05-12	
Styrene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,1,2,2-Tetrachloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Tetrachloroethene	< 1.0	MAC = 30	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1,1-Trichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Toluene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,1,2-Trichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Trichloroethene	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
Trichlorofluoromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Vinyl chloride	< 2.0	MAC = 2	2.0	ug/L	Oct-02-12	Oct-05-12	
Xylenes (total)	< 2.0		2.0	ug/L	Oct-02-12	Oct-05-12	
Surrogate: Toluene-d8	144 %		80-120		Oct-02-12	Oct-05-12	S02
Surrogate: 4-Bromofluorobenzene	101 %		80-120		Oct-02-12	Oct-05-12	
Surrogate: 1,4-Dichlorobenzene-d4	116 %		80-120		Oct-02-12	Oct-05-12	

Sample ID: MW11-03 (2091499-04) [Ground Water] Sampled: Sep-26-12

Benzene	< 0.5	MAC = 5	0.5	ug/L	Oct-02-12	Oct-05-12	
Bromodichloromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Bromoform	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Carbon tetrachloride	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
Chlorobenzene	< 1.0	MAC = 80	1.0	ug/L	Oct-02-12	Oct-05-12	
Chloroethane	< 2.0		2.0	ug/L	Oct-02-12	Oct-05-12	
Chloroform	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Dibromochloromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dibromoethane	< 0.3		0.3	ug/L	Oct-02-12	Oct-05-12	
Dibromomethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichlorobenzene	< 0.5	MAC = 200	0.5	ug/L	Oct-02-12	Oct-05-12	
1,3-Dichlorobenzene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,4-Dichlorobenzene	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1-Dichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1-Dichloroethene	< 1.0	MAC = 14	1.0	ug/L	Oct-02-12	Oct-05-12	
cis-1,2-Dichloroethene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
trans-1,2-Dichloroethene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,2-Dichloropropane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
cis-1,3-Dichloropropene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
trans-1,3-Dichloropropene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Ethylbenzene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Methyl tert-butyl ether	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Methylene chloride	< 3.0	MAC = 50	3.0	ug/L	Oct-02-12	Oct-05-12	
Styrene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
1,1,2,2-Tetrachloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Tetrachloroethene	< 1.0	MAC = 30	1.0	ug/L	Oct-02-12	Oct-05-12	
1,1,1-Trichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Toluene	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	

SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT Western Water Associates Ltd
12-047-02

WORK ORDER 2091499
REPORTED Jan-16-13

Analyte	Result / Recovery	Canadian DW Guideline	RDL / Limit	Units	Prepared	Analyzed	Notes
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Volatile Organic Compounds (VOC), Continued

Sample ID: MW11-03 (2091499-04) [Ground Water] Sampled: Sep-26-12, Continued

1,1,2-Trichloroethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Trichloroethene	< 1.0	MAC = 5	1.0	ug/L	Oct-02-12	Oct-05-12	
Trichlorofluoromethane	< 1.0		1.0	ug/L	Oct-02-12	Oct-05-12	
Vinyl chloride	< 2.0	MAC = 2	2.0	ug/L	Oct-02-12	Oct-05-12	
Xylenes (total)	< 2.0		2.0	ug/L	Oct-02-12	Oct-05-12	
Surrogate: Toluene-d8	127 %		80-120		Oct-02-12	Oct-05-12	S02
Surrogate: 4-Bromofluorobenzene	93 %		80-120		Oct-02-12	Oct-05-12	
Surrogate: 1,4-Dichlorobenzene-d4	117 %		80-120		Oct-02-12	Oct-05-12	

Sample Qualifiers:

F1 The sample was not field-filtered and was therefore filtered (0.45um) in the laboratory prior to analysis.
S02 Surrogate recovery outside of control limits.

CERTIFICATE OF ANALYSIS

**CLIENT****Western Water Associates Ltd**#32 - 10042 Main Street
Lake Country BC
V4V 1P6TEL 1-250-766-1030
FAX -**ATTENTION****Bryer Manwell****RECEIVED / TEMP**

Nov-09-12 08:00 / 3.0 °C

WORK ORDER

2110447

REPORTED

Nov-22-12

PROJECT

Lillooet Old Dump Site

COC #(s)

32793

PROJECT INFO

11-047-02

General Comments:

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; protocols published by the British Columbia Ministry of Environment (BCMOE); and/or CCME Canada-wide Standard Reference methods.

Methods not described in these publications are conducted according to procedures accepted by appropriate regulatory agencies, and/or are done in accordance with recognized professional standards using accepted testing methodologies and quality control efforts except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

- All solids results are reported on a dry weight basis unless otherwise noted
- Units: mg/kg = milligrams per kilogram, equivalent to parts per million (ppm)
mg/L = milligrams per litre, equivalent to parts per million (ppm)
ug/L = micrograms per litre, equivalent to parts per billion (ppb)
ug/g = micrograms per gram, equivalent to parts per million (ppm)
ug/m3 = micrograms per cubic meter of air
- "RDL" Reported detection limit
- "<" Less than reported detection limit
- "AO" Aesthetic objective
- "MAC" Maximum acceptable concentration (health-related guideline)
- "LAB" RMD = Richmond location, KEL = Kelowna location, EDM = Edmonton location, SUB = Subcontracted

Please contact CARO if more information is needed or to provide feedback on our services.

CARO Analytical Services

A handwritten signature in blue ink, appearing to read "J Shanko".

Final Review Per:

Jennifer Shanko, ASCT

Administration Coordinator, Kelowna

Locations:#110 4011 Viking Way
Richmond, BC V6V 2K9
Tel: 604-279-1499 Fax: 604-279-1599#102 3677 Highway 97N
Kelowna, BC V1X 5C3
Tel: 250-765-9646 Fax: 250-765-389317225 109 Avenue
Edmonton, AB T5S 1H7
Tel: 780-489-9100 Fax: 780-489-9700www.caro.ca

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
REPORTED**

2110447
Nov-22-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters

MW11-01 (2110447-01) Matrix: Ground Water Sampled: Nov-07-12

Alkalinity, Total as CaCO ₃	314		1	mg/L	Nov-09-12	Nov-09-12	
BOD, 5-day	< 10		10	mg/L	Nov-09-12	Nov-14-12	
Carbon, Total Organic	1.3		0.5	mg/L	Nov-08-12	Nov-09-12	
Chloride	23.5	AO ≤ 250	0.10	mg/L	Nov-09-12	Nov-10-12	
Chemical Oxygen Demand	< 5		5	mg/L	Nov-16-12	Nov-16-12	
Conductivity (EC)	860		2	uS/cm	Nov-09-12	Nov-09-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Nov-19-12	Nov-19-12	
Fluoride	0.16	MAC = 1.5	0.10	mg/L	Nov-09-12	Nov-10-12	
Nitrogen, Ammonia as N	0.036		0.020	mg/L	Nov-08-12	Nov-15-12	
Nitrogen, Nitrate as N	0.582	MAC = 10	0.010	mg/L	Nov-09-12	Nov-10-12	
Nitrogen, Nitrite as N	0.024	MAC = 1	0.010	mg/L	Nov-09-12	Nov-10-12	
Nitrogen, Total Kjeldahl	0.57		0.10	mg/L	Nov-09-12	Nov-16-12	
pH	7.94	AO = 6.5 - 8.5	0.01	pH units	Nov-09-12	Nov-09-12	
Phosphorus, Total Kjeldahl	0.81		0.05	mg/L	Nov-09-12	Nov-16-12	
Sulfate	153	AO ≤ 500	10.0	mg/L	Nov-09-12	Nov-10-12	

MW11-02 (2110447-02) Matrix: Ground Water Sampled: Nov-06-12

Alkalinity, Total as CaCO ₃	592		1	mg/L	Nov-09-12	Nov-09-12	
BOD, 5-day	11		10	mg/L	Nov-09-12	Nov-14-12	
Carbon, Total Organic	4.0		0.5	mg/L	Nov-08-12	Nov-09-12	
Chloride	36.1	AO ≤ 250	0.10	mg/L	Nov-09-12	Nov-10-12	
Chemical Oxygen Demand	< 5		5	mg/L	Nov-16-12	Nov-16-12	
Conductivity (EC)	1120		2	uS/cm	Nov-09-12	Nov-09-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Nov-19-12	Nov-19-12	
Fluoride	0.33	MAC = 1.5	0.10	mg/L	Nov-09-12	Nov-10-12	
Nitrogen, Ammonia as N	0.045		0.020	mg/L	Nov-09-12	Nov-19-12	HT
Nitrogen, Nitrate as N	0.098	MAC = 10	0.010	mg/L	Nov-09-12	Nov-10-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Nov-09-12	Nov-10-12	HT
Nitrogen, Total Kjeldahl	2.05		0.25	mg/L	Nov-09-12	Nov-16-12	HT
pH	7.89	AO = 6.5 - 8.5	0.01	pH units	Nov-09-12	Nov-09-12	HT
Phosphorus, Total Kjeldahl	9.52		0.50	mg/L	Nov-09-12	Nov-16-12	HT
Sulfate	173	AO ≤ 500	10.0	mg/L	Nov-09-12	Nov-10-12	

MW11-03 (2110447-03) Matrix: Ground Water Sampled: Nov-06-12

Alkalinity, Total as CaCO ₃	510		1	mg/L	Nov-09-12	Nov-09-12	
BOD, 5-day	< 10		10	mg/L	Nov-09-12	Nov-14-12	
Carbon, Total Organic	3.7		0.5	mg/L	Nov-08-12	Nov-09-12	
Chloride	40.0	AO ≤ 250	1.00	mg/L	Nov-09-12	Nov-10-12	
Chemical Oxygen Demand	< 5		5	mg/L	Nov-16-12	Nov-16-12	
Conductivity (EC)	1300		2	uS/cm	Nov-09-12	Nov-09-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Nov-19-12	Nov-19-12	
Fluoride	0.23	MAC = 1.5	0.10	mg/L	Nov-09-12	Nov-10-12	
Nitrogen, Ammonia as N	0.047		0.020	mg/L	Nov-08-12	Nov-15-12	
Nitrogen, Nitrate as N	0.192	MAC = 10	0.010	mg/L	Nov-09-12	Nov-10-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Nov-09-12	Nov-10-12	HT
Nitrogen, Total Kjeldahl	1.34		0.10	mg/L	Nov-09-12	Nov-16-12	HT
pH	7.81	AO = 6.5 - 8.5	0.01	pH units	Nov-09-12	Nov-09-12	HT

SAMPLE DATA

CLIENT
PROJECT

Western Water Associates Ltd
Lillooet Old Dump Site

WORK ORDER #
REPORTED

2110447
Nov-22-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters, Continued

MW11-03 (2110447-03) Matrix: Ground Water Sampled: Nov-06-12, Continued

Phosphorus, Total Kjeldahl	5.39		0.20	mg/L	Nov-09-12	Nov-16-12	HT
Sulfate	177	AO ≤ 500	10.0	mg/L	Nov-09-12	Nov-10-12	

MW12-05 (2110447-04) Matrix: Ground Water Sampled: Nov-06-12

Alkalinity, Total as CaCO ₃	402		1	mg/L	Nov-09-12	Nov-09-12	
BOD, 5-day	12		10	mg/L	Nov-09-12	Nov-14-12	
Carbon, Total Organic	4.0		0.5	mg/L	Nov-08-12	Nov-09-12	
Chloride	33.4	AO ≤ 250	0.10	mg/L	Nov-09-12	Nov-10-12	
Chemical Oxygen Demand	< 5		5	mg/L	Nov-16-12	Nov-16-12	
Conductivity (EC)	964		2	uS/cm	Nov-09-12	Nov-09-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Nov-19-12	Nov-19-12	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	Nov-09-12	Nov-10-12	
Nitrogen, Ammonia as N	0.078		0.020	mg/L	Nov-08-12	Nov-15-12	
Nitrogen, Nitrate as N	4.03	MAC = 10	0.010	mg/L	Nov-09-12	Nov-10-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Nov-09-12	Nov-10-12	HT
Nitrogen, Total Kjeldahl	4.73		0.25	mg/L	Nov-16-12	Nov-21-12	HT
pH	7.85	AO = 6.5 - 8.5	0.01	pH units	Nov-09-12	Nov-09-12	HT
Phosphorus, Total Kjeldahl	14.3		0.50	mg/L	Nov-09-12	Nov-16-12	HT
Sulfate	95.9	AO ≤ 500	1.0	mg/L	Nov-09-12	Nov-10-12	

River 1 (2110447-05) Matrix: Surface Water Sampled: Nov-06-12

Alkalinity, Total as CaCO ₃	74		1	mg/L	Nov-09-12	Nov-09-12	
BOD, 5-day	< 10		10	mg/L	Nov-09-12	Nov-14-12	
Carbon, Total Organic	3.9		0.5	mg/L	Nov-08-12	Nov-09-12	
Chloride	1.93	AO ≤ 250	0.10	mg/L	Nov-09-12	Nov-10-12	
Chemical Oxygen Demand	6		5	mg/L	Nov-16-12	Nov-16-12	
Conductivity (EC)	172		2	uS/cm	Nov-09-12	Nov-09-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Nov-19-12	Nov-19-12	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	Nov-09-12	Nov-10-12	
Nitrogen, Ammonia as N	0.021		0.020	mg/L	Nov-08-12	Nov-15-12	
Nitrogen, Nitrate as N	0.056	MAC = 10	0.010	mg/L	Nov-09-12	Nov-10-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Nov-09-12	Nov-10-12	HT
Nitrogen, Total Kjeldahl	0.21		0.05	mg/L	Nov-09-12	Nov-16-12	HT
pH	8.00	AO = 6.5 - 8.5	0.01	pH units	Nov-09-12	Nov-09-12	HT
Phosphorus, Total Kjeldahl	0.05		0.01	mg/L	Nov-09-12	Nov-16-12	HT
Sulfate	12.9	AO ≤ 500	1.0	mg/L	Nov-09-12	Nov-10-12	

River 2 (2110447-06) Matrix: Surface Water Sampled: Nov-06-12

Alkalinity, Total as CaCO ₃	74		1	mg/L	Nov-09-12	Nov-09-12	
BOD, 5-day	< 10		10	mg/L	Nov-09-12	Nov-14-12	
Carbon, Total Organic	3.5		0.5	mg/L	Nov-08-12	Nov-09-12	
Chloride	1.49	AO ≤ 250	0.10	mg/L	Nov-09-12	Nov-10-12	
Chemical Oxygen Demand	< 5		5	mg/L	Nov-16-12	Nov-16-12	
Conductivity (EC)	176		2	uS/cm	Nov-09-12	Nov-09-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Nov-19-12	Nov-19-12	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	Nov-09-12	Nov-10-12	
Nitrogen, Ammonia as N	0.021		0.020	mg/L	Nov-08-12	Nov-15-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
REPORTED**

2110447
Nov-22-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters, Continued

River 2 (2110447-06) Matrix: Surface Water Sampled: Nov-06-12, Continued

Nitrogen, Nitrate as N	0.116	MAC = 10	0.010	mg/L	Nov-09-12	Nov-10-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Nov-09-12	Nov-10-12	HT
Nitrogen, Total Kjeldahl	0.14		0.05	mg/L	Nov-09-12	Nov-16-12	HT
pH	7.97	AO = 6.5 - 8.5	0.01	pH units	Nov-09-12	Nov-09-12	HT
Phosphorus, Total Kjeldahl	0.04		0.01	mg/L	Nov-09-12	Nov-16-12	HT
Sulfate	13.2	AO ≤ 500	1.0	mg/L	Nov-09-12	Nov-10-12	

Calculated Parameters

MW11-01 (2110447-01) Matrix: Ground Water Sampled: Nov-07-12

Hardness, Total (Total as CaCO ₃)	582		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	456		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.606		0.020	mg/L	N/A	N/A	

MW11-02 (2110447-02) Matrix: Ground Water Sampled: Nov-06-12

Hardness, Total (Total as CaCO ₃)	1220		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	458		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.098		0.020	mg/L	N/A	N/A	

MW11-03 (2110447-03) Matrix: Ground Water Sampled: Nov-06-12

Hardness, Total (Total as CaCO ₃)	913		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	643		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.192		0.020	mg/L	N/A	N/A	

MW12-05 (2110447-04) Matrix: Ground Water Sampled: Nov-06-12

Hardness, Total (Total as CaCO ₃)	1520		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	522		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	4.03		0.020	mg/L	N/A	N/A	

River 1 (2110447-05) Matrix: Surface Water Sampled: Nov-06-12

Hardness, Total (Total as CaCO ₃)	80.6		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.056		0.020	mg/L	N/A	N/A	

River 2 (2110447-06) Matrix: Surface Water Sampled: Nov-06-12

Hardness, Total (Total as CaCO ₃)	77.3		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.116		0.020	mg/L	N/A	N/A	

Dissolved Metals

MW11-01 (2110447-01) Matrix: Ground Water Sampled: Nov-07-12

Aluminum, dissolved	0.14		0.05	mg/L	Nov-14-12	Nov-14-12	
Antimony, dissolved	0.002		0.001	mg/L	Nov-14-12	Nov-14-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Nov-14-12	Nov-14-12	
Barium, dissolved	0.07		0.05	mg/L	Nov-14-12	Nov-14-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Boron, dissolved	0.22		0.04	mg/L	Nov-14-12	Nov-14-12	
Cadmium, dissolved	0.0002		0.0001	mg/L	Nov-14-12	Nov-14-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet Old Dump Site

**WORK ORDER #
REPORTED**

2110447
Nov-22-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

MW11-01 (2110447-01) Matrix: Ground Water Sampled: Nov-07-12, Continued

Calcium, dissolved	83		2	mg/L	Nov-14-12	Nov-14-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Nov-14-12	Nov-14-12	
Cobalt, dissolved	< 0.0005		0.0005	mg/L	Nov-14-12	Nov-14-12	
Copper, dissolved	0.008		0.002	mg/L	Nov-14-12	Nov-14-12	
Iron, dissolved	0.3		0.1	mg/L	Nov-14-12	Nov-14-12	
Lead, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Lithium, dissolved	0.014		0.001	mg/L	Nov-14-12	Nov-14-12	
Magnesium, dissolved	60.5		0.1	mg/L	Nov-14-12	Nov-14-12	
Manganese, dissolved	0.041		0.002	mg/L	Nov-14-12	Nov-14-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Nov-14-12	Nov-14-12	
Molybdenum, dissolved	0.011		0.001	mg/L	Nov-14-12	Nov-14-12	
Nickel, dissolved	0.004		0.002	mg/L	Nov-14-12	Nov-14-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Nov-14-12	Nov-14-12	
Potassium, dissolved	3.0		0.2	mg/L	Nov-14-12	Nov-14-12	
Selenium, dissolved	< 0.005		0.005	mg/L	Nov-14-12	Nov-14-12	
Silicon, dissolved	8		5	mg/L	Nov-14-12	Nov-14-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Nov-14-12	Nov-14-12	
Sodium, dissolved	24.1		0.2	mg/L	Nov-14-12	Nov-14-12	
Strontium, dissolved	1.01		0.01	mg/L	Nov-14-12	Nov-14-12	
Sulfur, dissolved	65		10	mg/L	Nov-14-12	Nov-14-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Nov-14-12	Nov-14-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Nov-14-12	Nov-14-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Tin, dissolved	< 0.002		0.002	mg/L	Nov-14-12	Nov-14-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Nov-14-12	Nov-14-12	
Uranium, dissolved	0.0010		0.0002	mg/L	Nov-14-12	Nov-14-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Nov-14-12	Nov-14-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Nov-14-12	Nov-14-12	
Zirconium, dissolved	0.001		0.001	mg/L	Nov-14-12	Nov-14-12	

MW11-02 (2110447-02) Matrix: Ground Water Sampled: Nov-06-12

Aluminum, dissolved	< 0.05		0.05	mg/L	Nov-14-12	Nov-14-12	
Antimony, dissolved	0.002		0.001	mg/L	Nov-14-12	Nov-14-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Nov-14-12	Nov-14-12	
Barium, dissolved	0.06		0.05	mg/L	Nov-14-12	Nov-14-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Boron, dissolved	0.53		0.04	mg/L	Nov-14-12	Nov-14-12	
Cadmium, dissolved	< 0.0001		0.0001	mg/L	Nov-14-12	Nov-14-12	
Calcium, dissolved	74		2	mg/L	Nov-14-12	Nov-14-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Nov-14-12	Nov-14-12	
Cobalt, dissolved	0.0007		0.0005	mg/L	Nov-14-12	Nov-14-12	
Copper, dissolved	< 0.002		0.002	mg/L	Nov-14-12	Nov-14-12	
Iron, dissolved	< 0.1		0.1	mg/L	Nov-14-12	Nov-14-12	
Lead, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Lithium, dissolved	0.012		0.001	mg/L	Nov-14-12	Nov-14-12	
Magnesium, dissolved	66.1		0.1	mg/L	Nov-14-12	Nov-14-12	

SAMPLE DATA



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2110447
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Dissolved Metals, Continued

MW11-02 (2110447-02) Matrix: Ground Water Sampled: Nov-06-12, Continued

Manganese, dissolved	0.163		0.002	mg/L	Nov-14-12	Nov-14-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Nov-14-12	Nov-14-12	
Molybdenum, dissolved	0.010		0.001	mg/L	Nov-14-12	Nov-14-12	
Nickel, dissolved	0.005		0.002	mg/L	Nov-14-12	Nov-14-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Nov-14-12	Nov-14-12	
Potassium, dissolved	4.4		0.2	mg/L	Nov-14-12	Nov-14-12	
Selenium, dissolved	< 0.005		0.005	mg/L	Nov-14-12	Nov-14-12	
Silicon, dissolved	7		5	mg/L	Nov-14-12	Nov-14-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Nov-14-12	Nov-14-12	
Sodium, dissolved	98.5		0.2	mg/L	Nov-14-12	Nov-14-12	
Strontium, dissolved	1.39		0.01	mg/L	Nov-14-12	Nov-14-12	
Sulfur, dissolved	60		10	mg/L	Nov-14-12	Nov-14-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Nov-14-12	Nov-14-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Nov-14-12	Nov-14-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Tin, dissolved	< 0.002		0.002	mg/L	Nov-14-12	Nov-14-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Nov-14-12	Nov-14-12	
Uranium, dissolved	0.0019		0.0002	mg/L	Nov-14-12	Nov-14-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Nov-14-12	Nov-14-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Nov-14-12	Nov-14-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	

MW11-03 (2110447-03) Matrix: Ground Water Sampled: Nov-06-12

Aluminum, dissolved	< 0.05		0.05	mg/L	Nov-14-12	Nov-14-12	
Antimony, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Nov-14-12	Nov-14-12	
Barium, dissolved	< 0.05		0.05	mg/L	Nov-14-12	Nov-14-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Boron, dissolved	0.48		0.04	mg/L	Nov-14-12	Nov-14-12	
Cadmium, dissolved	< 0.0001		0.0001	mg/L	Nov-14-12	Nov-14-12	
Calcium, dissolved	102		2	mg/L	Nov-14-12	Nov-14-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Nov-14-12	Nov-14-12	
Cobalt, dissolved	< 0.0005		0.0005	mg/L	Nov-14-12	Nov-14-12	
Copper, dissolved	< 0.002		0.002	mg/L	Nov-14-12	Nov-14-12	
Iron, dissolved	< 0.1		0.1	mg/L	Nov-14-12	Nov-14-12	
Lead, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Lithium, dissolved	0.027		0.001	mg/L	Nov-14-12	Nov-14-12	
Magnesium, dissolved	94.4		0.1	mg/L	Nov-14-12	Nov-14-12	
Manganese, dissolved	0.015		0.002	mg/L	Nov-14-12	Nov-14-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Nov-14-12	Nov-14-12	
Molybdenum, dissolved	0.004		0.001	mg/L	Nov-14-12	Nov-14-12	
Nickel, dissolved	0.003		0.002	mg/L	Nov-14-12	Nov-14-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Nov-14-12	Nov-14-12	
Potassium, dissolved	3.0		0.2	mg/L	Nov-14-12	Nov-14-12	
Selenium, dissolved	< 0.005		0.005	mg/L	Nov-14-12	Nov-14-12	
Silicon, dissolved	8		5	mg/L	Nov-14-12	Nov-14-12	

SAMPLE DATA



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Dissolved Metals, Continued

MW11-03 (2110447-03) Matrix: Ground Water Sampled: Nov-06-12, Continued

Silver, dissolved	< 0.0005		0.0005	mg/L	Nov-14-12	Nov-14-12	
Sodium, dissolved	80.1		0.2	mg/L	Nov-14-12	Nov-14-12	
Strontium, dissolved	2.36		0.01	mg/L	Nov-14-12	Nov-14-12	
Sulfur, dissolved	82		10	mg/L	Nov-14-12	Nov-14-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Nov-14-12	Nov-14-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Nov-14-12	Nov-14-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Tin, dissolved	< 0.002		0.002	mg/L	Nov-14-12	Nov-14-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Nov-14-12	Nov-14-12	
Uranium, dissolved	0.0011		0.0002	mg/L	Nov-14-12	Nov-14-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Nov-14-12	Nov-14-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Nov-14-12	Nov-14-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	

MW12-05 (2110447-04) Matrix: Ground Water Sampled: Nov-06-12

Aluminum, dissolved	< 0.05		0.05	mg/L	Nov-14-12	Nov-14-12	
Antimony, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Nov-14-12	Nov-14-12	
Barium, dissolved	0.12		0.05	mg/L	Nov-14-12	Nov-14-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Boron, dissolved	0.22		0.04	mg/L	Nov-14-12	Nov-14-12	
Cadmium, dissolved	< 0.0001		0.0001	mg/L	Nov-14-12	Nov-14-12	
Calcium, dissolved	101		2	mg/L	Nov-14-12	Nov-14-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Nov-14-12	Nov-14-12	
Cobalt, dissolved	0.0032		0.0005	mg/L	Nov-14-12	Nov-14-12	
Copper, dissolved	< 0.002		0.002	mg/L	Nov-14-12	Nov-14-12	
Iron, dissolved	< 0.1		0.1	mg/L	Nov-14-12	Nov-14-12	
Lead, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Lithium, dissolved	0.014		0.001	mg/L	Nov-14-12	Nov-14-12	
Magnesium, dissolved	65.4		0.1	mg/L	Nov-14-12	Nov-14-12	
Manganese, dissolved	0.171		0.002	mg/L	Nov-14-12	Nov-14-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Nov-14-12	Nov-14-12	
Molybdenum, dissolved	0.006		0.001	mg/L	Nov-14-12	Nov-14-12	
Nickel, dissolved	0.011		0.002	mg/L	Nov-14-12	Nov-14-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Nov-14-12	Nov-14-12	
Potassium, dissolved	2.8		0.2	mg/L	Nov-14-12	Nov-14-12	
Selenium, dissolved	0.006		0.005	mg/L	Nov-14-12	Nov-14-12	
Silicon, dissolved	10		5	mg/L	Nov-14-12	Nov-14-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Nov-14-12	Nov-14-12	
Sodium, dissolved	22.5		0.2	mg/L	Nov-14-12	Nov-14-12	
Strontium, dissolved	1.54		0.01	mg/L	Nov-14-12	Nov-14-12	
Sulfur, dissolved	34		10	mg/L	Nov-14-12	Nov-14-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Nov-14-12	Nov-14-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Nov-14-12	Nov-14-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	
Tin, dissolved	< 0.002		0.002	mg/L	Nov-14-12	Nov-14-12	

SAMPLE DATA



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2110447
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Dissolved Metals, Continued

MW12-05 (2110447-04) Matrix: Ground Water Sampled: Nov-06-12, Continued

Titanium, dissolved	< 0.05		0.05	mg/L	Nov-14-12	Nov-14-12	
Uranium, dissolved	0.0012		0.0002	mg/L	Nov-14-12	Nov-14-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Nov-14-12	Nov-14-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Nov-14-12	Nov-14-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Nov-14-12	Nov-14-12	

Total Recoverable Metals

MW11-01 (2110447-01) Matrix: Ground Water Sampled: Nov-07-12

Calcium, total	112		2	mg/L	Nov-14-12	Nov-15-12	
Magnesium, total	73.2		0.1	mg/L	Nov-14-12	Nov-15-12	

MW11-02 (2110447-02) Matrix: Ground Water Sampled: Nov-06-12

Calcium, total	279		2	mg/L	Nov-14-12	Nov-15-12	
Magnesium, total	128		0.1	mg/L	Nov-14-12	Nov-15-12	

MW11-03 (2110447-03) Matrix: Ground Water Sampled: Nov-06-12

Calcium, total	171		2	mg/L	Nov-14-12	Nov-15-12	
Magnesium, total	118		0.1	mg/L	Nov-14-12	Nov-15-12	

MW12-05 (2110447-04) Matrix: Ground Water Sampled: Nov-06-12

Calcium, total	361		2	mg/L	Nov-14-12	Nov-15-12	
Magnesium, total	149		0.1	mg/L	Nov-14-12	Nov-15-12	

River 1 (2110447-05) Matrix: Surface Water Sampled: Nov-06-12

Aluminum, total	0.68	AO ≤ 0.1	0.05	mg/L	Nov-14-12	Nov-15-12	
Antimony, total	< 0.001	MAC = 0.006	0.001	mg/L	Nov-14-12	Nov-15-12	
Arsenic, total	< 0.005	MAC = 0.01	0.005	mg/L	Nov-14-12	Nov-15-12	
Barium, total	< 0.05	MAC = 1	0.05	mg/L	Nov-14-12	Nov-15-12	
Beryllium, total	< 0.001		0.001	mg/L	Nov-14-12	Nov-15-12	
Bismuth, total	< 0.001		0.001	mg/L	Nov-14-12	Nov-15-12	
Boron, total	< 0.04	MAC = 5	0.04	mg/L	Nov-14-12	Nov-15-12	
Cadmium, total	< 0.0001	MAC = 0.005	0.0001	mg/L	Nov-14-12	Nov-15-12	
Calcium, total	22		2	mg/L	Nov-14-12	Nov-15-12	
Chromium, total	< 0.005	MAC = 0.05	0.005	mg/L	Nov-14-12	Nov-15-12	
Cobalt, total	0.0006		0.0005	mg/L	Nov-14-12	Nov-15-12	
Copper, total	< 0.002	AO ≤ 1	0.002	mg/L	Nov-14-12	Nov-15-12	
Iron, total	1.2	AO ≤ 0.3	0.1	mg/L	Nov-14-12	Nov-15-12	
Lead, total	< 0.001	MAC = 0.01	0.001	mg/L	Nov-14-12	Nov-15-12	
Lithium, total	0.002		0.001	mg/L	Nov-14-12	Nov-15-12	
Magnesium, total	6.2		0.1	mg/L	Nov-14-12	Nov-15-12	
Manganese, total	0.039	AO ≤ 0.05	0.002	mg/L	Nov-14-12	Nov-15-12	
Mercury, total	< 0.0002	MAC = 0.001	0.0002	mg/L	Nov-14-12	Nov-15-12	
Molybdenum, total	0.002		0.001	mg/L	Nov-14-12	Nov-15-12	
Nickel, total	0.002		0.002	mg/L	Nov-14-12	Nov-15-12	
Phosphorus, total	< 0.2		0.2	mg/L	Nov-14-12	Nov-15-12	
Potassium, total	0.7		0.2	mg/L	Nov-14-12	Nov-15-12	
Selenium, total	< 0.005	MAC = 0.01	0.005	mg/L	Nov-14-12	Nov-15-12	

SAMPLE DATA



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Total Recoverable Metals, Continued

River 1 (2110447-05) Matrix: Surface Water Sampled: Nov-06-12, Continued

Silicon, total	< 5		5	mg/L	Nov-14-12	Nov-15-12	
Silver, total	< 0.0005		0.0005	mg/L	Nov-14-12	Nov-15-12	
Sodium, total	4.8	AO ≤ 200	0.2	mg/L	Nov-14-12	Nov-15-12	
Strontium, total	0.11		0.01	mg/L	Nov-14-12	Nov-15-12	
Sulfur, total	< 10		10	mg/L	Nov-14-12	Nov-15-12	
Tellurium, total	< 0.002		0.002	mg/L	Nov-14-12	Nov-15-12	
Thallium, total	< 0.0002		0.0002	mg/L	Nov-14-12	Nov-15-12	
Thorium, total	< 0.001		0.001	mg/L	Nov-14-12	Nov-15-12	
Tin, total	< 0.002		0.002	mg/L	Nov-14-12	Nov-15-12	
Titanium, total	< 0.05		0.05	mg/L	Nov-14-12	Nov-15-12	
Uranium, total	0.0003	MAC = 0.02	0.0002	mg/L	Nov-14-12	Nov-15-12	
Vanadium, total	< 0.01		0.01	mg/L	Nov-14-12	Nov-15-12	
Zinc, total	< 0.04	AO ≤ 5	0.04	mg/L	Nov-14-12	Nov-15-12	
Zirconium, total	< 0.001		0.001	mg/L	Nov-14-12	Nov-15-12	

River 2 (2110447-06) Matrix: Surface Water Sampled: Nov-06-12

Aluminum, total	0.56	AO ≤ 0.1	0.05	mg/L	Nov-14-12	Nov-15-12	
Antimony, total	< 0.001	MAC = 0.006	0.001	mg/L	Nov-14-12	Nov-15-12	
Arsenic, total	< 0.005	MAC = 0.01	0.005	mg/L	Nov-14-12	Nov-15-12	
Barium, total	< 0.05	MAC = 1	0.05	mg/L	Nov-14-12	Nov-15-12	
Beryllium, total	< 0.001		0.001	mg/L	Nov-14-12	Nov-15-12	
Bismuth, total	< 0.001		0.001	mg/L	Nov-14-12	Nov-15-12	
Boron, total	< 0.04	MAC = 5	0.04	mg/L	Nov-14-12	Nov-15-12	
Cadmium, total	< 0.0001	MAC = 0.005	0.0001	mg/L	Nov-14-12	Nov-15-12	
Calcium, total	22		2	mg/L	Nov-14-12	Nov-15-12	
Chromium, total	< 0.005	MAC = 0.05	0.005	mg/L	Nov-14-12	Nov-15-12	
Cobalt, total	< 0.0005		0.0005	mg/L	Nov-14-12	Nov-15-12	
Copper, total	< 0.002	AO ≤ 1	0.002	mg/L	Nov-14-12	Nov-15-12	
Iron, total	0.8	AO ≤ 0.3	0.1	mg/L	Nov-14-12	Nov-15-12	
Lead, total	< 0.001	MAC = 0.01	0.001	mg/L	Nov-14-12	Nov-15-12	
Lithium, total	0.002		0.001	mg/L	Nov-14-12	Nov-15-12	
Magnesium, total	5.7		0.1	mg/L	Nov-14-12	Nov-15-12	
Manganese, total	0.030	AO ≤ 0.05	0.002	mg/L	Nov-14-12	Nov-15-12	
Mercury, total	< 0.0002	MAC = 0.001	0.0002	mg/L	Nov-14-12	Nov-15-12	
Molybdenum, total	< 0.001		0.001	mg/L	Nov-14-12	Nov-15-12	
Nickel, total	< 0.002		0.002	mg/L	Nov-14-12	Nov-15-12	
Phosphorus, total	< 0.2		0.2	mg/L	Nov-14-12	Nov-15-12	
Potassium, total	0.5		0.2	mg/L	Nov-14-12	Nov-15-12	
Selenium, total	< 0.005	MAC = 0.01	0.005	mg/L	Nov-14-12	Nov-15-12	
Silicon, total	< 5		5	mg/L	Nov-14-12	Nov-15-12	
Silver, total	< 0.0005		0.0005	mg/L	Nov-14-12	Nov-15-12	
Sodium, total	4.4	AO ≤ 200	0.2	mg/L	Nov-14-12	Nov-15-12	
Strontium, total	0.11		0.01	mg/L	Nov-14-12	Nov-15-12	
Sulfur, total	< 10		10	mg/L	Nov-14-12	Nov-15-12	
Tellurium, total	< 0.002		0.002	mg/L	Nov-14-12	Nov-15-12	
Thallium, total	< 0.0002		0.0002	mg/L	Nov-14-12	Nov-15-12	
Thorium, total	< 0.001		0.001	mg/L	Nov-14-12	Nov-15-12	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet Old Dump Site

WORK ORDER # 2110447
REPORTED Nov-22-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Total Recoverable Metals, Continued

River 2 (2110447-06) Matrix: Surface Water Sampled: Nov-06-12, Continued

Tin, total	< 0.002		0.002	mg/L	Nov-14-12	Nov-15-12	
Titanium, total	< 0.05		0.05	mg/L	Nov-14-12	Nov-15-12	
Uranium, total	0.0003	MAC = 0.02	0.0002	mg/L	Nov-14-12	Nov-15-12	
Vanadium, total	< 0.01		0.01	mg/L	Nov-14-12	Nov-15-12	
Zinc, total	< 0.04	AO ≤ 5	0.04	mg/L	Nov-14-12	Nov-15-12	
Zirconium, total	< 0.001		0.001	mg/L	Nov-14-12	Nov-15-12	

Sample Qualifiers:

HT Parameter(s) analyzed outside of the recommended holding time.

ANALYSIS / REPORT INFORMATION

CLIENT Western Water Associates Ltd
PROJECT Lillooet Old Dump Site

WORK ORDER # 2110447
REPORTED Nov-22-12

Analysis Description	Method Reference(s) (* = modified from)		LAB
	Preparation	Analysis	
Hardness (Calc)	N/A	APHA 2340 B	RMD
Dissolved Metals	APHA 3030B	APHA 3125 B	RMD
Phosphorus, Total Kjeldahl	N/A	EPA 365.4 *	KEL
Total Kjeldahl Nitrogen	N/A	EPA 351.2 *	KEL
Carbon, Total Organic in Water	N/A	APHA 5310 B	KEL
Chemical Oxygen Demand (low level)	N/A	APHA 5220 D	KEL
BOD, 5-day	N/A	APHA 5210 B	KEL
Ammonia-N, colorimetric	N/A	APHA 4500-NH3 G	KEL
pH in Water	N/A	APHA 4500-H+ B	KEL
Cyanide, Total in Liquids	APHA 4500-CN C	APHA 4500-CN E	KEL
Chloride in Water by IC	N/A	APHA 4110 B	KEL
Fluoride in Water by IC	N/A	APHA 4110 B	KEL
Nitrite-N in Water by IC	N/A	APHA 4110 B	KEL
Nitrate-N in Water by IC	N/A	APHA 4110 B	KEL
Sulfate in Water by IC	N/A	APHA 4110 B	KEL
Conductivity in Water	N/A	APHA 2510 B	KEL
Alkalinity, total	N/A	APHA 2320 B	KEL
Total Recoverable Metals	APHA 3030E *	APHA 3125 B	RMD

Additional Information:

Nov.22/12- The COD values for 2110447-02 & -04 have been confirmed.

CERTIFICATE OF ANALYSIS

**CLIENT****Western Water Associates Ltd**

106 - 5145 26th Street

Vernon BC

V1T 8G4

TEL (250) 541-1030

FAX (250) 575-4764

ATTENTION**Bryer Manwell****RECEIVED / TEMP**

Dec-17-12 08:00 / 3.0 °C

REPORTED

Dec-24-12

COC #(s)

32575

WORK ORDER

2120762

PROJECT

12-047-02

PROJECT INFO

Lilloet Old Dump Site

General Comments:

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; protocols published by the British Columbia Ministry of Environment (BCMOE); and/or CCME Canada-wide Standard Reference methods.

Methods not described in these publications are conducted according to procedures accepted by appropriate regulatory agencies, and/or are done in accordance with recognized professional standards using accepted testing methodologies and quality control efforts except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

- All solids results are reported on a dry weight basis unless otherwise noted
- Units: mg/kg = milligrams per kilogram, equivalent to parts per million (ppm)
mg/L = milligrams per litre, equivalent to parts per million (ppm)
ug/L = micrograms per litre, equivalent to parts per billion (ppb)
ug/g = micrograms per gram, equivalent to parts per million (ppm)
ug/m3 = micrograms per cubic meter of air
- "RDL" Reported detection limit
- "<" Less than reported detection limit
- "AO" Aesthetic objective
- "MAC" Maximum acceptable concentration (health-related guideline)
- "LAB" RMD = Richmond location, KEL = Kelowna location, EDM = Edmonton location, SUB = Subcontracted

Please contact CARO if more information is needed or to provide feedback on our services.

CARO Analytical Services

Final Review Per:

Sarah Speier, B.Sc. For Jennifer Shanko, ASCT
Administration Coordinator, Kelowna**Locations:**#110 4011 Viking Way
Richmond, BC V6V 2K9

Tel: 604-279-1499 Fax: 604-279-1599

#102 3677 Highway 97N
Kelowna, BC V1X 5C3

Tel: 250-765-9646 Fax: 250-765-3893

www.caro.ca17225 109 Avenue
Edmonton, AB T5S 1H7

Tel: 780-489-9100 Fax: 780-489-9700

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
12-047-02

**WORK ORDER #
REPORTED**

2120762
Dec-24-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters

River 1 (SW1- Fraser River Upstream) (2120762-01) Matrix: Surface Water Sampled: Dec-12-12

Alkalinity, Total as CaCO ₃	86		1	mg/L	Dec-17-12	Dec-17-12	
BOD, 5-day	< 10		10	mg/L	Dec-17-12	Dec-22-12	HT
Carbon, Total Organic	4.4		0.5	mg/L	Dec-18-12	Dec-19-12	
Chloride	2.29	AO ≤ 250	0.10	mg/L	Dec-17-12	Dec-17-12	
Chemical Oxygen Demand	< 5		5	mg/L	Dec-21-12	Dec-21-12	
Conductivity (EC)	198		2	uS/cm	Dec-17-12	Dec-17-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Dec-19-12	Dec-19-12	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	Dec-17-12	Dec-17-12	
Nitrogen, Ammonia as N	0.047		0.020	mg/L	Dec-19-12	Dec-20-12	HT
Nitrogen, Nitrate as N	0.087	MAC = 10	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Total Kjeldahl	0.31		0.05	mg/L	Dec-17-12	Dec-20-12	HT
pH	7.26	AO = 6.5 - 8.5	0.01	pH units	Dec-17-12	Dec-17-12	HT
Phosphorus, Total Kjeldahl	0.04		0.01	mg/L	Dec-17-12	Dec-20-12	HT
Sulfate	14.5	AO ≤ 500	1.0	mg/L	Dec-17-12	Dec-17-12	

River 2 (SW2- Fraser River Downstream) (2120762-02) Matrix: Surface Water Sampled: Dec-12-12

Alkalinity, Total as CaCO ₃	89		1	mg/L	Dec-17-12	Dec-17-12	
BOD, 5-day	< 10		10	mg/L	Dec-17-12	Dec-22-12	HT
Carbon, Total Organic	4.4		0.5	mg/L	Dec-18-12	Dec-19-12	
Chloride	3.17	AO ≤ 250	0.10	mg/L	Dec-17-12	Dec-17-12	
Chemical Oxygen Demand	< 5		5	mg/L	Dec-21-12	Dec-21-12	
Conductivity (EC)	210		2	uS/cm	Dec-17-12	Dec-17-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Dec-19-12	Dec-19-12	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	Dec-17-12	Dec-17-12	
Nitrogen, Ammonia as N	0.042		0.020	mg/L	Dec-19-12	Dec-20-12	HT
Nitrogen, Nitrate as N	0.152	MAC = 10	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Total Kjeldahl	0.32		0.05	mg/L	Dec-17-12	Dec-20-12	HT
pH	7.23	AO = 6.5 - 8.5	0.01	pH units	Dec-17-12	Dec-17-12	HT
Phosphorus, Total Kjeldahl	0.03		0.01	mg/L	Dec-17-12	Dec-20-12	HT
Sulfate	16.0	AO ≤ 500	1.0	mg/L	Dec-17-12	Dec-17-12	

MW11-01 (2120762-03) Matrix: Ground Water Sampled: Dec-12-12

Alkalinity, Total as CaCO ₃	301		1	mg/L	Dec-17-12	Dec-17-12	
BOD, 5-day	< 10		10	mg/L	Dec-17-12	Dec-22-12	HT
Carbon, Total Organic	1.6		0.5	mg/L	Dec-18-12	Dec-19-12	
Chloride	22.5	AO ≤ 250	0.10	mg/L	Dec-17-12	Dec-17-12	
Chemical Oxygen Demand	< 5		5	mg/L	Dec-21-12	Dec-21-12	
Conductivity (EC)	846		2	uS/cm	Dec-17-12	Dec-17-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Dec-19-12	Dec-19-12	
Fluoride	0.17	MAC = 1.5	0.10	mg/L	Dec-17-12	Dec-17-12	
Nitrogen, Ammonia as N	0.025		0.020	mg/L	Dec-19-12	Dec-20-12	HT
Nitrogen, Nitrate as N	2.70	MAC = 10	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Nitrite as N	0.136	MAC = 1	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Total Kjeldahl	1.68		0.10	mg/L	Dec-17-12	Dec-20-12	HT
pH	7.56	AO = 6.5 - 8.5	0.01	pH units	Dec-17-12	Dec-17-12	HT

SAMPLE DATA

CLIENT Western Water Associates Ltd
PROJECT 12-047-02

WORK ORDER # 2120762
REPORTED Dec-24-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters, Continued

MW11-01 (2120762-03) Matrix: Ground Water Sampled: Dec-12-12, Continued

Phosphorus, Total Kjeldahl	2.15		0.10	mg/L	Dec-17-12	Dec-22-12	HT
Sulfate	120	AO ≤ 500	10.0	mg/L	Dec-17-12	Dec-17-12	

MW11-02 (2120762-04) Matrix: Ground Water Sampled: Dec-12-12

Alkalinity, Total as CaCO ₃	418		1	mg/L	Dec-17-12	Dec-17-12	
BOD, 5-day	< 10		10	mg/L	Dec-17-12	Dec-22-12	HT
Carbon, Total Organic	5.3		0.5	mg/L	Dec-18-12	Dec-19-12	
Chloride	38.3	AO ≤ 250	0.10	mg/L	Dec-17-12	Dec-17-12	
Chemical Oxygen Demand	< 5		5	mg/L	Dec-21-12	Dec-21-12	
Conductivity (EC)	1160		2	uS/cm	Dec-17-12	Dec-17-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Dec-19-12	Dec-19-12	
Fluoride	0.30	MAC = 1.5	0.10	mg/L	Dec-17-12	Dec-17-12	
Nitrogen, Ammonia as N	0.031		0.020	mg/L	Dec-19-12	Dec-20-12	HT
Nitrogen, Nitrate as N	0.052	MAC = 10	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Total Kjeldahl	6.46		0.20	mg/L	Dec-17-12	Dec-20-12	HT
pH	7.72	AO = 6.5 - 8.5	0.01	pH units	Dec-17-12	Dec-17-12	HT
Phosphorus, Total Kjeldahl	12.2		1.00	mg/L	Dec-17-12	Dec-20-12	HT
Sulfate	190	AO ≤ 500	10.0	mg/L	Dec-17-12	Dec-17-12	

MW11-03 (2120762-05) Matrix: Ground Water Sampled: Dec-12-12

Alkalinity, Total as CaCO ₃	503		1	mg/L	Dec-17-12	Dec-17-12	
BOD, 5-day	< 10		10	mg/L	Dec-17-12	Dec-22-12	HT
Carbon, Total Organic	2.4		0.5	mg/L	Dec-18-12	Dec-19-12	
Chloride	51.6	AO ≤ 250	1.00	mg/L	Dec-17-12	Dec-17-12	
Chemical Oxygen Demand	< 5		5	mg/L	Dec-21-12	Dec-21-12	
Conductivity (EC)	1320		2	uS/cm	Dec-17-12	Dec-17-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Dec-19-12	Dec-19-12	
Fluoride	0.27	MAC = 1.5	0.10	mg/L	Dec-17-12	Dec-17-12	
Nitrogen, Ammonia as N	0.039		0.020	mg/L	Dec-19-12	Dec-20-12	HT
Nitrogen, Nitrate as N	0.015	MAC = 10	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Total Kjeldahl	1.68		0.10	mg/L	Dec-17-12	Dec-20-12	HT
pH	7.61	AO = 6.5 - 8.5	0.01	pH units	Dec-17-12	Dec-17-12	HT
Phosphorus, Total Kjeldahl	3.50		0.20	mg/L	Dec-17-12	Dec-20-12	HT
Sulfate	206	AO ≤ 500	10.0	mg/L	Dec-17-12	Dec-17-12	

MW12-05 (2120762-06) Matrix: Ground Water Sampled: Dec-12-12

Alkalinity, Total as CaCO ₃	390		1	mg/L	Dec-17-12	Dec-17-12	
BOD, 5-day	< 10		10	mg/L	Dec-17-12	Dec-22-12	HT
Carbon, Total Organic	2.6		0.5	mg/L	Dec-18-12	Dec-19-12	
Chloride	36.4	AO ≤ 250	0.10	mg/L	Dec-17-12	Dec-17-12	
Chemical Oxygen Demand	< 5		5	mg/L	Dec-21-12	Dec-21-12	
Conductivity (EC)	952		2	uS/cm	Dec-17-12	Dec-17-12	
Cyanide, total	< 0.010	MAC = 0.2	0.010	mg/L	Dec-19-12	Dec-19-12	
Fluoride	0.11	MAC = 1.5	0.10	mg/L	Dec-17-12	Dec-17-12	
Nitrogen, Ammonia as N	0.032		0.020	mg/L	Dec-19-12	Dec-20-12	HT

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
12-047-02

**WORK ORDER #
REPORTED**

2120762
Dec-24-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters, Continued

MW12-05 (2120762-06) Matrix: Ground Water Sampled: Dec-12-12, Continued

Nitrogen, Nitrate as N	1.79	MAC = 10	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	Dec-17-12	Dec-17-12	HT
Nitrogen, Total Kjeldahl	6.20		0.25	mg/L	Dec-17-12	Dec-20-12	HT
pH	7.56	AO = 6.5 - 8.5	0.01	pH units	Dec-17-12	Dec-17-12	HT
Phosphorus, Total Kjeldahl	12.3		0.50	mg/L	Dec-17-12	Dec-20-12	HT
Sulfate	76.7	AO ≤ 500	1.0	mg/L	Dec-17-12	Dec-17-12	

Calculated Parameters

River 1 (SW1- Fraser River Upstream) (2120762-01) Matrix: Surface Water Sampled: Dec-12-12

Hardness, Total (Total as CaCO ₃)	94.1		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.087		0.020	mg/L	N/A	N/A	

River 2 (SW2- Fraser River Downstream) (2120762-02) Matrix: Surface Water Sampled: Dec-12-12

Hardness, Total (Total as CaCO ₃)	91.3		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.152		0.020	mg/L	N/A	N/A	

MW11-01 (2120762-03) Matrix: Ground Water Sampled: Dec-12-12

Hardness, Total (Total as CaCO ₃)	620		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	455		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	2.84		0.020	mg/L	N/A	N/A	

MW11-02 (2120762-04) Matrix: Ground Water Sampled: Dec-12-12

Hardness, Total (Total as CaCO ₃)	1630		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	456		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	0.052		0.020	mg/L	N/A	N/A	

MW11-03 (2120762-05) Matrix: Ground Water Sampled: Dec-12-12

Hardness, Total (Total as CaCO ₃)	974		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	620		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	< 0.020		0.020	mg/L	N/A	N/A	

MW12-05 (2120762-06) Matrix: Ground Water Sampled: Dec-12-12

Hardness, Total (Total as CaCO ₃)	2030		5.0	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	499		5.0	mg/L	N/A	N/A	
Nitrogen, Nitrate+Nitrite as N	1.79		0.020	mg/L	N/A	N/A	

Dissolved Metals

MW11-01 (2120762-03) Matrix: Ground Water Sampled: Dec-12-12

Aluminum, dissolved	< 0.05		0.05	mg/L	Dec-19-12	Dec-19-12	
Antimony, dissolved	0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Dec-19-12	Dec-19-12	
Barium, dissolved	0.08		0.05	mg/L	Dec-19-12	Dec-19-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Boron, dissolved	0.24		0.04	mg/L	Dec-19-12	Dec-19-12	
Cadmium, dissolved	0.0001		0.0001	mg/L	Dec-19-12	Dec-19-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
12-047-02

**WORK ORDER #
REPORTED**

2120762
Dec-24-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

MW11-01 (2120762-03) Matrix: Ground Water Sampled: Dec-12-12, Continued

Calcium, dissolved	82		2	mg/L	Dec-19-12	Dec-19-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Dec-19-12	Dec-19-12	
Cobalt, dissolved	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Copper, dissolved	0.003		0.002	mg/L	Dec-19-12	Dec-19-12	
Iron, dissolved	< 0.1		0.1	mg/L	Dec-19-12	Dec-19-12	
Lead, dissolved	0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Lithium, dissolved	0.013		0.001	mg/L	Dec-19-12	Dec-19-12	
Magnesium, dissolved	60.7		0.1	mg/L	Dec-19-12	Dec-19-12	
Manganese, dissolved	0.044		0.002	mg/L	Dec-19-12	Dec-19-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Dec-19-12	Dec-19-12	
Molybdenum, dissolved	0.011		0.001	mg/L	Dec-19-12	Dec-19-12	
Nickel, dissolved	0.003		0.002	mg/L	Dec-19-12	Dec-19-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Dec-19-12	Dec-19-12	
Potassium, dissolved	2.3		0.2	mg/L	Dec-19-12	Dec-19-12	
Selenium, dissolved	0.011		0.005	mg/L	Dec-19-12	Dec-19-12	
Silicon, dissolved	< 5		5	mg/L	Dec-19-12	Dec-19-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Sodium, dissolved	20.7		0.2	mg/L	Dec-19-12	Dec-19-12	
Strontium, dissolved	1.12		0.01	mg/L	Dec-19-12	Dec-19-12	
Sulfur, dissolved	31		10	mg/L	Dec-19-12	Dec-19-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Dec-19-12	Dec-19-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Tin, dissolved	0.003		0.002	mg/L	Dec-19-12	Dec-19-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Dec-19-12	Dec-19-12	
Uranium, dissolved	0.0008		0.0002	mg/L	Dec-19-12	Dec-19-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Dec-19-12	Dec-19-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Dec-19-12	Dec-19-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	

MW11-02 (2120762-04) Matrix: Ground Water Sampled: Dec-12-12

Aluminum, dissolved	< 0.05		0.05	mg/L	Dec-19-12	Dec-19-12	
Antimony, dissolved	0.002		0.001	mg/L	Dec-19-12	Dec-19-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Dec-19-12	Dec-19-12	
Barium, dissolved	0.06		0.05	mg/L	Dec-19-12	Dec-19-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Boron, dissolved	0.57		0.04	mg/L	Dec-19-12	Dec-19-12	
Cadmium, dissolved	< 0.0001		0.0001	mg/L	Dec-19-12	Dec-19-12	
Calcium, dissolved	71		2	mg/L	Dec-19-12	Dec-19-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Dec-19-12	Dec-19-12	
Cobalt, dissolved	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Copper, dissolved	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Iron, dissolved	< 0.1		0.1	mg/L	Dec-19-12	Dec-19-12	
Lead, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Lithium, dissolved	0.012		0.001	mg/L	Dec-19-12	Dec-19-12	
Magnesium, dissolved	67.7		0.1	mg/L	Dec-19-12	Dec-19-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
12-047-02

**WORK ORDER #
REPORTED**

2120762
Dec-24-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

MW11-02 (2120762-04) Matrix: Ground Water Sampled: Dec-12-12, Continued

Manganese, dissolved	0.101		0.002	mg/L	Dec-19-12	Dec-19-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Dec-19-12	Dec-19-12	
Molybdenum, dissolved	0.009		0.001	mg/L	Dec-19-12	Dec-19-12	
Nickel, dissolved	0.004		0.002	mg/L	Dec-19-12	Dec-19-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Dec-19-12	Dec-19-12	
Potassium, dissolved	4.4		0.2	mg/L	Dec-19-12	Dec-19-12	
Selenium, dissolved	< 0.005		0.005	mg/L	Dec-19-12	Dec-19-12	
Silicon, dissolved	< 5		5	mg/L	Dec-19-12	Dec-19-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Sodium, dissolved	103		0.2	mg/L	Dec-19-12	Dec-19-12	
Strontium, dissolved	1.57		0.01	mg/L	Dec-19-12	Dec-19-12	
Sulfur, dissolved	63		10	mg/L	Dec-19-12	Dec-19-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Dec-19-12	Dec-19-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Tin, dissolved	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Dec-19-12	Dec-19-12	
Uranium, dissolved	0.0015		0.0002	mg/L	Dec-19-12	Dec-19-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Dec-19-12	Dec-19-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Dec-19-12	Dec-19-12	
Zirconium, dissolved	0.002		0.001	mg/L	Dec-19-12	Dec-19-12	

MW11-03 (2120762-05) Matrix: Ground Water Sampled: Dec-12-12

Aluminum, dissolved	0.06		0.05	mg/L	Dec-19-12	Dec-19-12	
Antimony, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Dec-19-12	Dec-19-12	
Barium, dissolved	< 0.05		0.05	mg/L	Dec-19-12	Dec-19-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Boron, dissolved	0.51		0.04	mg/L	Dec-19-12	Dec-19-12	
Cadmium, dissolved	0.0001		0.0001	mg/L	Dec-19-12	Dec-19-12	
Calcium, dissolved	99		2	mg/L	Dec-19-12	Dec-19-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Dec-19-12	Dec-19-12	
Cobalt, dissolved	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Copper, dissolved	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Iron, dissolved	< 0.1		0.1	mg/L	Dec-19-12	Dec-19-12	
Lead, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Lithium, dissolved	0.024		0.001	mg/L	Dec-19-12	Dec-19-12	
Magnesium, dissolved	90.3		0.1	mg/L	Dec-19-12	Dec-19-12	
Manganese, dissolved	0.084		0.002	mg/L	Dec-19-12	Dec-19-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Dec-19-12	Dec-19-12	
Molybdenum, dissolved	0.003		0.001	mg/L	Dec-19-12	Dec-19-12	
Nickel, dissolved	0.003		0.002	mg/L	Dec-19-12	Dec-19-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Dec-19-12	Dec-19-12	
Potassium, dissolved	2.8		0.2	mg/L	Dec-19-12	Dec-19-12	
Selenium, dissolved	< 0.005		0.005	mg/L	Dec-19-12	Dec-19-12	
Silicon, dissolved	< 5		5	mg/L	Dec-19-12	Dec-19-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
12-047-02

**WORK ORDER #
REPORTED**

2120762
Dec-24-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

MW11-03 (2120762-05) Matrix: Ground Water Sampled: Dec-12-12, Continued

Silver, dissolved	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Sodium, dissolved	76.3		0.2	mg/L	Dec-19-12	Dec-19-12	
Strontium, dissolved	2.50		0.01	mg/L	Dec-19-12	Dec-19-12	
Sulfur, dissolved	61		10	mg/L	Dec-19-12	Dec-19-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Dec-19-12	Dec-19-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Tin, dissolved	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Titanium, dissolved	< 0.05		0.05	mg/L	Dec-19-12	Dec-19-12	
Uranium, dissolved	0.0012		0.0002	mg/L	Dec-19-12	Dec-19-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Dec-19-12	Dec-19-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Dec-19-12	Dec-19-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	

MW12-05 (2120762-06) Matrix: Ground Water Sampled: Dec-12-12

Aluminum, dissolved	< 0.05		0.05	mg/L	Dec-19-12	Dec-19-12	
Antimony, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Arsenic, dissolved	< 0.005		0.005	mg/L	Dec-19-12	Dec-19-12	
Barium, dissolved	0.12		0.05	mg/L	Dec-19-12	Dec-19-12	
Beryllium, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Bismuth, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Boron, dissolved	0.23		0.04	mg/L	Dec-19-12	Dec-19-12	
Cadmium, dissolved	< 0.0001		0.0001	mg/L	Dec-19-12	Dec-19-12	
Calcium, dissolved	93		2	mg/L	Dec-19-12	Dec-19-12	
Chromium, dissolved	< 0.005		0.005	mg/L	Dec-19-12	Dec-19-12	
Cobalt, dissolved	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Copper, dissolved	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Iron, dissolved	< 0.1		0.1	mg/L	Dec-19-12	Dec-19-12	
Lead, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Lithium, dissolved	0.013		0.001	mg/L	Dec-19-12	Dec-19-12	
Magnesium, dissolved	64.9		0.1	mg/L	Dec-19-12	Dec-19-12	
Manganese, dissolved	0.010		0.002	mg/L	Dec-19-12	Dec-19-12	
Mercury, dissolved	< 0.0002		0.0002	mg/L	Dec-19-12	Dec-19-12	
Molybdenum, dissolved	0.005		0.001	mg/L	Dec-19-12	Dec-19-12	
Nickel, dissolved	0.004		0.002	mg/L	Dec-19-12	Dec-19-12	
Phosphorus, dissolved	< 0.2		0.2	mg/L	Dec-19-12	Dec-19-12	
Potassium, dissolved	2.8		0.2	mg/L	Dec-19-12	Dec-19-12	
Selenium, dissolved	0.007		0.005	mg/L	Dec-19-12	Dec-19-12	
Silicon, dissolved	7		5	mg/L	Dec-19-12	Dec-19-12	
Silver, dissolved	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Sodium, dissolved	23.2		0.2	mg/L	Dec-19-12	Dec-19-12	
Strontium, dissolved	1.68		0.01	mg/L	Dec-19-12	Dec-19-12	
Sulfur, dissolved	23		10	mg/L	Dec-19-12	Dec-19-12	
Tellurium, dissolved	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Thallium, dissolved	< 0.0002		0.0002	mg/L	Dec-19-12	Dec-19-12	
Thorium, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Tin, dissolved	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
12-047-02

**WORK ORDER #
REPORTED**

2120762
Dec-24-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals, Continued

MW12-05 (2120762-06) Matrix: Ground Water Sampled: Dec-12-12, Continued

Titanium, dissolved	< 0.05		0.05	mg/L	Dec-19-12	Dec-19-12	
Uranium, dissolved	0.0009		0.0002	mg/L	Dec-19-12	Dec-19-12	
Vanadium, dissolved	< 0.01		0.01	mg/L	Dec-19-12	Dec-19-12	
Zinc, dissolved	< 0.04		0.04	mg/L	Dec-19-12	Dec-19-12	
Zirconium, dissolved	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	

Total Recoverable Metals

River 1 (SW1- Fraser River Upstream) (2120762-01) Matrix: Surface Water Sampled: Dec-12-12

Aluminum, total	0.56	AO ≤ 0.1	0.05	mg/L	Dec-19-12	Dec-19-12	
Antimony, total	< 0.001	MAC = 0.006	0.001	mg/L	Dec-19-12	Dec-19-12	
Arsenic, total	< 0.005	MAC = 0.01	0.005	mg/L	Dec-19-12	Dec-19-12	
Barium, total	< 0.05	MAC = 1	0.05	mg/L	Dec-19-12	Dec-19-12	
Beryllium, total	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Bismuth, total	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Boron, total	< 0.04	MAC = 5	0.04	mg/L	Dec-19-12	Dec-19-12	
Cadmium, total	< 0.0001	MAC = 0.005	0.0001	mg/L	Dec-19-12	Dec-19-12	
Calcium, total	26		2	mg/L	Dec-19-12	Dec-19-12	
Chromium, total	< 0.005	MAC = 0.05	0.005	mg/L	Dec-19-12	Dec-19-12	
Cobalt, total	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Copper, total	0.002	AO ≤ 1	0.002	mg/L	Dec-19-12	Dec-19-12	
Iron, total	0.5	AO ≤ 0.3	0.1	mg/L	Dec-19-12	Dec-19-12	
Lead, total	< 0.001	MAC = 0.01	0.001	mg/L	Dec-19-12	Dec-19-12	
Lithium, total	0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Magnesium, total	6.9		0.1	mg/L	Dec-19-12	Dec-19-12	
Manganese, total	0.023	AO ≤ 0.05	0.002	mg/L	Dec-19-12	Dec-19-12	
Mercury, total	< 0.0002	MAC = 0.001	0.0002	mg/L	Dec-19-12	Dec-19-12	
Molybdenum, total	0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Nickel, total	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Phosphorus, total	< 0.2		0.2	mg/L	Dec-19-12	Dec-19-12	
Potassium, total	0.9		0.2	mg/L	Dec-19-12	Dec-19-12	
Selenium, total	< 0.005	MAC = 0.01	0.005	mg/L	Dec-19-12	Dec-19-12	
Silicon, total	< 5		5	mg/L	Dec-19-12	Dec-19-12	
Silver, total	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Sodium, total	6.4	AO ≤ 200	0.2	mg/L	Dec-19-12	Dec-19-12	
Strontium, total	0.13		0.01	mg/L	Dec-19-12	Dec-19-12	
Sulfur, total	< 10		10	mg/L	Dec-19-12	Dec-19-12	
Tellurium, total	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Thallium, total	< 0.0002		0.0002	mg/L	Dec-19-12	Dec-19-12	
Thorium, total	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Tin, total	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Titanium, total	< 0.05		0.05	mg/L	Dec-19-12	Dec-19-12	
Uranium, total	0.0004	MAC = 0.02	0.0002	mg/L	Dec-19-12	Dec-19-12	
Vanadium, total	< 0.01		0.01	mg/L	Dec-19-12	Dec-19-12	
Zinc, total	< 0.04	AO ≤ 5	0.04	mg/L	Dec-19-12	Dec-19-12	
Zirconium, total	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	

SAMPLE DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
12-047-02

**WORK ORDER #
REPORTED**

2120762
Dec-24-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Total Recoverable Metals, Continued

River 2 (SW2- Fraser River Downstream) (2120762-02) Matrix: Surface Water Sampled: Dec-12-12

Aluminum, total	0.24	AO ≤ 0.1	0.05	mg/L	Dec-19-12	Dec-19-12	
Antimony, total	< 0.001	MAC = 0.006	0.001	mg/L	Dec-19-12	Dec-19-12	
Arsenic, total	< 0.005	MAC = 0.01	0.005	mg/L	Dec-19-12	Dec-19-12	
Barium, total	< 0.05	MAC = 1	0.05	mg/L	Dec-19-12	Dec-19-12	
Beryllium, total	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Bismuth, total	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Boron, total	< 0.04	MAC = 5	0.04	mg/L	Dec-19-12	Dec-19-12	
Cadmium, total	0.0002	MAC = 0.005	0.0001	mg/L	Dec-19-12	Dec-19-12	
Calcium, total	24		2	mg/L	Dec-19-12	Dec-19-12	
Chromium, total	< 0.005	MAC = 0.05	0.005	mg/L	Dec-19-12	Dec-19-12	
Cobalt, total	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Copper, total	< 0.002	AO ≤ 1	0.002	mg/L	Dec-19-12	Dec-19-12	
Iron, total	0.4	AO ≤ 0.3	0.1	mg/L	Dec-19-12	Dec-19-12	
Lead, total	< 0.001	MAC = 0.01	0.001	mg/L	Dec-19-12	Dec-19-12	
Lithium, total	0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Magnesium, total	7.5		0.1	mg/L	Dec-19-12	Dec-19-12	
Manganese, total	0.021	AO ≤ 0.05	0.002	mg/L	Dec-19-12	Dec-19-12	
Mercury, total	< 0.0002	MAC = 0.001	0.0002	mg/L	Dec-19-12	Dec-19-12	
Molybdenum, total	0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Nickel, total	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Phosphorus, total	< 0.2		0.2	mg/L	Dec-19-12	Dec-19-12	
Potassium, total	0.8		0.2	mg/L	Dec-19-12	Dec-19-12	
Selenium, total	< 0.005	MAC = 0.01	0.005	mg/L	Dec-19-12	Dec-19-12	
Silicon, total	< 5		5	mg/L	Dec-19-12	Dec-19-12	
Silver, total	< 0.0005		0.0005	mg/L	Dec-19-12	Dec-19-12	
Sodium, total	6.8	AO ≤ 200	0.2	mg/L	Dec-19-12	Dec-19-12	
Strontium, total	0.15		0.01	mg/L	Dec-19-12	Dec-19-12	
Sulfur, total	< 10		10	mg/L	Dec-19-12	Dec-19-12	
Tellurium, total	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Thallium, total	< 0.0002		0.0002	mg/L	Dec-19-12	Dec-19-12	
Thorium, total	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	
Tin, total	< 0.002		0.002	mg/L	Dec-19-12	Dec-19-12	
Titanium, total	< 0.05		0.05	mg/L	Dec-19-12	Dec-19-12	
Uranium, total	0.0004	MAC = 0.02	0.0002	mg/L	Dec-19-12	Dec-19-12	
Vanadium, total	< 0.01		0.01	mg/L	Dec-19-12	Dec-19-12	
Zinc, total	< 0.04	AO ≤ 5	0.04	mg/L	Dec-19-12	Dec-19-12	
Zirconium, total	< 0.001		0.001	mg/L	Dec-19-12	Dec-19-12	

MW11-01 (2120762-03) Matrix: Ground Water Sampled: Dec-12-12

Calcium, total	120		2	mg/L	Dec-19-12	Dec-19-12	
Magnesium, total	77.9		0.1	mg/L	Dec-19-12	Dec-19-12	

MW11-02 (2120762-04) Matrix: Ground Water Sampled: Dec-12-12

Calcium, total	339		2	mg/L	Dec-19-12	Dec-19-12	
Magnesium, total	190		0.1	mg/L	Dec-19-12	Dec-19-12	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT 12-047-02

WORK ORDER # 2120762
REPORTED Dec-24-12

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Total Recoverable Metals, Continued

MW11-03 (2120762-05) Matrix: Ground Water Sampled: Dec-12-12

Calcium, total	173		2	mg/L	Dec-19-12	Dec-19-12	
Magnesium, total	131		0.1	mg/L	Dec-19-12	Dec-19-12	

MW12-05 (2120762-06) Matrix: Ground Water Sampled: Dec-12-12

Calcium, total	448		2	mg/L	Dec-19-12	Dec-19-12	
Magnesium, total	220		0.1	mg/L	Dec-19-12	Dec-19-12	

Sample Qualifiers:

F1 The sample was not field-filtered and was therefore filtered (0.45um) in the laboratory prior to analysis.
HT Parameter(s) analyzed outside of the recommended holding time.

ANALYSIS / REPORT INFORMATION

CLIENT Western Water Associates Ltd
PROJECT 12-047-02

WORK ORDER # 2120762
REPORTED Dec-24-12

Analysis Description	Method Reference(s) (* = modified from)		LAB
	Preparation	Analysis	
Hardness (Calc)	N/A	APHA 2340 B	RMD
Dissolved Metals	APHA 3030 B	APHA 3125 B	RMD
Phosphorus, Total Kjeldahl	N/A	EPA 365.4 *	KEL
Total Kjeldahl Nitrogen	N/A	EPA 351.2 *	KEL
Carbon, Total Organic in Water	N/A	APHA 5310 B	KEL
Chemical Oxygen Demand (low level)	N/A	APHA 5220 D	KEL
BOD, 5-day	N/A	APHA 5210 B	KEL
Ammonia-N, colorimetric	N/A	APHA 4500-NH3 G	KEL
pH in Water	N/A	APHA 4500-H+ B	KEL
Cyanide, Total in Liquids	APHA 4500-CN C	APHA 4500-CN E	KEL
Chloride in Water by IC	N/A	APHA 4110 B	KEL
Fluoride in Water by IC	N/A	APHA 4110 B	KEL
Nitrite-N in Water by IC	N/A	APHA 4110 B	KEL
Nitrate-N in Water by IC	N/A	APHA 4110 B	KEL
Sulfate in Water by IC	N/A	APHA 4110 B	KEL
Conductivity in Water	N/A	APHA 2510 B	KEL
Alkalinity, total	N/A	APHA 2320 B	KEL
Total Recoverable Metals	APHA 3030E *	APHA 3125 B	RMD

CERTIFICATE OF ANALYSIS



CLIENT	Summit Environmental Consultants Inc. #200-2800 29th Street VERNON BC V1T 9P9	TEL 1-250-275-4410 FAX 1-250-545-3654
ATTENTION	Ryan Rhodes	
RECEIVED / TEMP REPORTED	Oct-16-10 09:00 / 4.0 °C Oct-25-10	WORK ORDER K0J0571 PROJECT Lillooet Septic
COC #(s)	27783	PROJECT INFO 2010-8983.000

General Comments:

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; protocols published by the British Columbia Ministry of Environment (BCMOE); and/or CCME Canada-wide Standard Reference methods.

Methods not described in these publications are conducted according to procedures accepted by appropriate regulatory agencies, and/or are done in accordance with recognized professional standards using accepted testing methodologies and quality control efforts except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

- All solids results are reported on a dry weight basis unless otherwise noted
- Units:
 - mg/kg = milligrams per kilogram, equivalent to parts per million (ppm)
 - mg/L = milligrams per litre, equivalent to parts per million (ppm)
 - ug/L = micrograms per litre, equivalent to parts per billion (ppb)
 - ug/g = micrograms per gram, equivalent to parts per million (ppm)
 - ug/m3 = micrograms per cubic meter of air
- "RDL" Reported detection limit
- "<" Less than reported detection limit
- "AO" Aesthetic objective
- "MAC" Maximum acceptable concentration (health-related guideline)
- "LAB" RMD = Richmond location, KEL = Kelowna location, EDM = Edmonton location, SUB = Subcontracted

Please contact CARO if more information is needed.

CARO Analytical Services

A blue ink signature, appearing to read "SS", is written over a horizontal line.

Final Review Per:

Sarah Speier, B.Sc.
Administration Coordinator (Acting)

SAMPLE DATA



CLIENT Summit Environmental Consultants Inc.
PROJECT Lillooet Septic

WORK ORDER # KOJ0571
REPORTED Oct-25-10

Analyte	Result	Canadian DW Guidelines (May 08)	RDL	Units	Analyzed	Method	Lab	Notes
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General Parameters

WTN 38009 (KOJ0571-01) Matrix: Water Sampled: Oct-15-10 11:15

Alkalinity, Total as CaCO ₃	239		1.0	mg/L	Oct-20-10	APHA 2320 B	KEL	
Chloride	33.5	AO ≤ 250	0.10	mg/L	Oct-16-10	APHA 4110 B	KEL	
Colour, True	<5	AO ≤ 15	5	Color Unit	Oct-16-10	APHA 2120 B	KEL	
Conductivity (EC)	934		2	uS/cm	Oct-20-10	APHA 2510 B	KEL	
Cyanide (total)	<0.01	MAC = 0.2	0.01	mg/L	Oct-21-10	APHA 4500-CN	KEL	
Fluoride	0.29	MAC = 1.5	0.10	mg/L	Oct-16-10	APHA 4110 B	KEL	
Hardness, Total (Total as CaCO ₃)	401		2.91	mg/L	Oct-21-10	APHA 2340 B	RMD	
Nitrogen, Nitrate as N	0.40	MAC = 10	0.01	mg/L	Oct-16-10	APHA 4110 B	KEL	
Nitrogen, Nitrite as N	<0.01	MAC = 1	0.01	mg/L	Oct-16-10	APHA 4110 B	KEL	
pH	7.90	AO = 6.5 - 8.5	0.01	pH Units	Oct-16-10	APHA 4500-H+	KEL	
Solids, Total Dissolved	657	AO ≤ 500	5	mg/L	Oct-20-10	APHA 2540 C	KEL	
Sulfate	232	AO ≤ 500	10.0	mg/L	Oct-16-10	APHA 4110 B	KEL	
Turbidity	0.1	Varies, See Guidelines	0.1	NTU	Oct-16-10	APHA 2130 B	KEL	
UV Transmittance @ 254nm	98.4		0.1	%	Oct-19-10	APHA 5910B	KEL	

WTN 37238 (KOJ0571-02) Matrix: Water Sampled: Oct-15-10 12:00

Alkalinity, Total as CaCO ₃	299		1.0	mg/L	Oct-20-10	APHA 2320 B	KEL	
Chloride	25.1	AO ≤ 250	0.10	mg/L	Oct-16-10	APHA 4110 B	KEL	
Colour, True	<5	AO ≤ 15	5	Color Unit	Oct-16-10	APHA 2120 B	KEL	
Conductivity (EC)	850		2	uS/cm	Oct-20-10	APHA 2510 B	KEL	
Cyanide (total)	<0.01	MAC = 0.2	0.01	mg/L	Oct-21-10	APHA 4500-CN	KEL	
Fluoride	0.16	MAC = 1.5	0.10	mg/L	Oct-16-10	APHA 4110 B	KEL	
Hardness, Total (Total as CaCO ₃)	419		2.91	mg/L	Oct-21-10	APHA 2340 B	RMD	
Nitrogen, Nitrate as N	2.09	MAC = 10	0.01	mg/L	Oct-16-10	APHA 4110 B	KEL	
Nitrogen, Nitrite as N	<0.01	MAC = 1	0.01	mg/L	Oct-16-10	APHA 4110 B	KEL	
pH	7.87	AO = 6.5 - 8.5	0.01	pH Units	Oct-16-10	APHA 4500-H+	KEL	
Solids, Total Dissolved	589	AO ≤ 500	5	mg/L	Oct-20-10	APHA 2540 C	KEL	
Sulfate	144	AO ≤ 500	10.0	mg/L	Oct-16-10	APHA 4110 B	KEL	
Turbidity	0.3	Varies, See Guidelines	0.1	NTU	Oct-16-10	APHA 2130 B	KEL	
UV Transmittance @ 254nm	98.6		0.1	%	Oct-19-10	APHA 5910B	KEL	

Total Recoverable Metals by ICPMS

WTN 38009 (KOJ0571-01) Matrix: Water Sampled: Oct-15-10 11:15

Aluminum	<0.050	AO ≤ 0.1	0.050	mg/L	Oct-21-10	EPA 6020A	RMD	
Antimony	<0.0010	MAC = 0.006	0.0010	mg/L	Oct-21-10	EPA 6020A	RMD	
Arsenic	<0.0050	MAC = 0.01	0.0050	mg/L	Oct-21-10	EPA 6020A	RMD	
Barium	0.0283	MAC = 1	0.0050	mg/L	Oct-21-10	EPA 6020A	RMD	
Beryllium	<0.0010		0.0010	mg/L	Oct-21-10	EPA 6020A	RMD	
Boron	0.216	MAC = 5	0.040	mg/L	Oct-21-10	EPA 6020A	RMD	
Cadmium	<0.00010	MAC = 0.005	0.00010	mg/L	Oct-21-10	EPA 6020A	RMD	
Calcium	89.1		1.0	mg/L	Oct-21-10	EPA 6020A	RMD	
Chromium	<0.0050	MAC = 0.05	0.0050	mg/L	Oct-21-10	EPA 6020A	RMD	
Cobalt	<0.00050		0.00050	mg/L	Oct-21-10	EPA 6020A	RMD	
Copper	0.0028	AO ≤ 1	0.0010	mg/L	Oct-21-10	EPA 6020A	RMD	
Iron	0.42	AO ≤ 0.3	0.10	mg/L	Oct-21-10	EPA 6020A	RMD	

SAMPLE DATA



**CLIENT
PROJECT**

Summit Environmental Consultants Inc.
Lillooet Septic

**WORK ORDER #
REPORTED**

K0J0571
Oct-25-10

Analyte	Result	Canadian DW Guidelines (May 08)	RDL	Units	Analyzed	Method	Lab	Notes
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Total Recoverable Metals by ICPMS, Continued

WTN 38009 (K0J0571-01) Matrix: Water Sampled: Oct-15-10 11:15, Continued

Lead	<0.0010	MAC = 0.01	0.0010	mg/L	Oct-21-10	EPA 6020A	RMD	
Magnesium	43.5		0.10	mg/L	Oct-21-10	EPA 6020A	RMD	
Manganese	<0.0020	AO ≤ 0.05	0.0020	mg/L	Oct-21-10	EPA 6020A	RMD	
Mercury	<0.00050	MAC = 0.001	0.00050	mg/L	Oct-21-10	EPA 6020A	RMD	
Molybdenum	0.0019		0.0010	mg/L	Oct-21-10	EPA 6020A	RMD	
Nickel	0.0043		0.0020	mg/L	Oct-21-10	EPA 6020A	RMD	
Phosphorus	<0.20		0.20	mg/L	Oct-21-10	EPA 6020A	RMD	
Potassium	1.04		0.10	mg/L	Oct-21-10	EPA 6020A	RMD	
Selenium	0.0043	MAC = 0.01	0.0030	mg/L	Oct-21-10	EPA 6020A	RMD	
Silicon	2.6		2.0	mg/L	Oct-21-10	EPA 6020A	RMD	
Silver	<0.00050		0.00050	mg/L	Oct-21-10	EPA 6020A	RMD	
Sodium	32.4	AO ≤ 200	0.10	mg/L	Oct-21-10	EPA 6020A	RMD	
Uranium	<0.00020	MAC = 0.02	0.00020	mg/L	Oct-21-10	EPA 6020A	RMD	
Vanadium	<0.010		0.010	mg/L	Oct-21-10	EPA 6020A	RMD	
Zinc	0.016	AO ≤ 5	0.010	mg/L	Oct-21-10	EPA 6020A	RMD	

WTN 37238 (K0J0571-02) Matrix: Water Sampled: Oct-15-10 12:00

Aluminum	<0.050	AO ≤ 0.1	0.050	mg/L	Oct-21-10	EPA 6020A	RMD	
Antimony	<0.0010	MAC = 0.006	0.0010	mg/L	Oct-21-10	EPA 6020A	RMD	
Arsenic	<0.0050	MAC = 0.01	0.0050	mg/L	Oct-21-10	EPA 6020A	RMD	
Barium	0.0457	MAC = 1	0.0050	mg/L	Oct-21-10	EPA 6020A	RMD	
Beryllium	<0.0010		0.0010	mg/L	Oct-21-10	EPA 6020A	RMD	
Boron	0.186	MAC = 5	0.040	mg/L	Oct-21-10	EPA 6020A	RMD	
Cadmium	<0.00010	MAC = 0.005	0.00010	mg/L	Oct-21-10	EPA 6020A	RMD	
Calcium	75.0		1.0	mg/L	Oct-21-10	EPA 6020A	RMD	
Chromium	<0.0050	MAC = 0.05	0.0050	mg/L	Oct-21-10	EPA 6020A	RMD	
Cobalt	<0.00050		0.00050	mg/L	Oct-21-10	EPA 6020A	RMD	
Copper	0.0022	AO ≤ 1	0.0010	mg/L	Oct-21-10	EPA 6020A	RMD	
Iron	0.28	AO ≤ 0.3	0.10	mg/L	Oct-21-10	EPA 6020A	RMD	
Lead	<0.0010	MAC = 0.01	0.0010	mg/L	Oct-21-10	EPA 6020A	RMD	
Magnesium	56.3		0.10	mg/L	Oct-21-10	EPA 6020A	RMD	
Manganese	<0.0020	AO ≤ 0.05	0.0020	mg/L	Oct-21-10	EPA 6020A	RMD	
Mercury	<0.00050	MAC = 0.001	0.00050	mg/L	Oct-21-10	EPA 6020A	RMD	
Molybdenum	0.0053		0.0010	mg/L	Oct-21-10	EPA 6020A	RMD	
Nickel	0.0033		0.0020	mg/L	Oct-21-10	EPA 6020A	RMD	
Phosphorus	<0.20		0.20	mg/L	Oct-21-10	EPA 6020A	RMD	
Potassium	3.06		0.10	mg/L	Oct-21-10	EPA 6020A	RMD	
Selenium	0.0101	MAC = 0.01	0.0030	mg/L	Oct-21-10	EPA 6020A	RMD	
Silicon	3.0		2.0	mg/L	Oct-21-10	EPA 6020A	RMD	
Silver	<0.00050		0.00050	mg/L	Oct-21-10	EPA 6020A	RMD	
Sodium	15.7	AO ≤ 200	0.10	mg/L	Oct-21-10	EPA 6020A	RMD	
Uranium	0.00244	MAC = 0.02	0.00020	mg/L	Oct-21-10	EPA 6020A	RMD	
Vanadium	<0.010		0.010	mg/L	Oct-21-10	EPA 6020A	RMD	
Zinc	0.011	AO ≤ 5	0.010	mg/L	Oct-21-10	EPA 6020A	RMD	

Microbiological Parameters

SAMPLE DATA



CLIENT Summit Environmental Consultants Inc.
PROJECT Lillooet Septic

WORK ORDER # K0J0571
REPORTED Oct-25-10

Analyte	Result	Canadian DW Guidelines (May 08)	RDL	Units	Analyzed	Method	Lab	Notes
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Microbiological Parameters, Continued

WTN 38009 (K0J0571-01) Matrix: Water Sampled: Oct-15-10 11:15

Coliforms, Total	<1	MAC < 1	1	CFU/100mL	Oct-16-10	APHA 9222	KEL	
E. coli	<1	MAC < 1	1	CFU/100mL	Oct-16-10	APHA 9222	KEL	

WTN 37238 (K0J0571-02) Matrix: Water Sampled: Oct-15-10 12:00

Coliforms, Total	110	MAC < 1	1	CFU/100mL	Oct-16-10	APHA 9222	KEL	
E. coli	<1	MAC < 1	1	CFU/100mL	Oct-16-10	APHA 9222	KEL	

QUALITY CONTROL DATA



CLIENT Summit Environmental Consultants Inc.
PROJECT Lillooet Septic

WORK ORDER # KOJ0571
REPORTED Oct-25-10

The following section reports quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with quality control samples that ensure your data is of the highest quality. Common QC types include:

- Method Blank (Blk): Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- Duplicate (Dup): Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- Blank Spike (BS): A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- Standard Reference Material (SRM): A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested for.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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General Parameters, Batch K004045

Blank (K004045-BLK1)				Analyzed: Oct-15-10						
Turbidity	<	0.1	NTU							
Blank (K004045-BLK2)				Analyzed: Oct-15-10						
Turbidity	<	0.1	NTU							
Blank (K004045-BLK3)				Analyzed: Oct-15-10						
Turbidity	<	0.1	NTU							
Blank (K004045-BLK4)				Analyzed: Oct-15-10						
Turbidity	<	0.1	NTU							
LCS (K004045-BS1)				Analyzed: Oct-15-10						
Turbidity	39	0.1	NTU	40.0		98	85-115			
LCS (K004045-BS2)				Analyzed: Oct-15-10						
Turbidity	39	0.1	NTU	40.0		98	85-115			
LCS (K004045-BS3)				Analyzed: Oct-15-10						
Turbidity	39	0.1	NTU	40.0		98	85-115			
LCS (K004045-BS4)				Analyzed: Oct-15-10						
Turbidity	39	0.1	NTU	40.0		98	85-115			

General Parameters, Batch K004049

Blank (K004049-BLK1)				Analyzed: Oct-16-10						
Chloride	<	0.10	mg/L							
Fluoride	<	0.10	mg/L							
Nitrogen, Nitrate as N	<	0.01	mg/L							
Nitrogen, Nitrite as N	<	0.01	mg/L							
Sulfate	<	1.0	mg/L							
Blank (K004049-BLK2)				Analyzed: Oct-16-10						
Chloride	<	0.10	mg/L							
Fluoride	<	0.10	mg/L							
Nitrogen, Nitrate as N	<	0.01	mg/L							
Nitrogen, Nitrite as N	<	0.01	mg/L							
Sulfate	<	1.0	mg/L							

QUALITY CONTROL DATA



**CLIENT
PROJECT**

Summit Environmental Consultants Inc.
Lillooet Septic

**WORK ORDER #
REPORTED**

K0J0571
Oct-25-10

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD Limit	Notes
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General Parameters, Batch K004049, Continued

Blank (K004049-BLK3)

Analyzed: Oct-16-10

Chloride	<	0.10	mg/L
Fluoride	<	0.10	mg/L
Nitrogen, Nitrate as N	<	0.01	mg/L
Nitrogen, Nitrite as N	<	0.01	mg/L
Sulfate	<	1.0	mg/L

Blank (K004049-BLK4)

Analyzed: Oct-16-10

Chloride	<	0.10	mg/L
Fluoride	<	0.10	mg/L
Nitrogen, Nitrate as N	<	0.01	mg/L
Nitrogen, Nitrite as N	<	0.01	mg/L
Sulfate	<	1.0	mg/L

Blank (K004049-BLK5)

Analyzed: Oct-16-10

Chloride	<	0.10	mg/L
Fluoride	<	0.10	mg/L
Nitrogen, Nitrate as N	<	0.01	mg/L
Nitrogen, Nitrite as N	<	0.01	mg/L
Sulfate	<	1.0	mg/L

LCS (K004049-BS1)

Analyzed: Oct-16-10

Chloride	1.02	0.10	mg/L	1.00	102	85-115
Fluoride	0.96	0.10	mg/L	1.00	96	85-115
Nitrogen, Nitrate as N	0.899	0.01	mg/L	1.00	90	85-115
Nitrogen, Nitrite as N	0.962	0.01	mg/L	1.00	96	85-115
Sulfate	1.0	1.0	mg/L	1.00	104	85-115

LCS (K004049-BS2)

Analyzed: Oct-16-10

Chloride	0.99	0.10	mg/L	1.00	99	85-115
Fluoride	0.91	0.10	mg/L	1.00	91	85-115
Nitrogen, Nitrate as N	0.875	0.01	mg/L	1.00	87	85-115
Nitrogen, Nitrite as N	0.976	0.01	mg/L	1.00	98	85-115
Sulfate	1.1	1.0	mg/L	1.00	114	85-115

LCS (K004049-BS3)

Analyzed: Oct-16-10

Chloride	0.97	0.10	mg/L	1.00	97	85-115
Fluoride	0.98	0.10	mg/L	1.00	98	85-115
Nitrogen, Nitrate as N	0.970	0.01	mg/L	1.00	97	85-115
Nitrogen, Nitrite as N	0.960	0.01	mg/L	1.00	96	85-115
Sulfate	1.0	1.0	mg/L	1.00	99	85-115

LCS (K004049-BS4)

Analyzed: Oct-16-10

Chloride	1.00	0.10	mg/L	1.00	100	85-115
Fluoride	0.96	0.10	mg/L	1.00	96	85-115
Nitrogen, Nitrate as N	0.957	0.01	mg/L	1.00	96	85-115
Nitrogen, Nitrite as N	0.954	0.01	mg/L	1.00	95	85-115
Sulfate	1.0	1.0	mg/L	1.00	100	85-115

LCS (K004049-BS5)

Analyzed: Oct-16-10

Chloride	0.99	0.10	mg/L	1.00	99	85-115
Fluoride	0.89	0.10	mg/L	1.00	89	85-115
Nitrogen, Nitrate as N	0.953	0.01	mg/L	1.00	95	85-115
Nitrogen, Nitrite as N	0.911	0.01	mg/L	1.00	91	85-115
Sulfate	1.0	1.0	mg/L	1.00	103	85-115

General Parameters, Batch K004061

Blank (K004061-BLK1)

Analyzed: Oct-19-10

UV Transmittance @ 254nm	<	0.1	%
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QUALITY CONTROL DATA



**CLIENT
PROJECT**

Summit Environmental Consultants Inc.
Lillooet Septic

**WORK ORDER #
REPORTED**

K0J0571
Oct-25-10

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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General Parameters, Batch K004061, Continued

Blank (K004061-BLK2)				Analyzed: Oct-19-10						
UV Transmittance @ 254nm	<	0.1	%							
Blank (K004061-BLK3)				Analyzed: Oct-19-10						
UV Transmittance @ 254nm	<	0.1	%							
Blank (K004061-BLK4)				Analyzed: Oct-19-10						
UV Transmittance @ 254nm	<	0.1	%							
Reference (K004061-SRM1)				Analyzed: Oct-19-10						
UV Transmittance @ 254nm	62.9	0.1	%	66.6		94	80-120			
Reference (K004061-SRM2)				Analyzed: Oct-19-10						
UV Transmittance @ 254nm	62.5	0.1	%	66.6		94	80-120			
Reference (K004061-SRM3)				Analyzed: Oct-19-10						
UV Transmittance @ 254nm	62.5	0.1	%	66.6		94	80-120			
Reference (K004061-SRM4)				Analyzed: Oct-19-10						
UV Transmittance @ 254nm	62.4	0.1	%	66.6		94	80-120			

General Parameters, Batch K004072

Blank (K004072-BLK1)				Analyzed: Oct-20-10						
Solids, Total Dissolved	<	5	mg/L							
Blank (K004072-BLK2)				Analyzed: Oct-20-10						
Solids, Total Dissolved	<	5	mg/L							
Duplicate (K004072-DUP1)				Source: K0J0571-02		Analyzed: Oct-20-10				
Solids, Total Dissolved	548	5	mg/L		589			7	15	
Reference (K004072-SRM1)				Analyzed: Oct-20-10						
Solids, Total Dissolved	239	5	mg/L	240		100	85-115			
Reference (K004072-SRM2)				Analyzed: Oct-20-10						
Solids, Total Dissolved	242	5	mg/L	240		101	85-115			

General Parameters, Batch K004078

Blank (K004078-BLK1)				Analyzed: Oct-20-10						
Alkalinity, Total as CaCO3	<	1.0	mg/L							
Conductivity (EC)	<	2	uS/cm							
Blank (K004078-BLK2)				Analyzed: Oct-20-10						
Alkalinity, Total as CaCO3	<	1.0	mg/L							
Conductivity (EC)	<	2	uS/cm							
Blank (K004078-BLK3)				Analyzed: Oct-20-10						
Alkalinity, Total as CaCO3	<	1.0	mg/L							
Conductivity (EC)	<	2	uS/cm							
Blank (K004078-BLK4)				Analyzed: Oct-20-10						
Alkalinity, Total as CaCO3	<	1.0	mg/L							
Conductivity (EC)	<	2	uS/cm							
LCS (K004078-BS1)				Analyzed: Oct-20-10						
Alkalinity, Total as CaCO3	101	1.0	mg/L	100		101	95-109			

QUALITY CONTROL DATA



**CLIENT
PROJECT**

Summit Environmental Consultants Inc.
Lillooet Septic

**WORK ORDER #
REPORTED**

K0J0571
Oct-25-10

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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General Parameters, Batch K004078, Continued

LCS (K004078-BS2)				Analyzed: Oct-20-10						
Alkalinity, Total as CaCO ₃	101	1.0	mg/L	100		101	95-109			
LCS (K004078-BS3)				Analyzed: Oct-20-10						
Alkalinity, Total as CaCO ₃	101	1.0	mg/L	100		101	95-109			
LCS (K004078-BS4)				Analyzed: Oct-20-10						
Alkalinity, Total as CaCO ₃	101	1.0	mg/L	100		101	95-109			
LCS (K004078-BS7)				Analyzed: Oct-20-10						
Conductivity (EC)	1390	2	uS/cm	1410		99	95-105			
LCS (K004078-BS8)				Analyzed: Oct-20-10						
Conductivity (EC)	1390	2	uS/cm	1410		99	95-105			
Reference (K004078-SRM1)				Analyzed: Oct-20-10						
pH	7.01	0.01	pH Units	7.00		100	98-102			
Reference (K004078-SRM2)				Analyzed: Oct-20-10						
pH	7.01	0.01	pH Units	7.00		100	98-102			
Reference (K004078-SRM3)				Analyzed: Oct-20-10						
pH	7.01	0.01	pH Units	7.00		100	98-102			
Reference (K004078-SRM4)				Analyzed: Oct-20-10						
pH	7.01	0.01	pH Units	7.00		100	98-102			

General Parameters, Batch K004106

Blank (K004106-BLK1)				Analyzed: Oct-21-10						
Colour, True	<	5	Color Unit							
Blank (K004106-BLK2)				Analyzed: Oct-21-10						
Colour, True	<	5	Color Unit							
Blank (K004106-BLK3)				Analyzed: Oct-21-10						
Colour, True	<	5	Color Unit							
LCS (K004106-BS1)				Analyzed: Oct-21-10						
Colour, True	9	5	Color Unit	9.00		100	98-102			
LCS (K004106-BS2)				Analyzed: Oct-21-10						
Colour, True	9	5	Color Unit	9.00		100	98-102			
LCS (K004106-BS3)				Analyzed: Oct-21-10						
Colour, True	9	5	Color Unit	9.00		100	98-102			

General Parameters, Batch K004107

Blank (K004107-BLK1)				Analyzed: Oct-21-10						
Cyanide (total)	<	0.01	mg/L							
LCS (K004107-BS1)				Analyzed: Oct-21-10						
Cyanide (total)	10.3	0.01	mg/L	10.0		103	78-120			

Microbiological Parameters, Batch K004055

Blank (K004055-BLK1)				Analyzed: Oct-16-10						
Coliforms, Total	<	1	CFU/100mL							
E. coli	<	1	CFU/100mL							

QUALITY CONTROL DATA



**CLIENT
PROJECT**

Summit Environmental Consultants Inc.
Lillooet Septic

**WORK ORDER #
REPORTED**

K0J0571
Oct-25-10

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
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Microbiological Parameters, Batch K004055, Continued

Blank (K004055-BLK2)

Analyzed: Oct-18-10

Coliforms, Total	<	1	CFU/100mL
E. coli	<	1	CFU/100mL

Blank (K004055-BLK3)

Analyzed: Oct-18-10

Coliforms, Total	<	1	CFU/100mL
E. coli	<	1	CFU/100mL

Blank (K004055-BLK4)

Analyzed: Oct-18-10

Coliforms, Total	<	1	CFU/100mL
E. coli	<	1	CFU/100mL

Duplicate (K004055-DUP1)

Source: K0J0571-01

Analyzed: Oct-16-10

Coliforms, Total	<	1	CFU/100mL	<	40
E. coli	<	1	CFU/100mL	<	40

Total Recoverable Metals by ICPMS, Batch R002756

Blank (R002756-BLK1)

Analyzed: Oct-21-10

Aluminum	<	0.050	mg/L
Antimony	<	0.0010	mg/L
Arsenic	<	0.0050	mg/L
Barium	<	0.0050	mg/L
Beryllium	<	0.0010	mg/L
Boron	<	0.040	mg/L
Cadmium	<	0.00010	mg/L
Calcium	<	1.0	mg/L
Chromium	<	0.0050	mg/L
Cobalt	<	0.00050	mg/L
Copper	<	0.0010	mg/L
Iron	<	0.10	mg/L
Lead	<	0.0010	mg/L
Magnesium	<	0.10	mg/L
Manganese	<	0.0020	mg/L
Mercury	<	0.00050	mg/L
Molybdenum	<	0.0010	mg/L
Nickel	<	0.0020	mg/L
Phosphorus	<	0.20	mg/L
Potassium	<	0.10	mg/L
Selenium	<	0.0030	mg/L
Silicon	<	2.0	mg/L
Silver	<	0.00050	mg/L
Sodium	<	0.10	mg/L
Uranium	<	0.00020	mg/L
Vanadium	<	0.010	mg/L
Zinc	<	0.010	mg/L

Blank (R002756-BLK2)

Analyzed: Oct-21-10

Aluminum	<	0.050	mg/L
Antimony	<	0.0010	mg/L
Arsenic	<	0.0050	mg/L
Barium	<	0.0050	mg/L
Beryllium	<	0.0010	mg/L
Boron	<	0.040	mg/L
Cadmium	<	0.00010	mg/L
Calcium	<	1.0	mg/L
Chromium	<	0.0050	mg/L
Cobalt	<	0.00050	mg/L
Copper	<	0.0010	mg/L
Iron	<	0.10	mg/L
Lead	<	0.0010	mg/L
Magnesium	<	0.10	mg/L
Manganese	<	0.0020	mg/L

QUALITY CONTROL DATA



**CLIENT
PROJECT**

Summit Environmental Consultants Inc.
Lillooet Septic

**WORK ORDER #
REPORTED**

K0J0571
Oct-25-10

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Total Recoverable Metals by ICPMS, Batch R002756, Continued

Blank (R002756-BLK2), Continued

Analyzed: Oct-21-10

Mercury	<	0.00050	mg/L
Molybdenum	<	0.0010	mg/L
Nickel	<	0.0020	mg/L
Phosphorus	<	0.20	mg/L
Potassium	<	0.10	mg/L
Selenium	<	0.0030	mg/L
Silicon	<	2.0	mg/L
Silver	<	0.00050	mg/L
Sodium	<	0.10	mg/L
Uranium	<	0.00020	mg/L
Vanadium	<	0.010	mg/L
Zinc	<	0.010	mg/L

Blank (R002756-BLK3)

Analyzed: Oct-21-10

Aluminum	<	0.050	mg/L
Antimony	<	0.0010	mg/L
Arsenic	<	0.0050	mg/L
Barium	<	0.0050	mg/L
Beryllium	<	0.0010	mg/L
Boron	<	0.040	mg/L
Cadmium	<	0.00010	mg/L
Calcium	<	1.0	mg/L
Chromium	<	0.0050	mg/L
Cobalt	<	0.00050	mg/L
Copper	<	0.0010	mg/L
Iron	<	0.10	mg/L
Lead	<	0.0010	mg/L
Magnesium	<	0.10	mg/L
Manganese	<	0.0020	mg/L
Mercury	<	0.00050	mg/L
Molybdenum	<	0.0010	mg/L
Nickel	<	0.0020	mg/L
Phosphorus	<	0.20	mg/L
Potassium	<	0.10	mg/L
Selenium	<	0.0030	mg/L
Silicon	<	2.0	mg/L
Silver	<	0.00050	mg/L
Sodium	<	0.10	mg/L
Uranium	<	0.00020	mg/L
Vanadium	<	0.010	mg/L
Zinc	<	0.010	mg/L

Duplicate (R002756-DUP3)

Source: K0J0571-01

Analyzed: Oct-21-10

Aluminum	<	0.050	mg/L	<		30
Antimony	<	0.0010	mg/L	<		25
Arsenic	<	0.0050	mg/L	<		25
Barium	0.0274	0.0050	mg/L	0.0283	3	30
Beryllium	<	0.0010	mg/L	<		30
Boron	0.223	0.040	mg/L	0.216	3	40
Cadmium	<	0.00010	mg/L	<		20
Calcium	92.5	1.0	mg/L	89.1	4	20
Chromium	<	0.0050	mg/L	<		25
Cobalt	<	0.00050	mg/L	<		20
Copper	0.0029	0.0010	mg/L	0.0028		30
Iron	0.32	0.10	mg/L	0.42		30
Lead	<	0.0010	mg/L	<		20
Magnesium	49.5	0.10	mg/L	43.5	13	20
Manganese	<	0.0020	mg/L	<		20
Mercury	<	0.00050	mg/L	<		40
Molybdenum	0.0020	0.0010	mg/L	0.0019		20
Nickel	0.0038	0.0020	mg/L	0.0043		20
Phosphorus	<	0.20	mg/L	<		20
Potassium	1.20	0.10	mg/L	1.04	14	20

QUALITY CONTROL DATA



CLIENT Summit Environmental Consultants Inc.
PROJECT Lillooet Septic

WORK ORDER # K0J0571
REPORTED Oct-25-10

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Total Recoverable Metals by ICPMS, Batch R002756, Continued

Duplicate (R002756-DUP3), Continued		Source: K0J0571-01		Analyzed: Oct-21-10	
Selenium	0.0047	0.0030	mg/L	0.0043	30
Silicon	<	2.0	mg/L	2.6	40
Silver	<	0.00050	mg/L	<	30
Sodium	37.3	0.10	mg/L	32.4	20
Uranium	<	0.00020	mg/L	<	20
Vanadium	<	0.010	mg/L	<	20
Zinc	0.016	0.010	mg/L	0.016	20

Reference (R002756-SRM1)		Analyzed: Oct-21-10	
Aluminum	0.395	0.050	mg/L
Antimony	0.0820	0.0010	mg/L
Arsenic	0.177	0.0050	mg/L
Barium	0.550	0.0050	mg/L
Beryllium	0.0651	0.0010	mg/L
Boron	3.77	0.040	mg/L
Cadmium	0.0802	0.00010	mg/L
Calcium	11.7	1.0	mg/L
Chromium	0.311	0.0050	mg/L
Cobalt	0.0403	0.00050	mg/L
Copper	0.214	0.0010	mg/L
Iron	0.58	0.10	mg/L
Lead	0.273	0.0010	mg/L
Magnesium	3.80	0.10	mg/L
Manganese	0.146	0.0020	mg/L
Molybdenum	0.204	0.0010	mg/L
Nickel	0.345	0.0020	mg/L
Potassium	6.59	0.10	mg/L
Selenium	0.122	0.0030	mg/L
Sodium	9.50	0.10	mg/L
Vanadium	0.417	0.010	mg/L
Zinc	2.20	0.010	mg/L

Reference (R002756-SRM2)		Analyzed: Oct-21-10	
Aluminum	0.345	0.050	mg/L
Antimony	0.0778	0.0010	mg/L
Arsenic	0.161	0.0050	mg/L
Barium	0.532	0.0050	mg/L
Beryllium	0.0585	0.0010	mg/L
Boron	3.47	0.040	mg/L
Cadmium	0.0778	0.00010	mg/L
Calcium	10.5	1.0	mg/L
Chromium	0.271	0.0050	mg/L
Cobalt	0.0372	0.00050	mg/L
Copper	0.198	0.0010	mg/L
Iron	0.68	0.10	mg/L
Lead	0.258	0.0010	mg/L
Magnesium	3.23	0.10	mg/L
Manganese	0.136	0.0020	mg/L
Molybdenum	0.195	0.0010	mg/L
Nickel	0.314	0.0020	mg/L
Potassium	6.00	0.10	mg/L
Selenium	0.121	0.0030	mg/L
Sodium	8.09	0.10	mg/L
Vanadium	0.371	0.010	mg/L
Zinc	2.08	0.010	mg/L

Reference (R002756-SRM3)		Analyzed: Oct-21-10	
Aluminum	0.361	0.050	mg/L
Antimony	0.0754	0.0010	mg/L
Arsenic	0.171	0.0050	mg/L
Barium	0.527	0.0050	mg/L
Beryllium	0.0651	0.0010	mg/L
Boron	3.70	0.040	mg/L

QUALITY CONTROL DATA



**CLIENT
PROJECT**

Summit Environmental Consultants Inc.
Lillooet Septic

**WORK ORDER #
REPORTED**

K0J0571
Oct-25-10

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD Limit	Notes
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Total Recoverable Metals by ICPMS, Batch R002756, Continued

Reference (R002756-SRM3), Continued

Analyzed: Oct-21-10

Cadmium	0.0764	0.00010	mg/L	0.0790	97	91-110
Calcium	11.0	1.0	mg/L	10.3	107	88-119
Chromium	0.281	0.0050	mg/L	0.274	103	89-113
Cobalt	0.0378	0.00050	mg/L	0.0390	97	90-113
Copper	0.196	0.0010	mg/L	0.200	98	93-114
Iron	0.58	0.10	mg/L	0.590	98	85-118
Lead	0.261	0.0010	mg/L	0.260	100	89-112
Magnesium	3.40	0.10	mg/L	3.37	101	80-117
Manganese	0.136	0.0020	mg/L	0.138	99	88-113
Molybdenum	0.190	0.0010	mg/L	0.200	95	90-111
Nickel	0.323	0.0020	mg/L	0.340	95	92-110
Potassium	6.08	0.10	mg/L	6.21	98	87-111
Selenium	0.122	0.0030	mg/L	0.120	102	89-113
Sodium	8.56	0.10	mg/L	8.32	103	84-121
Vanadium	0.386	0.010	mg/L	0.390	99	87-111
Zinc	2.02	0.010	mg/L	2.02	100	89-114

CERTIFICATE OF ANALYSIS

**CLIENT****Western Water Associates Ltd**

10051 Hwy 97 N

Lake Country BC

V4VC 1P6

TEL 1-250-766-1030

FAX -

ATTENTION**Bryer Manwell****RECEIVED / TEMP**

Oct-11-11 08:00 / 8.0 °C

REPORTED

Oct-18-11

COC #(s)

Note & Email

WORK ORDER

K1J0330

PROJECT

Lillooet Dump Site

PROJECT INFO

11-047-01

General Comments:

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; protocols published by the British Columbia Ministry of Environment (BCMOE); and/or CCME Canada-wide Standard Reference methods.

Methods not described in these publications are conducted according to procedures accepted by appropriate regulatory agencies, and/or are done in accordance with recognized professional standards using accepted testing methodologies and quality control efforts except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

- All solids results are reported on a dry weight basis unless otherwise noted
- Units:
 - mg/kg = milligrams per kilogram, equivalent to parts per million (ppm)
 - mg/L = milligrams per litre, equivalent to parts per million (ppm)
 - ug/L = micrograms per litre, equivalent to parts per billion (ppb)
 - ug/g = micrograms per gram, equivalent to parts per million (ppm)
 - ug/m3 = micrograms per cubic meter of air
- "RDL" Reported detection limit
- "<" Less than reported detection limit
- "AO" Aesthetic objective
- "MAC" Maximum acceptable concentration (health-related guideline)
- "LAB" RMD = Richmond location, KEL = Kelowna location, EDM = Edmonton location, SUB = Subcontracted

Please contact CARO if more information is needed or to provide feedback on our services.

CARO Analytical Services

A handwritten signature in blue ink, appearing to read "J. Shanko".

Final Review Per:

Jennifer Shanko, ASCT

Administration Coordinator

CARO Analytical Services

#120 12791 Clarke Place

Richmond, BC V6V 2H9

Tel: 604-279-1499 Fax: 604-279-1599

#102 3677 Highway 97N

Kelowna, BC V1X 5C3

Tel: 250-765-9646 Fax: 250-765-3893

17225 109 Avenue

Edmonton, AB T5S 1H7

Tel: 780-489-9100 Fax: 780-489-9700

www.caro.ca

Page 1 of 20

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet Dump Site

WORK ORDER # K1J0330
REPORTED Oct-18-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters

MW-01 (K1J0330-01) Matrix: Water Sampled: Oct-06-11

Alkalinity, Total as CaCO ₃	242		1.0	mg/L	Oct-12-11	Oct-12-11	
Carbon, Total Organic	2.3		0.5	mg/L	Oct-13-11	Oct-14-11	
Chloride	25.3	AO ≤ 250	0.10	mg/L	Oct-12-11	Oct-13-11	
Conductivity (EC)	757		2	uS/cm	Oct-12-11	Oct-12-11	
Hardness, Total (Total as CaCO ₃)	379		5.00	mg/L	Oct-16-11	Oct-17-11	
Hardness, Total (Diss. as CaCO ₃)	370		5	mg/L	Oct-14-11	Oct-15-11	
Nitrogen, Ammonia as N	0.03		0.01	mg/L	Oct-11-11	Oct-13-11	HT
Nitrogen, Nitrate+Nitrite as N	2.36		0.020	mg/L	Oct-12-11	Oct-13-11	
Nitrogen, Nitrate as N	2.26	MAC = 10	0.010	mg/L	Oct-12-11	Oct-13-11	HT
Nitrogen, Nitrite as N	0.09	MAC = 1	0.01	mg/L	Oct-12-11	Oct-13-11	HT
Nitrogen, Total Kjeldahl	< 0.05		0.05	mg/L	Oct-11-11	Oct-18-11	HT
pH	7.97	AO = 6.5 - 8.5	0.01	pH Units	Oct-12-11	Oct-12-11	HT
Sulfate	157	AO ≤ 500	10.0	mg/L	Oct-12-11	Oct-13-11	

MW-02 (K1J0330-02) Matrix: Water Sampled: Oct-07-11

Alkalinity, Total as CaCO ₃	271		1.0	mg/L	Oct-12-11	Oct-13-11	
Carbon, Total Organic	82.0		0.5	mg/L	Oct-13-11	Oct-14-11	
Chloride	37.6	AO ≤ 250	0.10	mg/L	Oct-12-11	Oct-13-11	
Conductivity (EC)	802		2	uS/cm	Oct-12-11	Oct-13-11	
Hardness, Total (Total as CaCO ₃)	5180		5.00	mg/L	Oct-16-11	Oct-17-11	
Hardness, Total (Diss. as CaCO ₃)	330		5	mg/L	Oct-14-11	Oct-15-11	
Nitrogen, Ammonia as N	0.22		0.01	mg/L	Oct-11-11	Oct-13-11	HT
Nitrogen, Nitrate+Nitrite as N	0.892		0.020	mg/L	Oct-12-11	Oct-13-11	
Nitrogen, Nitrate as N	0.866	MAC = 10	0.010	mg/L	Oct-12-11	Oct-13-11	HT
Nitrogen, Nitrite as N	0.03	MAC = 1	0.01	mg/L	Oct-12-11	Oct-13-11	HT
Nitrogen, Total Kjeldahl	6.43		0.50	mg/L	Oct-11-11	Oct-18-11	HT
pH	7.27	AO = 6.5 - 8.5	0.01	pH Units	Oct-12-11	Oct-13-11	HT
Sulfate	142	AO ≤ 500	10.0	mg/L	Oct-12-11	Oct-13-11	

MW-03 (K1J0330-03) Matrix: Water Sampled: Oct-07-11

Alkalinity, Total as CaCO ₃	481		1.0	mg/L	Oct-12-11	Oct-12-11	
Carbon, Total Organic	4.0		0.5	mg/L	Oct-13-11	Oct-14-11	
Chloride	42.3	AO ≤ 250	0.10	mg/L	Oct-12-11	Oct-13-11	
Conductivity (EC)	1180		2	uS/cm	Oct-12-11	Oct-12-11	
Hardness, Total (Total as CaCO ₃)	844		5.00	mg/L	Oct-16-11	Oct-17-11	
Hardness, Total (Diss. as CaCO ₃)	600		5	mg/L	Oct-14-11	Oct-15-11	
Nitrogen, Ammonia as N	0.07		0.01	mg/L	Oct-11-11	Oct-13-11	HT
Nitrogen, Nitrate+Nitrite as N	0.412		0.020	mg/L	Oct-12-11	Oct-13-11	
Nitrogen, Nitrate as N	0.412	MAC = 10	0.010	mg/L	Oct-12-11	Oct-13-11	HT
Nitrogen, Nitrite as N	< 0.01	MAC = 1	0.01	mg/L	Oct-12-11	Oct-13-11	HT
Nitrogen, Total Kjeldahl	1.14		0.05	mg/L	Oct-11-11	Oct-18-11	HT
pH	7.71	AO = 6.5 - 8.5	0.01	pH Units	Oct-12-11	Oct-12-11	HT
Sulfate	192	AO ≤ 500	10.0	mg/L	Oct-12-11	Oct-13-11	

Dissolved Metals by ICPMS

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet Dump Site

WORK ORDER # K1J0330
REPORTED Oct-18-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals by ICPMS, Continued

MW-01 (K1J0330-01) Matrix: Water Sampled: Oct-06-11

Aluminum, dissolved	< 0.050		0.050	mg/L	Oct-14-11	Oct-15-11	
Antimony, dissolved	< 0.0200		0.0200	mg/L	Oct-14-11	Oct-15-11	
Arsenic, dissolved	< 0.0050		0.0050	mg/L	Oct-14-11	Oct-15-11	
Barium, dissolved	0.063		0.050	mg/L	Oct-14-11	Oct-15-11	
Beryllium, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Bismuth, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Boron, dissolved	0.187		0.040	mg/L	Oct-14-11	Oct-15-11	
Cadmium, dissolved	0.00012		0.00010	mg/L	Oct-14-11	Oct-15-11	
Calcium, dissolved	70.1		2.0	mg/L	Oct-14-11	Oct-15-11	
Chromium, dissolved	< 0.0050		0.0050	mg/L	Oct-14-11	Oct-15-11	
Cobalt, dissolved	0.00087		0.00050	mg/L	Oct-14-11	Oct-15-11	
Copper, dissolved	< 0.0020		0.0020	mg/L	Oct-14-11	Oct-15-11	
Iron, dissolved	< 0.10		0.10	mg/L	Oct-14-11	Oct-15-11	
Lead, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Lithium, dissolved	0.0107		0.0010	mg/L	Oct-14-11	Oct-15-11	
Magnesium, dissolved	47.3		0.10	mg/L	Oct-14-11	Oct-15-11	
Manganese, dissolved	0.190		0.0020	mg/L	Oct-14-11	Oct-15-11	
Mercury, dissolved	< 0.00020		0.00020	mg/L	Oct-14-11	Oct-15-11	
Molybdenum, dissolved	0.0227		0.0010	mg/L	Oct-14-11	Oct-15-11	
Nickel, dissolved	0.0056		0.0020	mg/L	Oct-14-11	Oct-15-11	
Phosphorus, dissolved	< 0.20		0.20	mg/L	Oct-14-11	Oct-15-11	
Potassium, dissolved	3.00		0.20	mg/L	Oct-14-11	Oct-15-11	
Selenium, dissolved	0.0102		0.0050	mg/L	Oct-14-11	Oct-15-11	
Silicon, dissolved	6.0		5.0	mg/L	Oct-14-11	Oct-15-11	
Silver, dissolved	< 0.00050		0.00050	mg/L	Oct-14-11	Oct-15-11	
Sodium, dissolved	25.5		0.20	mg/L	Oct-14-11	Oct-15-11	
Strontium, dissolved	0.774		0.010	mg/L	Oct-14-11	Oct-15-11	
Tellurium, dissolved	< 0.0020		0.0020	mg/L	Oct-14-11	Oct-15-11	
Thallium, dissolved	< 0.00020		0.00020	mg/L	Oct-14-11	Oct-15-11	
Thorium, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Tin, dissolved	< 0.0020		0.0020	mg/L	Oct-14-11	Oct-15-11	
Titanium, dissolved	< 0.050		0.050	mg/L	Oct-14-11	Oct-15-11	
Uranium, dissolved	0.00143		0.00020	mg/L	Oct-14-11	Oct-15-11	
Vanadium, dissolved	< 0.010		0.010	mg/L	Oct-14-11	Oct-15-11	
Zinc, dissolved	< 0.040		0.040	mg/L	Oct-14-11	Oct-15-11	
Zirconium, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	

MW-02 (K1J0330-02) Matrix: Water Sampled: Oct-07-11

Aluminum, dissolved	< 0.050		0.050	mg/L	Oct-14-11	Oct-15-11	
Antimony, dissolved	< 0.0200		0.0200	mg/L	Oct-14-11	Oct-15-11	
Arsenic, dissolved	< 0.0050		0.0050	mg/L	Oct-14-11	Oct-15-11	
Barium, dissolved	0.097		0.050	mg/L	Oct-14-11	Oct-15-11	
Beryllium, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Bismuth, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Boron, dissolved	0.219		0.040	mg/L	Oct-14-11	Oct-15-11	
Cadmium, dissolved	0.00018		0.00010	mg/L	Oct-14-11	Oct-15-11	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet Dump Site

WORK ORDER # K1J0330
REPORTED Oct-18-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals by ICPMS, Continued

MW-02 (K1J0330-02) Matrix: Water Sampled: Oct-07-11, Continued

Calcium, dissolved	71.2		2.0	mg/L	Oct-14-11	Oct-15-11	
Chromium, dissolved	< 0.0050		0.0050	mg/L	Oct-14-11	Oct-15-11	
Cobalt, dissolved	0.00258		0.00050	mg/L	Oct-14-11	Oct-15-11	
Copper, dissolved	0.0024		0.0020	mg/L	Oct-14-11	Oct-15-11	
Iron, dissolved	< 0.10		0.10	mg/L	Oct-14-11	Oct-15-11	
Lead, dissolved	0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Lithium, dissolved	0.0121		0.0010	mg/L	Oct-14-11	Oct-15-11	
Magnesium, dissolved	38.1		0.10	mg/L	Oct-14-11	Oct-15-11	
Manganese, dissolved	1.50		0.0020	mg/L	Oct-14-11	Oct-15-11	
Mercury, dissolved	< 0.00020		0.00020	mg/L	Oct-14-11	Oct-15-11	
Molybdenum, dissolved	0.0287		0.0010	mg/L	Oct-14-11	Oct-15-11	
Nickel, dissolved	0.0196		0.0020	mg/L	Oct-14-11	Oct-15-11	
Phosphorus, dissolved	0.24		0.20	mg/L	Oct-14-11	Oct-15-11	
Potassium, dissolved	5.17		0.20	mg/L	Oct-14-11	Oct-15-11	
Selenium, dissolved	< 0.0050		0.0050	mg/L	Oct-14-11	Oct-15-11	
Silicon, dissolved	5.1		5.0	mg/L	Oct-14-11	Oct-15-11	
Silver, dissolved	< 0.00050		0.00050	mg/L	Oct-14-11	Oct-15-11	
Sodium, dissolved	56.6		0.20	mg/L	Oct-14-11	Oct-15-11	
Strontium, dissolved	0.883		0.010	mg/L	Oct-14-11	Oct-15-11	
Tellurium, dissolved	< 0.0020		0.0020	mg/L	Oct-14-11	Oct-15-11	
Thallium, dissolved	< 0.00020		0.00020	mg/L	Oct-14-11	Oct-15-11	
Thorium, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Tin, dissolved	< 0.0020		0.0020	mg/L	Oct-14-11	Oct-15-11	
Titanium, dissolved	< 0.050		0.050	mg/L	Oct-14-11	Oct-15-11	
Uranium, dissolved	0.00169		0.00020	mg/L	Oct-14-11	Oct-15-11	
Vanadium, dissolved	< 0.010		0.010	mg/L	Oct-14-11	Oct-15-11	
Zinc, dissolved	< 0.040		0.040	mg/L	Oct-14-11	Oct-15-11	
Zirconium, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	

MW-03 (K1J0330-03) Matrix: Water Sampled: Oct-07-11

Aluminum, dissolved	< 0.050		0.050	mg/L	Oct-14-11	Oct-15-11	
Antimony, dissolved	< 0.0200		0.0200	mg/L	Oct-14-11	Oct-15-11	
Arsenic, dissolved	< 0.0050		0.0050	mg/L	Oct-14-11	Oct-15-11	
Barium, dissolved	0.090		0.050	mg/L	Oct-14-11	Oct-15-11	
Beryllium, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Bismuth, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Boron, dissolved	0.466		0.040	mg/L	Oct-14-11	Oct-15-11	
Cadmium, dissolved	< 0.00010		0.00010	mg/L	Oct-14-11	Oct-15-11	
Calcium, dissolved	104		2.0	mg/L	Oct-14-11	Oct-15-11	
Chromium, dissolved	< 0.0050		0.0050	mg/L	Oct-14-11	Oct-15-11	
Cobalt, dissolved	0.00239		0.00050	mg/L	Oct-14-11	Oct-15-11	
Copper, dissolved	0.0027		0.0020	mg/L	Oct-14-11	Oct-15-11	
Iron, dissolved	< 0.10		0.10	mg/L	Oct-14-11	Oct-15-11	
Lead, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Lithium, dissolved	0.0184		0.0010	mg/L	Oct-14-11	Oct-15-11	
Magnesium, dissolved	81.3		0.10	mg/L	Oct-14-11	Oct-15-11	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet Dump Site

WORK ORDER # K1J0330
REPORTED Oct-18-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals by ICPMS, Continued

MW-03 (K1J0330-03) Matrix: Water Sampled: Oct-07-11, Continued

Manganese, dissolved	0.532		0.0020	mg/L	Oct-14-11	Oct-15-11	
Mercury, dissolved	< 0.00020		0.00020	mg/L	Oct-14-11	Oct-15-11	
Molybdenum, dissolved	0.0065		0.0010	mg/L	Oct-14-11	Oct-15-11	
Nickel, dissolved	0.0095		0.0020	mg/L	Oct-14-11	Oct-15-11	
Phosphorus, dissolved	< 0.20		0.20	mg/L	Oct-14-11	Oct-15-11	
Potassium, dissolved	3.87		0.20	mg/L	Oct-14-11	Oct-15-11	
Selenium, dissolved	< 0.0050		0.0050	mg/L	Oct-14-11	Oct-15-11	
Silicon, dissolved	7.5		5.0	mg/L	Oct-14-11	Oct-15-11	
Silver, dissolved	< 0.00050		0.00050	mg/L	Oct-14-11	Oct-15-11	
Sodium, dissolved	74.8		0.20	mg/L	Oct-14-11	Oct-15-11	
Strontium, dissolved	1.64		0.010	mg/L	Oct-14-11	Oct-15-11	
Tellurium, dissolved	< 0.0020		0.0020	mg/L	Oct-14-11	Oct-15-11	
Thallium, dissolved	< 0.00020		0.00020	mg/L	Oct-14-11	Oct-15-11	
Thorium, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	
Tin, dissolved	< 0.0020		0.0020	mg/L	Oct-14-11	Oct-15-11	
Titanium, dissolved	< 0.050		0.050	mg/L	Oct-14-11	Oct-15-11	
Uranium, dissolved	0.00394		0.00020	mg/L	Oct-14-11	Oct-15-11	
Vanadium, dissolved	< 0.010		0.010	mg/L	Oct-14-11	Oct-15-11	
Zinc, dissolved	< 0.040		0.040	mg/L	Oct-14-11	Oct-15-11	
Zirconium, dissolved	< 0.0010		0.0010	mg/L	Oct-14-11	Oct-15-11	

Total Recoverable Metals by ICPMS

MW-01 (K1J0330-01) Matrix: Water Sampled: Oct-06-11

Aluminum	0.520	AO ≤ 0.1	0.050	mg/L	Oct-16-11	Oct-17-11	
Antimony	0.0017	MAC = 0.006	0.0010	mg/L	Oct-16-11	Oct-17-11	
Arsenic	< 0.0050	MAC = 0.01	0.0050	mg/L	Oct-16-11	Oct-17-11	
Barium	0.071	MAC = 1	0.050	mg/L	Oct-16-11	Oct-17-11	
Beryllium	< 0.0010		0.0010	mg/L	Oct-16-11	Oct-17-11	
Bismuth	< 0.0010		0.0010	mg/L	Oct-16-11	Oct-17-11	
Boron	0.145	MAC = 5	0.040	mg/L	Oct-16-11	Oct-17-11	
Cadmium	< 0.00010	MAC = 0.005	0.00010	mg/L	Oct-16-11	Oct-17-11	
Calcium	72.2		2.0	mg/L	Oct-16-11	Oct-17-11	
Chromium	< 0.0050	MAC = 0.05	0.0050	mg/L	Oct-16-11	Oct-17-11	
Cobalt	0.00144		0.00050	mg/L	Oct-16-11	Oct-17-11	
Copper	0.0030	AO ≤ 1	0.0020	mg/L	Oct-16-11	Oct-17-11	
Iron	1.27	AO ≤ 0.3	0.10	mg/L	Oct-16-11	Oct-17-11	
Lead	< 0.0010	MAC = 0.01	0.0010	mg/L	Oct-16-11	Oct-17-11	
Lithium	0.0097		0.0010	mg/L	Oct-16-11	Oct-17-11	
Magnesium	48.3		0.10	mg/L	Oct-16-11	Oct-17-11	
Manganese	0.222	AO ≤ 0.05	0.0020	mg/L	Oct-16-11	Oct-17-11	
Mercury	< 0.00020	MAC = 0.001	0.00020	mg/L	Oct-16-11	Oct-17-11	
Molybdenum	0.0249		0.0010	mg/L	Oct-16-11	Oct-17-11	
Nickel	0.0035		0.0020	mg/L	Oct-16-11	Oct-17-11	
Phosphorus	< 0.20		0.20	mg/L	Oct-16-11	Oct-17-11	
Potassium	3.02		0.20	mg/L	Oct-16-11	Oct-17-11	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet Dump Site

WORK ORDER # K1J0330
REPORTED Oct-18-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Total Recoverable Metals by ICPMS, Continued

MW-01 (K1J0330-01) Matrix: Water Sampled: Oct-06-11, Continued

Selenium	0.0113	MAC = 0.01	0.0050	mg/L	Oct-16-11	Oct-17-11	
Silicon	5.5		5.0	mg/L	Oct-16-11	Oct-17-11	
Silver	< 0.00050		0.00050	mg/L	Oct-16-11	Oct-17-11	
Sodium	24.5	AO ≤ 200	0.20	mg/L	Oct-16-11	Oct-17-11	
Strontium	0.843		0.010	mg/L	Oct-16-11	Oct-17-11	
Tellurium	< 0.0020		0.0020	mg/L	Oct-16-11	Oct-17-11	
Thallium	< 0.00020		0.00020	mg/L	Oct-16-11	Oct-17-11	
Thorium	< 0.0010		0.0010	mg/L	Oct-16-11	Oct-17-11	
Tin	< 0.0020		0.0020	mg/L	Oct-16-11	Oct-17-11	
Titanium	< 0.050		0.050	mg/L	Oct-16-11	Oct-17-11	
Uranium	0.00154	MAC = 0.02	0.00020	mg/L	Oct-16-11	Oct-17-11	
Vanadium	< 0.010		0.010	mg/L	Oct-16-11	Oct-17-11	
Zinc	< 0.040	AO ≤ 5	0.040	mg/L	Oct-16-11	Oct-17-11	
Zirconium	< 0.0010		0.0010	mg/L	Oct-16-11	Oct-17-11	

MW-02 (K1J0330-02) Matrix: Water Sampled: Oct-07-11

Aluminum	443	AO ≤ 0.1	0.050	mg/L	Oct-16-11	Oct-17-11	
Antimony	< 0.0010	MAC = 0.006	0.0010	mg/L	Oct-16-11	Oct-17-11	
Arsenic	0.111	MAC = 0.01	0.0050	mg/L	Oct-16-11	Oct-17-11	
Barium	8.02	MAC = 1	0.050	mg/L	Oct-16-11	Oct-17-11	
Beryllium	0.0126		0.0010	mg/L	Oct-16-11	Oct-17-11	
Bismuth	0.0039		0.0010	mg/L	Oct-16-11	Oct-17-11	
Boron	0.321	MAC = 5	0.040	mg/L	Oct-16-11	Oct-17-11	
Cadmium	0.0223	MAC = 0.005	0.00010	mg/L	Oct-16-11	Oct-17-11	
Calcium	1330		2.0	mg/L	Oct-16-11	Oct-17-11	
Chromium	1.17	MAC = 0.05	0.0050	mg/L	Oct-16-11	Oct-17-11	
Cobalt	0.745		0.00050	mg/L	Oct-16-11	Oct-17-11	
Copper	3.00	AO ≤ 1	0.0020	mg/L	Oct-16-11	Oct-17-11	
Iron	1060	AO ≤ 0.3	0.10	mg/L	Oct-16-11	Oct-17-11	
Lead	0.269	MAC = 0.01	0.0010	mg/L	Oct-16-11	Oct-17-11	
Lithium	0.394		0.0010	mg/L	Oct-16-11	Oct-17-11	
Magnesium	451		0.10	mg/L	Oct-16-11	Oct-17-11	
Manganese	38.5	AO ≤ 0.05	0.0020	mg/L	Oct-16-11	Oct-17-11	
Mercury	0.00462	MAC = 0.001	0.00020	mg/L	Oct-16-11	Oct-17-11	
Molybdenum	0.0080		0.0010	mg/L	Oct-16-11	Oct-17-11	
Nickel	2.99		0.0020	mg/L	Oct-16-11	Oct-17-11	
Phosphorus	20.5		0.20	mg/L	Oct-16-11	Oct-17-11	
Potassium	37.0		0.20	mg/L	Oct-16-11	Oct-17-11	
Selenium	0.0651	MAC = 0.01	0.0050	mg/L	Oct-16-11	Oct-17-11	
Silicon	335		5.0	mg/L	Oct-16-11	Oct-17-11	
Silver	0.00379		0.00050	mg/L	Oct-16-11	Oct-17-11	
Sodium	77.8	AO ≤ 200	0.20	mg/L	Oct-16-11	Oct-17-11	
Strontium	7.04		0.010	mg/L	Oct-16-11	Oct-17-11	
Tellurium	< 0.0020		0.0020	mg/L	Oct-16-11	Oct-17-11	
Thallium	0.00373		0.00020	mg/L	Oct-16-11	Oct-17-11	
Thorium	0.0399		0.0010	mg/L	Oct-16-11	Oct-17-11	

SAMPLE DATA



CLIENT
PROJECT

Western Water Associates Ltd
Lillooet Dump Site

WORK ORDER #
REPORTED

K1J0330
Oct-18-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Total Recoverable Metals by ICPMS, Continued

MW-02 (K1J0330-02) Matrix: Water Sampled: Oct-07-11, Continued

Tin	< 0.0020		0.0020	mg/L	Oct-16-11	Oct-17-11	
Titanium	1.92		0.050	mg/L	Oct-16-11	Oct-17-11	
Uranium	0.0144	MAC = 0.02	0.00020	mg/L	Oct-16-11	Oct-17-11	
Vanadium	0.836		0.010	mg/L	Oct-16-11	Oct-17-11	
Zinc	2.86	AO ≤ 5	0.040	mg/L	Oct-16-11	Oct-17-11	
Zirconium	0.0071		0.0010	mg/L	Oct-16-11	Oct-17-11	

MW-03 (K1J0330-03) Matrix: Water Sampled: Oct-07-11

Aluminum	39.3	AO ≤ 0.1	0.050	mg/L	Oct-16-11	Oct-17-11	
Antimony	0.0023	MAC = 0.006	0.0010	mg/L	Oct-16-11	Oct-17-11	
Arsenic	0.0379	MAC = 0.01	0.0050	mg/L	Oct-16-11	Oct-17-11	
Barium	0.793	MAC = 1	0.050	mg/L	Oct-16-11	Oct-17-11	
Beryllium	< 0.0010		0.0010	mg/L	Oct-16-11	Oct-17-11	
Bismuth	< 0.0010		0.0010	mg/L	Oct-16-11	Oct-17-11	
Boron	0.408	MAC = 5	0.040	mg/L	Oct-16-11	Oct-17-11	
Cadmium	0.00109	MAC = 0.005	0.00010	mg/L	Oct-16-11	Oct-17-11	
Calcium	171		2.0	mg/L	Oct-16-11	Oct-17-11	
Chromium	0.102	MAC = 0.05	0.0050	mg/L	Oct-16-11	Oct-17-11	
Cobalt	0.0504		0.00050	mg/L	Oct-16-11	Oct-17-11	
Copper	0.163	AO ≤ 1	0.0020	mg/L	Oct-16-11	Oct-17-11	
Iron	95.1	AO ≤ 0.3	0.10	mg/L	Oct-16-11	Oct-17-11	
Lead	0.0190	MAC = 0.01	0.0010	mg/L	Oct-16-11	Oct-17-11	
Lithium	0.0412		0.0010	mg/L	Oct-16-11	Oct-17-11	
Magnesium	101		0.10	mg/L	Oct-16-11	Oct-17-11	
Manganese	2.68	AO ≤ 0.05	0.0020	mg/L	Oct-16-11	Oct-17-11	
Mercury	0.00022	MAC = 0.001	0.00020	mg/L	Oct-16-11	Oct-17-11	
Molybdenum	0.0105		0.0010	mg/L	Oct-16-11	Oct-17-11	
Nickel	0.178		0.0020	mg/L	Oct-16-11	Oct-17-11	
Phosphorus	1.79		0.20	mg/L	Oct-16-11	Oct-17-11	
Potassium	8.66		0.20	mg/L	Oct-16-11	Oct-17-11	
Selenium	0.0114	MAC = 0.01	0.0050	mg/L	Oct-16-11	Oct-17-11	
Silicon	78.9		5.0	mg/L	Oct-16-11	Oct-17-11	
Silver	< 0.00050		0.00050	mg/L	Oct-16-11	Oct-17-11	
Sodium	75.1	AO ≤ 200	0.20	mg/L	Oct-16-11	Oct-17-11	
Strontium	1.72		0.010	mg/L	Oct-16-11	Oct-17-11	
Tellurium	< 0.0020		0.0020	mg/L	Oct-16-11	Oct-17-11	
Thallium	0.00033		0.00020	mg/L	Oct-16-11	Oct-17-11	
Thorium	0.0043		0.0010	mg/L	Oct-16-11	Oct-17-11	
Tin	< 0.0020		0.0020	mg/L	Oct-16-11	Oct-17-11	
Titanium	2.14		0.050	mg/L	Oct-16-11	Oct-17-11	
Uranium	0.00783	MAC = 0.02	0.00020	mg/L	Oct-16-11	Oct-17-11	
Vanadium	0.124		0.010	mg/L	Oct-16-11	Oct-17-11	
Zinc	0.203	AO ≤ 5	0.040	mg/L	Oct-16-11	Oct-17-11	
Zirconium	0.0131		0.0010	mg/L	Oct-16-11	Oct-17-11	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet Dump Site

WORK ORDER # K1J0330
REPORTED Oct-18-11

Sample Qualifiers:

F1 The sample was not field-filtered and was therefore filtered (0.45um) in the laboratory prior to analysis.
HT Parameter(s) analyzed outside of the EPA/BCMOE/APHA recommended holding time.

ANALYSIS / REPORT INFORMATION

CLIENT Western Water Associates Ltd
PROJECT Lillooet Dump Site

WORK ORDER # K1J0330
REPORTED Oct-18-11

Analysis Description	Method Reference(s) (* = modified from)		LAB
	Preparation	Analysis	
Dissolved Metals by ICPMS	N/A	EPA 6020A	RMD
Alkalinity, total	N/A	APHA 2320 B *	KEL
Total Organic Carbon	N/A	APHA 5310 B	KEL
Chloride by IC	N/A	APHA 4110 B	KEL
Conductivity-Water	N/A	APHA 2510 B	KEL
Ammonia-N	N/A	APHA 4500-NH3 G *	KEL
Nitrate by IC	N/A	APHA 4110 B	KEL
Nitrate+Nitrite-N		[CALC]	KEL
Nitrite by IC	N/A	APHA 4110 B	KEL
Total Kjeldahl Nitrogen	N/A	EPA 351.2 *	KEL
pH	N/A	APHA 4500-H+ B	KEL
Sulfate by IC	N/A	APHA 4110 B	KEL
Total Recoverable Metals by ICPMS	EPA 200.2 *	EPA 6020A	RMD

QUALITY CONTROL DATA



CLIENT
PROJECT

Western Water Associates Ltd
Lillooet Dump Site

WORK ORDER #
REPORTED

K1J0330
Oct-18-11

The following section reports quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with quality control samples that ensure your data is of the highest quality. Common QC types include:

- Method Blank (Blk): Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- Duplicate (Dup): Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- Blank Spike (BS): A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- Standard Reference Material (SRM): A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested for.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Dissolved Metals by ICPMS, Batch B1J0171

Blank (B1J0171-BLK1)

Prepared: Oct-14-11, Analyzed: Oct-14-11

Aluminum, dissolved	< 0.05	0.05 mg/L
Antimony, dissolved	< 0.001	0.001 mg/L
Arsenic, dissolved	< 0.005	0.005 mg/L
Barium, dissolved	< 0.05	0.05 mg/L
Beryllium, dissolved	< 0.001	0.001 mg/L
Bismuth, dissolved	< 0.001	0.001 mg/L
Boron, dissolved	< 0.04	0.04 mg/L
Cadmium, dissolved	< 0.0001	0.0001 mg/L
Calcium, dissolved	< 5	5 mg/L
Chromium, dissolved	< 0.005	0.005 mg/L
Cobalt, dissolved	< 0.0005	0.0005 mg/L
Copper, dissolved	< 0.002	0.002 mg/L
Iron, dissolved	< 0.100	0.100 mg/L
Lead, dissolved	< 0.001	0.001 mg/L
Lithium, dissolved	< 0.001	0.001 mg/L
Magnesium, dissolved	< 0.100	0.100 mg/L
Manganese, dissolved	< 0.002	0.002 mg/L
Mercury, dissolved	< 0.0002	0.0002 mg/L
Molybdenum, dissolved	< 0.001	0.001 mg/L
Nickel, dissolved	< 0.002	0.002 mg/L
Phosphorus, dissolved	< 0.200	0.200 mg/L
Potassium, dissolved	< 0.200	0.200 mg/L
Selenium, dissolved	< 0.005	0.005 mg/L
Silicon, dissolved	< 5	5 mg/L
Silver, dissolved	< 0.0005	0.0005 mg/L
Sodium, dissolved	< 0.200	0.200 mg/L
Strontium, dissolved	< 0.01	0.01 mg/L
Tellurium, dissolved	< 0.002	0.002 mg/L
Thallium, dissolved	< 0.0002	0.0002 mg/L
Thorium, dissolved	< 0.001	0.001 mg/L
Tin, dissolved	< 0.002	0.002 mg/L
Titanium, dissolved	< 0.05	0.05 mg/L
Uranium, dissolved	< 0.0002	0.0002 mg/L
Vanadium, dissolved	< 0.01	0.01 mg/L
Zinc, dissolved	< 0.04	0.04 mg/L
Zirconium, dissolved	< 0.001	0.001 mg/L

Blank (B1J0171-BLK2)

Prepared: Oct-14-11, Analyzed: Oct-14-11

Aluminum, dissolved	< 0.05	0.05 mg/L
Antimony, dissolved	< 0.001	0.001 mg/L
Arsenic, dissolved	< 0.005	0.005 mg/L
Barium, dissolved	< 0.05	0.05 mg/L

QUALITY CONTROL DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet Dump Site

WORK ORDER # K1J0330
REPORTED Oct-18-11

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	% REC	% REC Limits	% RPD	% RPD Limit	Notes
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Dissolved Metals by ICPMS, Batch B1J0171, Continued

Blank (B1J0171-BLK2), Continued

Prepared: Oct-14-11, Analyzed: Oct-14-11

Beryllium, dissolved	< 0.001	0.001	mg/L
Bismuth, dissolved	< 0.001	0.001	mg/L
Boron, dissolved	< 0.04	0.04	mg/L
Cadmium, dissolved	< 0.0001	0.0001	mg/L
Calcium, dissolved	< 5	5	mg/L
Chromium, dissolved	< 0.005	0.005	mg/L
Cobalt, dissolved	< 0.0005	0.0005	mg/L
Copper, dissolved	< 0.002	0.002	mg/L
Iron, dissolved	< 0.100	0.100	mg/L
Lead, dissolved	< 0.001	0.001	mg/L
Lithium, dissolved	< 0.001	0.001	mg/L
Magnesium, dissolved	< 0.100	0.100	mg/L
Manganese, dissolved	< 0.002	0.002	mg/L
Mercury, dissolved	< 0.0002	0.0002	mg/L
Molybdenum, dissolved	< 0.001	0.001	mg/L
Nickel, dissolved	< 0.002	0.002	mg/L
Phosphorus, dissolved	< 0.200	0.200	mg/L
Potassium, dissolved	< 0.200	0.200	mg/L
Selenium, dissolved	< 0.005	0.005	mg/L
Silicon, dissolved	< 5	5	mg/L
Silver, dissolved	< 0.0005	0.0005	mg/L
Sodium, dissolved	< 0.200	0.200	mg/L
Strontium, dissolved	< 0.01	0.01	mg/L
Tellurium, dissolved	< 0.002	0.002	mg/L
Thallium, dissolved	< 0.0002	0.0002	mg/L
Thorium, dissolved	< 0.001	0.001	mg/L
Tin, dissolved	< 0.002	0.002	mg/L
Titanium, dissolved	< 0.05	0.05	mg/L
Uranium, dissolved	< 0.0002	0.0002	mg/L
Vanadium, dissolved	< 0.01	0.01	mg/L
Zinc, dissolved	< 0.04	0.04	mg/L
Zirconium, dissolved	< 0.001	0.001	mg/L

Blank (B1J0171-BLK3)

Prepared: Oct-14-11, Analyzed: Oct-15-11

Aluminum, dissolved	< 0.05	0.05	mg/L
Antimony, dissolved	< 0.001	0.001	mg/L
Arsenic, dissolved	< 0.005	0.005	mg/L
Barium, dissolved	< 0.05	0.05	mg/L
Beryllium, dissolved	< 0.001	0.001	mg/L
Bismuth, dissolved	< 0.001	0.001	mg/L
Boron, dissolved	< 0.04	0.04	mg/L
Cadmium, dissolved	< 0.0001	0.0001	mg/L
Calcium, dissolved	< 5	5	mg/L
Chromium, dissolved	< 0.005	0.005	mg/L
Cobalt, dissolved	< 0.0005	0.0005	mg/L
Copper, dissolved	< 0.002	0.002	mg/L
Iron, dissolved	< 0.100	0.100	mg/L
Lead, dissolved	< 0.001	0.001	mg/L
Lithium, dissolved	< 0.001	0.001	mg/L
Magnesium, dissolved	< 0.100	0.100	mg/L
Manganese, dissolved	< 0.002	0.002	mg/L
Mercury, dissolved	< 0.0002	0.0002	mg/L
Molybdenum, dissolved	< 0.001	0.001	mg/L
Nickel, dissolved	< 0.002	0.002	mg/L
Phosphorus, dissolved	< 0.200	0.200	mg/L
Potassium, dissolved	< 0.200	0.200	mg/L
Selenium, dissolved	< 0.005	0.005	mg/L
Silicon, dissolved	< 5	5	mg/L
Silver, dissolved	< 0.0005	0.0005	mg/L
Sodium, dissolved	< 0.200	0.200	mg/L
Strontium, dissolved	< 0.01	0.01	mg/L
Tellurium, dissolved	< 0.002	0.002	mg/L
Thallium, dissolved	< 0.0002	0.0002	mg/L
Thorium, dissolved	< 0.001	0.001	mg/L

QUALITY CONTROL DATA



CLIENT
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Western Water Associates Ltd
Lillooet Dump Site

WORK ORDER #
REPORTED

K1J0330
Oct-18-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Dissolved Metals by ICPMS, Batch B1J0171, Continued

Blank (B1J0171-BLK3), Continued

Prepared: Oct-14-11, Analyzed: Oct-15-11

Tin, dissolved	< 0.002	0.002 mg/L					
Titanium, dissolved	< 0.05	0.05 mg/L					
Uranium, dissolved	< 0.0002	0.0002 mg/L					
Vanadium, dissolved	< 0.01	0.01 mg/L					
Zinc, dissolved	< 0.04	0.04 mg/L					
Zirconium, dissolved	< 0.001	0.001 mg/L					

Blank (B1J0171-BLK4)

Prepared: Oct-14-11, Analyzed: Oct-15-11

Aluminum, dissolved	< 0.05	0.05 mg/L					
Antimony, dissolved	< 0.001	0.001 mg/L					
Arsenic, dissolved	< 0.005	0.005 mg/L					
Barium, dissolved	< 0.05	0.05 mg/L					
Beryllium, dissolved	< 0.001	0.001 mg/L					
Bismuth, dissolved	< 0.001	0.001 mg/L					
Boron, dissolved	< 0.04	0.04 mg/L					
Cadmium, dissolved	< 0.0001	0.0001 mg/L					
Calcium, dissolved	< 5	5 mg/L					
Chromium, dissolved	< 0.005	0.005 mg/L					
Cobalt, dissolved	< 0.0005	0.0005 mg/L					
Copper, dissolved	< 0.002	0.002 mg/L					
Iron, dissolved	< 0.100	0.100 mg/L					
Lead, dissolved	< 0.001	0.001 mg/L					
Lithium, dissolved	< 0.001	0.001 mg/L					
Magnesium, dissolved	< 0.100	0.100 mg/L					
Manganese, dissolved	< 0.002	0.002 mg/L					
Mercury, dissolved	< 0.0002	0.0002 mg/L					
Molybdenum, dissolved	< 0.001	0.001 mg/L					
Nickel, dissolved	< 0.002	0.002 mg/L					
Phosphorus, dissolved	< 0.200	0.200 mg/L					
Potassium, dissolved	< 0.200	0.200 mg/L					
Selenium, dissolved	< 0.005	0.005 mg/L					
Silicon, dissolved	< 5	5 mg/L					
Silver, dissolved	< 0.0005	0.0005 mg/L					
Sodium, dissolved	< 0.200	0.200 mg/L					
Strontium, dissolved	< 0.01	0.01 mg/L					
Tellurium, dissolved	< 0.002	0.002 mg/L					
Thallium, dissolved	< 0.0002	0.0002 mg/L					
Thorium, dissolved	< 0.001	0.001 mg/L					
Tin, dissolved	< 0.002	0.002 mg/L					
Titanium, dissolved	< 0.05	0.05 mg/L					
Uranium, dissolved	< 0.0002	0.0002 mg/L					
Vanadium, dissolved	< 0.01	0.01 mg/L					
Zinc, dissolved	< 0.04	0.04 mg/L					
Zirconium, dissolved	< 0.001	0.001 mg/L					

Reference (B1J0171-SRM1)

Prepared: Oct-14-11, Analyzed: Oct-14-11

Aluminum, dissolved	0.259	0.05 mg/L	0.209	124	74-127
Antimony, dissolved	0.0437	0.001 mg/L	0.0400	109	86-116
Arsenic, dissolved	0.398	0.005 mg/L	0.404	99	84-111
Barium, dissolved	3.06	0.05 mg/L	3.12	98	87-114
Beryllium, dissolved	0.189	0.001 mg/L	0.197	96	78-127
Boron, dissolved	1.56	0.04 mg/L	1.61	97	74-117
Cadmium, dissolved	0.193	0.0001 mg/L	0.200	96	89-110
Calcium, dissolved	6.7	5 mg/L	6.50	103	83-128
Chromium, dissolved	0.376	0.005 mg/L	0.401	94	87-112
Cobalt, dissolved	0.112	0.0005 mg/L	0.119	94	88-113
Copper, dissolved	0.763	0.002 mg/L	0.781	98	91-115
Iron, dissolved	1.17	0.100 mg/L	1.17	100	81-117
Lead, dissolved	0.0998	0.001 mg/L	0.102	98	90-114
Lithium, dissolved	0.0995	0.001 mg/L	0.0960	104	77-134
Magnesium, dissolved	6.24	0.100 mg/L	6.11	102	79-122
Manganese, dissolved	0.294	0.002 mg/L	0.318	93	86-114
Molybdenum, dissolved	0.359	0.001 mg/L	0.387	93	92-113

QUALITY CONTROL DATA



CLIENT
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Western Water Associates Ltd
Lillooet Dump Site

WORK ORDER #
REPORTED

K1J0330
Oct-18-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Dissolved Metals by ICPMS, Batch B1J0171, Continued

Reference (B1J0171-SRM1), Continued

Prepared: Oct-14-11, Analyzed: Oct-14-11

Nickel, dissolved	0.739	0.002 mg/L	0.789	94	89-114
Phosphorus, dissolved	0.48	0.200 mg/L	0.448	107	60-117
Potassium, dissolved	2.56	0.200 mg/L	2.84	90	80-113
Selenium, dissolved	0.0263	0.005 mg/L	0.0300	88	84-120
Sodium, dissolved	16.9	0.200 mg/L	17.4	97	78-118
Strontium, dissolved	0.882	0.01 mg/L	0.979	90	88-113
Thallium, dissolved	0.0353	0.0002 mg/L	0.0350	101	96-129
Uranium, dissolved	0.171	0.0002 mg/L	0.244	70	68-95
Vanadium, dissolved	0.724	0.01 mg/L	0.798	91	83-110
Zinc, dissolved	0.795	0.04 mg/L	0.800	99	90-115

Reference (B1J0171-SRM2)

Prepared: Oct-14-11, Analyzed: Oct-15-11

Aluminum, dissolved	0.228	0.05 mg/L	0.209	109	74-127
Antimony, dissolved	0.0420	0.001 mg/L	0.0400	105	86-116
Arsenic, dissolved	0.404	0.005 mg/L	0.404	100	84-111
Barium, dissolved	3.10	0.05 mg/L	3.12	99	87-114
Beryllium, dissolved	0.189	0.001 mg/L	0.197	96	78-127
Boron, dissolved	1.59	0.04 mg/L	1.61	98	74-117
Cadmium, dissolved	0.195	0.0001 mg/L	0.200	97	89-110
Calcium, dissolved	6.4	5 mg/L	6.50	98	83-128
Chromium, dissolved	0.378	0.005 mg/L	0.401	94	87-112
Cobalt, dissolved	0.113	0.0005 mg/L	0.119	95	88-113
Copper, dissolved	0.763	0.002 mg/L	0.781	98	91-115
Iron, dissolved	1.13	0.100 mg/L	1.17	97	81-117
Lead, dissolved	0.0960	0.001 mg/L	0.102	94	90-114
Lithium, dissolved	0.100	0.001 mg/L	0.0960	105	77-134
Magnesium, dissolved	5.92	0.100 mg/L	6.11	97	79-122
Manganese, dissolved	0.300	0.002 mg/L	0.318	94	86-114
Molybdenum, dissolved	0.362	0.001 mg/L	0.387	94	92-113
Nickel, dissolved	0.733	0.002 mg/L	0.789	93	89-114
Phosphorus, dissolved	0.40	0.200 mg/L	0.448	89	60-117
Potassium, dissolved	2.64	0.200 mg/L	2.84	93	80-113
Selenium, dissolved	0.0346	0.005 mg/L	0.0300	115	84-120
Sodium, dissolved	16.8	0.200 mg/L	17.4	97	78-118
Strontium, dissolved	0.889	0.01 mg/L	0.979	91	88-113
Thallium, dissolved	0.0358	0.0002 mg/L	0.0350	102	96-129
Uranium, dissolved	0.175	0.0002 mg/L	0.244	72	68-95
Vanadium, dissolved	0.723	0.01 mg/L	0.798	91	83-110
Zinc, dissolved	0.797	0.04 mg/L	0.800	100	90-115

Reference (B1J0171-SRM3)

Prepared: Oct-14-11, Analyzed: Oct-18-11

Aluminum, dissolved	0.251	0.05 mg/L	0.209	120	74-127
Antimony, dissolved	0.0371	0.001 mg/L	0.0400	93	86-116
Arsenic, dissolved	0.396	0.005 mg/L	0.404	98	84-111
Barium, dissolved	3.19	0.05 mg/L	3.12	102	87-114
Beryllium, dissolved	0.198	0.001 mg/L	0.197	100	78-127
Boron, dissolved	1.53	0.04 mg/L	1.61	95	74-117
Cadmium, dissolved	0.197	0.0001 mg/L	0.200	99	89-110
Calcium, dissolved	6.5	5 mg/L	6.50	99	83-128
Chromium, dissolved	0.386	0.005 mg/L	0.401	96	87-112
Cobalt, dissolved	0.115	0.0005 mg/L	0.119	97	88-113
Copper, dissolved	0.787	0.002 mg/L	0.781	101	91-115
Iron, dissolved	1.19	0.100 mg/L	1.17	102	81-117
Lead, dissolved	0.0967	0.001 mg/L	0.102	95	90-114
Lithium, dissolved	0.101	0.001 mg/L	0.0960	105	77-134
Magnesium, dissolved	5.97	0.100 mg/L	6.11	98	79-122
Manganese, dissolved	0.303	0.002 mg/L	0.318	95	86-114
Molybdenum, dissolved	0.383	0.001 mg/L	0.387	99	92-113
Nickel, dissolved	0.757	0.002 mg/L	0.789	96	89-114
Phosphorus, dissolved	0.39	0.200 mg/L	0.448	88	60-117
Potassium, dissolved	2.95	0.200 mg/L	2.84	104	80-113
Selenium, dissolved	0.0315	0.005 mg/L	0.0300	105	84-120
Sodium, dissolved	17.6	0.200 mg/L	17.4	101	78-118

QUALITY CONTROL DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet Dump Site

WORK ORDER # K1J0330
REPORTED Oct-18-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC	% REC Limits	% RPD	% RPD Limit	Notes
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Dissolved Metals by ICPMS, Batch B1J0171, Continued

Reference (B1J0171-SRM3), Continued

Prepared: Oct-14-11, Analyzed: Oct-18-11

Strontium, dissolved	0.945	0.01 mg/L	0.979	97	88-113
Thallium, dissolved	0.0358	0.0002 mg/L	0.0350	102	96-129
Uranium, dissolved	0.179	0.0002 mg/L	0.244	73	68-95
Vanadium, dissolved	0.731	0.01 mg/L	0.798	92	83-110
Zinc, dissolved	0.793	0.04 mg/L	0.800	99	90-115

Reference (B1J0171-SRM4)

Prepared: Oct-14-11, Analyzed: Oct-15-11

Aluminum, dissolved	0.228	0.05 mg/L	0.209	109	74-127
Antimony, dissolved	0.0408	0.001 mg/L	0.0400	102	86-116
Arsenic, dissolved	0.401	0.005 mg/L	0.404	99	84-111
Barium, dissolved	3.10	0.05 mg/L	3.12	99	87-114
Beryllium, dissolved	0.194	0.001 mg/L	0.197	98	78-127
Boron, dissolved	1.58	0.04 mg/L	1.61	98	74-117
Cadmium, dissolved	0.192	0.0001 mg/L	0.200	96	89-110
Calcium, dissolved	6.9	5 mg/L	6.50	106	83-128
Chromium, dissolved	0.382	0.005 mg/L	0.401	95	87-112
Cobalt, dissolved	0.115	0.0005 mg/L	0.119	97	88-113
Copper, dissolved	0.775	0.002 mg/L	0.781	99	91-115
Iron, dissolved	1.15	0.100 mg/L	1.17	98	81-117
Lead, dissolved	0.0988	0.001 mg/L	0.102	97	90-114
Lithium, dissolved	0.102	0.001 mg/L	0.0960	106	77-134
Magnesium, dissolved	6.01	0.100 mg/L	6.11	98	79-122
Manganese, dissolved	0.302	0.002 mg/L	0.318	95	86-114
Molybdenum, dissolved	0.363	0.001 mg/L	0.387	94	92-113
Nickel, dissolved	0.752	0.002 mg/L	0.789	95	89-114
Phosphorus, dissolved	0.44	0.200 mg/L	0.448	98	60-117
Potassium, dissolved	2.67	0.200 mg/L	2.84	94	80-113
Selenium, dissolved	0.0300	0.005 mg/L	0.0300	100	84-120
Sodium, dissolved	16.9	0.200 mg/L	17.4	97	78-118
Strontium, dissolved	0.891	0.01 mg/L	0.979	91	88-113
Thallium, dissolved	0.0365	0.0002 mg/L	0.0350	104	96-129
Uranium, dissolved	0.178	0.0002 mg/L	0.244	73	68-95
Vanadium, dissolved	0.736	0.01 mg/L	0.798	92	83-110
Zinc, dissolved	0.801	0.04 mg/L	0.800	100	90-115

General Parameters, Batch K104394

Blank (K104394-BLK1)

Prepared: Oct-12-11, Analyzed: Oct-13-11

Chloride	< 0.10	0.10 mg/L
Nitrogen, Nitrate as N	< 0.005	0.005 mg/L
Nitrogen, Nitrite as N	< 0.005	0.005 mg/L
Sulfate	< 0.5	0.5 mg/L

Blank (K104394-BLK2)

Prepared: Oct-12-11, Analyzed: Oct-13-11

Chloride	< 0.10	0.10 mg/L
Nitrogen, Nitrate as N	< 0.005	0.005 mg/L
Nitrogen, Nitrite as N	< 0.005	0.005 mg/L
Sulfate	< 0.5	0.5 mg/L

Blank (K104394-BLK3)

Prepared: Oct-12-11, Analyzed: Oct-14-11

Chloride	< 0.10	0.10 mg/L
Nitrogen, Nitrate as N	< 0.005	0.005 mg/L
Nitrogen, Nitrite as N	< 0.005	0.005 mg/L
Sulfate	< 0.5	0.5 mg/L

Blank (K104394-BLK4)

Prepared: Oct-12-11, Analyzed: Oct-14-11

Chloride	< 0.10	0.10 mg/L
Nitrogen, Nitrate as N	< 0.005	0.005 mg/L
Nitrogen, Nitrite as N	< 0.005	0.005 mg/L
Sulfate	< 0.5	0.5 mg/L

QUALITY CONTROL DATA



CLIENT
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Western Water Associates Ltd
Lillooet Dump Site

WORK ORDER #
REPORTED

K1J0330
Oct-18-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch K104394, Continued

Blank (K104394-BLK5)			Prepared: Oct-12-11, Analyzed: Oct-14-11				
Chloride	< 0.10	0.10 mg/L					
Nitrogen, Nitrate as N	< 0.005	0.005 mg/L					
Nitrogen, Nitrite as N	< 0.005	0.005 mg/L					
Sulfate	< 0.5	0.5 mg/L					
LCS (K104394-BS1)			Prepared: Oct-12-11, Analyzed: Oct-13-11				
Chloride	3.67	0.10 mg/L	4.00		92	85-115	
Nitrogen, Nitrate as N	4.33	0.005 mg/L	4.00		108	85-115	
Nitrogen, Nitrite as N	3.75	0.005 mg/L	4.00		94	85-115	
Sulfate	4.0	0.5 mg/L	4.00		101	85-115	
LCS (K104394-BS2)			Prepared: Oct-12-11, Analyzed: Oct-13-11				
Chloride	3.67	0.10 mg/L	4.00		92	85-115	
Nitrogen, Nitrate as N	4.25	0.005 mg/L	4.00		106	85-115	
Nitrogen, Nitrite as N	3.74	0.005 mg/L	4.00		93	85-115	
Sulfate	4.1	0.5 mg/L	4.00		104	85-115	
LCS (K104394-BS3)			Prepared: Oct-12-11, Analyzed: Oct-14-11				
Chloride	3.65	0.10 mg/L	4.00		91	85-115	
Nitrogen, Nitrate as N	4.35	0.005 mg/L	4.00		109	85-115	
Nitrogen, Nitrite as N	3.74	0.005 mg/L	4.00		94	85-115	
Sulfate	4.1	0.5 mg/L	4.00		103	85-115	
LCS (K104394-BS4)			Prepared: Oct-12-11, Analyzed: Oct-14-11				
Chloride	3.68	0.10 mg/L	4.00		92	85-115	
Nitrogen, Nitrate as N	4.33	0.005 mg/L	4.00		108	85-115	
Nitrogen, Nitrite as N	3.74	0.005 mg/L	4.00		93	85-115	
Sulfate	4.1	0.5 mg/L	4.00		103	85-115	
LCS (K104394-BS5)			Prepared: Oct-12-11, Analyzed: Oct-14-11				
Chloride	3.68	0.10 mg/L	4.00		92	85-115	
Nitrogen, Nitrate as N	4.37	0.005 mg/L	4.00		109	85-115	
Nitrogen, Nitrite as N	3.71	0.005 mg/L	4.00		93	85-115	
Sulfate	4.1	0.5 mg/L	4.00		103	85-115	

General Parameters, Batch K104395

Blank (K104395-BLK1)			Prepared: Oct-12-11, Analyzed: Oct-12-11				
Alkalinity, Total as CaCO3	< 1.0	1.0 mg/L					
Conductivity (EC)	< 2	2 uS/cm					
Blank (K104395-BLK2)			Prepared: Oct-12-11, Analyzed: Oct-12-11				
Alkalinity, Total as CaCO3	< 1.0	1.0 mg/L					
Conductivity (EC)	< 2	2 uS/cm					
Blank (K104395-BLK3)			Prepared: Oct-12-11, Analyzed: Oct-12-11				
Alkalinity, Total as CaCO3	< 1.0	1.0 mg/L					
Conductivity (EC)	< 2	2 uS/cm					
Blank (K104395-BLK4)			Prepared: Oct-12-11, Analyzed: Oct-12-11				
Alkalinity, Total as CaCO3	< 1.0	1.0 mg/L					
Conductivity (EC)	< 2	2 uS/cm					
LCS (K104395-BS1)			Prepared: Oct-12-11, Analyzed: Oct-12-11				
Alkalinity, Total as CaCO3	102	1.0 mg/L	100		102	96-108	
LCS (K104395-BS2)			Prepared: Oct-12-11, Analyzed: Oct-12-11				
Alkalinity, Total as CaCO3	102	1.0 mg/L	100		102	96-108	
LCS (K104395-BS3)			Prepared: Oct-12-11, Analyzed: Oct-12-11				
Alkalinity, Total as CaCO3	103	1.0 mg/L	100		103	96-108	

QUALITY CONTROL DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet Dump Site

WORK ORDER # K1J0330
REPORTED Oct-18-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch K104395, Continued

LCS (K104395-BS4)		Prepared: Oct-12-11, Analyzed: Oct-12-11					
Alkalinity, Total as CaCO3	102	1.0 mg/L	100	102	96-108		
LCS (K104395-BS5)		Prepared: Oct-12-11, Analyzed: Oct-12-11					
Conductivity (EC)	1390	2 uS/cm	1410	99	93-104		
LCS (K104395-BS6)		Prepared: Oct-12-11, Analyzed: Oct-12-11					
Conductivity (EC)	1390	2 uS/cm	1410	98	93-104		
LCS (K104395-BS7)		Prepared: Oct-12-11, Analyzed: Oct-12-11					
Conductivity (EC)	1380	2 uS/cm	1410	98	93-104		
LCS (K104395-BS8)		Prepared: Oct-12-11, Analyzed: Oct-12-11					
Conductivity (EC)	1380	2 uS/cm	1410	98	93-104		
Duplicate (K104395-DUP1)		Source: K1J0330-01		Prepared: Oct-12-11, Analyzed: Oct-13-11			
Alkalinity, Total as CaCO3	236	1.0 mg/L	242	2	10		
Conductivity (EC)	759	2 uS/cm	757	< 1	5		
pH	7.97	0.01 pH Units	7.97	< 1	5		
Reference (K104395-SRM1)		Prepared: Oct-12-11, Analyzed: Oct-12-11					
pH	7.01	0.01 pH Units	7.00	100	98-102		
Reference (K104395-SRM2)		Prepared: Oct-12-11, Analyzed: Oct-12-11					
pH	7.01	0.01 pH Units	7.00	100	98-102		
Reference (K104395-SRM3)		Prepared: Oct-12-11, Analyzed: Oct-12-11					
pH	7.00	0.01 pH Units	7.00	100	98-102		
Reference (K104395-SRM4)		Prepared: Oct-12-11, Analyzed: Oct-12-11					
pH	7.01	0.01 pH Units	7.00	100	98-102		

General Parameters, Batch K104398

Blank (K104398-BLK1)		Prepared: Oct-12-11, Analyzed: Oct-13-11					
Alkalinity, Total as CaCO3	< 1.0	1.0 mg/L					
Conductivity (EC)	< 2	2 uS/cm					
LCS (K104398-BS1)		Prepared: Oct-12-11, Analyzed: Oct-13-11					
Alkalinity, Total as CaCO3	100	1.0 mg/L	100	100	96-108		
LCS (K104398-BS2)		Prepared: Oct-12-11, Analyzed: Oct-13-11					
Conductivity (EC)	1410	2 uS/cm	1410	100	93-104		
Duplicate (K104398-DUP1)		Source: K1J0330-02		Prepared: Oct-12-11, Analyzed: Oct-13-11			
Alkalinity, Total as CaCO3	277	1.0 mg/L	271	2	10		
Conductivity (EC)	802	2 uS/cm	802	< 1	5		
pH	7.28	0.01 pH Units	7.27	< 1	5		
Reference (K104398-SRM1)		Prepared: Oct-12-11, Analyzed: Oct-13-11					
pH	6.99	0.01 pH Units	7.00	100	98-102		

General Parameters, Batch K104402

Blank (K104402-BLK1)		Prepared: Oct-13-11, Analyzed: Oct-13-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
Blank (K104402-BLK2)		Prepared: Oct-13-11, Analyzed: Oct-13-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					

QUALITY CONTROL DATA



CLIENT
PROJECT

Western Water Associates Ltd
Lillooet Dump Site

WORK ORDER #
REPORTED

K1J0330
Oct-18-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch K104402, Continued

Blank (K104402-BLK3)		Prepared: Oct-13-11, Analyzed: Oct-13-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
Blank (K104402-BLK4)		Prepared: Oct-13-11, Analyzed: Oct-13-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
LCS (K104402-BS1)		Prepared: Oct-13-11, Analyzed: Oct-13-11					
Nitrogen, Ammonia as N	10.1	0.10 mg/L	10.0	101	86-111		
LCS (K104402-BS2)		Prepared: Oct-13-11, Analyzed: Oct-13-11					
Nitrogen, Ammonia as N	9.96	0.10 mg/L	10.0	100	86-111		
LCS (K104402-BS3)		Prepared: Oct-13-11, Analyzed: Oct-13-11					
Nitrogen, Ammonia as N	10.3	0.10 mg/L	10.0	103	86-111		
LCS (K104402-BS4)		Prepared: Oct-13-11, Analyzed: Oct-13-11					
Nitrogen, Ammonia as N	9.93	0.10 mg/L	10.0	99	86-111		

General Parameters, Batch K104410

Blank (K104410-BLK1)		Prepared: Oct-13-11, Analyzed: Oct-14-11					
Carbon, Total Organic	< 0.5	0.5 mg/L					
LCS (K104410-BS1)		Prepared: Oct-13-11, Analyzed: Oct-14-11					
Carbon, Total Organic	9.7	0.5 mg/L	10.0	97	80-120		

General Parameters, Batch K104428

Blank (K104428-BLK1)		Prepared: Oct-14-11, Analyzed: Oct-18-11					
Nitrogen, Total Kjeldahl	< 0.05	0.05 mg/L					
Blank (K104428-BLK2)		Prepared: Oct-14-11, Analyzed: Oct-18-11					
Nitrogen, Total Kjeldahl	< 0.05	0.05 mg/L					
LCS (K104428-BS1)		Prepared: Oct-14-11, Analyzed: Oct-18-11					
Nitrogen, Total Kjeldahl	10.0	0.50 mg/L	10.0	100	89-116		
LCS (K104428-BS2)		Prepared: Oct-14-11, Analyzed: Oct-18-11					
Nitrogen, Total Kjeldahl	10.5	0.50 mg/L	10.0	105	89-116		

Total Recoverable Metals by ICPMS, Batch B1J0196

Blank (B1J0196-BLK1)		Prepared: Oct-16-11, Analyzed: Oct-17-11					
Aluminum	< 0.050	0.050 mg/L					
Antimony	< 0.0010	0.0010 mg/L					
Arsenic	< 0.0050	0.0050 mg/L					
Barium	< 0.050	0.050 mg/L					
Beryllium	< 0.0010	0.0010 mg/L					
Bismuth	< 0.0010	0.0010 mg/L					
Boron	< 0.040	0.040 mg/L					
Cadmium	< 0.00010	0.00010 mg/L					
Calcium	< 2.0	2.0 mg/L					
Chromium	< 0.0050	0.0050 mg/L					
Cobalt	< 0.00050	0.00050 mg/L					
Copper	< 0.0020	0.0020 mg/L					
Iron	< 0.10	0.10 mg/L					
Lead	< 0.0010	0.0010 mg/L					
Lithium	< 0.0010	0.0010 mg/L					
Magnesium	< 0.10	0.10 mg/L					
Manganese	< 0.0020	0.0020 mg/L					
Mercury	< 0.00020	0.00020 mg/L					

QUALITY CONTROL DATA



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PROJECT

Western Water Associates Ltd
Lillooet Dump Site

WORK ORDER #
REPORTED

K1J0330
Oct-18-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Total Recoverable Metals by ICPMS, Batch B1J0196, Continued

Blank (B1J0196-BLK1), Continued

Prepared: Oct-16-11, Analyzed: Oct-17-11

Molybdenum	< 0.0010	0.0010 mg/L					
Nickel	< 0.0020	0.0020 mg/L					
Phosphorus	< 0.20	0.20 mg/L					
Potassium	< 0.20	0.20 mg/L					
Selenium	< 0.0050	0.0050 mg/L					
Silicon	< 5.0	5.0 mg/L					
Silver	< 0.00050	0.00050 mg/L					
Sodium	< 0.20	0.20 mg/L					
Strontium	< 0.010	0.010 mg/L					
Tellurium	< 0.0020	0.0020 mg/L					
Thallium	< 0.00020	0.00020 mg/L					
Thorium	< 0.0010	0.0010 mg/L					
Tin	< 0.0020	0.0020 mg/L					
Titanium	< 0.050	0.050 mg/L					
Uranium	< 0.00020	0.00020 mg/L					
Vanadium	< 0.010	0.010 mg/L					
Zinc	< 0.040	0.040 mg/L					
Zirconium	< 0.0010	0.0010 mg/L					

Blank (B1J0196-BLK2)

Prepared: Oct-16-11, Analyzed: Oct-17-11

Aluminum	< 0.050	0.050 mg/L					
Antimony	< 0.0010	0.0010 mg/L					
Arsenic	< 0.0050	0.0050 mg/L					
Barium	< 0.050	0.050 mg/L					
Beryllium	< 0.0010	0.0010 mg/L					
Bismuth	< 0.0010	0.0010 mg/L					
Boron	< 0.040	0.040 mg/L					
Cadmium	< 0.00010	0.00010 mg/L					
Calcium	< 2.0	2.0 mg/L					
Chromium	< 0.0050	0.0050 mg/L					
Cobalt	< 0.00050	0.00050 mg/L					
Copper	< 0.0020	0.0020 mg/L					
Iron	< 0.10	0.10 mg/L					
Lead	< 0.0010	0.0010 mg/L					
Lithium	< 0.0010	0.0010 mg/L					
Magnesium	< 0.10	0.10 mg/L					
Manganese	< 0.0020	0.0020 mg/L					
Mercury	< 0.00020	0.00020 mg/L					
Molybdenum	< 0.0010	0.0010 mg/L					
Nickel	< 0.0020	0.0020 mg/L					
Phosphorus	< 0.20	0.20 mg/L					
Potassium	< 0.20	0.20 mg/L					
Selenium	< 0.0050	0.0050 mg/L					
Silicon	< 5.0	5.0 mg/L					
Silver	< 0.00050	0.00050 mg/L					
Sodium	< 0.20	0.20 mg/L					
Strontium	< 0.010	0.010 mg/L					
Tellurium	< 0.0020	0.0020 mg/L					
Thallium	< 0.00020	0.00020 mg/L					
Thorium	< 0.0010	0.0010 mg/L					
Tin	< 0.0020	0.0020 mg/L					
Titanium	< 0.050	0.050 mg/L					
Uranium	< 0.00020	0.00020 mg/L					
Vanadium	< 0.010	0.010 mg/L					
Zinc	< 0.040	0.040 mg/L					
Zirconium	< 0.0010	0.0010 mg/L					

Duplicate (B1J0196-DUP1)

Source: K1J0330-01

Prepared: Oct-16-11, Analyzed: Oct-17-11

Aluminum	0.522	0.050 mg/L	0.520	< 1	30
Antimony	0.0013	0.0010 mg/L	0.0017		25
Arsenic	< 0.0050	0.0050 mg/L	< 0.0050		25
Barium	0.072	0.050 mg/L	0.071		30
Beryllium	< 0.0010	0.0010 mg/L	< 0.0010		30

QUALITY CONTROL DATA



CLIENT
PROJECT

Western Water Associates Ltd
Lillooet Dump Site

WORK ORDER #
REPORTED

K1J0330
Oct-18-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Total Recoverable Metals by ICPMS, Batch B1J0196, Continued

Duplicate (B1J0196-DUP1), Continued		Source: K1J0330-01		Prepared: Oct-16-11, Analyzed: Oct-17-11			
Bismuth	< 0.0010	0.0010 mg/L		< 0.0010		30	
Boron	0.148	0.040 mg/L		0.145		40	
Cadmium	< 0.00010	0.00010 mg/L		< 0.00010		20	
Calcium	72.6	2.0 mg/L		72.2	< 1	20	
Chromium	< 0.0050	0.0050 mg/L		< 0.0050		25	
Cobalt	0.00145	0.00050 mg/L		0.00144		20	
Copper	0.0022	0.0020 mg/L		0.0030		30	
Iron	1.29	0.10 mg/L		1.27	1	30	
Lead	< 0.0010	0.0010 mg/L		< 0.0010		20	
Lithium	0.0104	0.0010 mg/L		0.0097	7	30	
Magnesium	49.0	0.10 mg/L		48.3	2	20	
Manganese	0.222	0.0020 mg/L		0.222	< 1	20	
Mercury	< 0.00020	0.00020 mg/L		< 0.00020		40	
Molybdenum	0.0254	0.0010 mg/L		0.0249	2	20	
Nickel	0.0046	0.0020 mg/L		0.0035		20	
Phosphorus	< 0.20	0.20 mg/L		< 0.20		20	
Potassium	3.23	0.20 mg/L		3.02	7	20	
Selenium	0.0161	0.0050 mg/L		0.0113		30	
Silicon	6.0	5.0 mg/L		5.5		40	
Silver	< 0.00050	0.00050 mg/L		< 0.00050		30	
Sodium	24.9	0.20 mg/L		24.5	1	20	
Strontium	0.846	0.010 mg/L		0.843	< 1	20	
Tellurium	< 0.0020	0.0020 mg/L		< 0.0020		30	
Thallium	< 0.00020	0.00020 mg/L		< 0.00020		20	
Thorium	< 0.0010	0.0010 mg/L		< 0.0010		30	
Tin	< 0.0020	0.0020 mg/L		< 0.0020		40	
Titanium	< 0.050	0.050 mg/L		< 0.050		30	
Uranium	0.00157	0.00020 mg/L		0.00154	2	20	
Vanadium	< 0.010	0.010 mg/L		< 0.010		20	
Zinc	< 0.040	0.040 mg/L		< 0.040		20	
Zirconium	< 0.0010	0.0010 mg/L		< 0.0010		40	

Reference (B1J0196-SRM1)		Prepared: Oct-16-11, Analyzed: Oct-17-11					
Aluminum	0.350	0.050 mg/L	0.296	118	81-129		
Antimony	0.0474	0.0010 mg/L	0.0505	94	88-114		
Arsenic	0.119	0.0050 mg/L	0.122	97	88-114		
Barium	0.780	0.050 mg/L	0.777	100	72-104		
Beryllium	0.0428	0.0010 mg/L	0.0488	88	76-131		
Boron	3.17	0.040 mg/L	3.40	93	75-121		
Cadmium	0.0504	0.00010 mg/L	0.0490	103	89-111		
Calcium	9.4	2.0 mg/L	10.2	92	86-121		
Chromium	0.234	0.0050 mg/L	0.242	97	89-114		
Cobalt	0.0369	0.00050 mg/L	0.0366	101	91-113		
Copper	0.491	0.0020 mg/L	0.487	101	91-115		
Iron	0.53	0.10 mg/L	0.469	112	77-124		
Lead	0.200	0.0010 mg/L	0.193	104	92-113		
Lithium	0.366	0.0010 mg/L	0.390	94	85-115		
Magnesium	3.18	0.10 mg/L	3.31	96	78-120		
Manganese	0.106	0.0020 mg/L	0.109	97	90-114		
Mercury	0.00463	0.00020 mg/L	0.00456	102	50-150		
Molybdenum	0.187	0.0010 mg/L	0.197	95	90-111		
Nickel	0.228	0.0020 mg/L	0.242	94	90-111		
Phosphorus	0.26	0.20 mg/L	0.233	113	85-115		
Potassium	5.54	0.20 mg/L	5.93	93	84-113		
Selenium	0.112	0.0050 mg/L	0.115	97	85-115		
Sodium	7.37	0.20 mg/L	7.64	96	82-123		
Strontium	0.345	0.010 mg/L	0.363	95	88-112		
Thallium	0.0771	0.00020 mg/L	0.0794	97	91-114		
Uranium	0.0185	0.00020 mg/L	0.0192	96	85-120		
Vanadium	0.346	0.010 mg/L	0.376	92	86-111		
Zinc	2.42	0.040 mg/L	2.42	100	85-111		

QUALITY CONTROL DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet Dump Site

WORK ORDER # K1J0330
REPORTED Oct-18-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Total Recoverable Metals by ICPMS, Batch B1J0196, Continued

Reference (B1J0196-SRM2)			Prepared: Oct-16-11, Analyzed: Oct-17-11				
Aluminum	0.348	0.050 mg/L	0.296		117	81-129	
Antimony	0.0495	0.0010 mg/L	0.0505		98	88-114	
Arsenic	0.125	0.0050 mg/L	0.122		103	88-114	
Barium	0.788	0.050 mg/L	0.777		101	72-104	
Beryllium	0.0462	0.0010 mg/L	0.0488		95	76-131	
Boron	3.44	0.040 mg/L	3.40		101	75-121	
Cadmium	0.0520	0.00010 mg/L	0.0490		106	89-111	
Calcium	10.3	2.0 mg/L	10.2		101	86-121	
Chromium	0.245	0.0050 mg/L	0.242		101	89-114	
Cobalt	0.0380	0.00050 mg/L	0.0366		104	91-113	
Copper	0.512	0.0020 mg/L	0.487		105	91-115	
Iron	0.50	0.10 mg/L	0.469		107	77-124	
Lead	0.209	0.0010 mg/L	0.193		108	92-113	
Lithium	0.396	0.0010 mg/L	0.390		102	85-115	
Magnesium	3.36	0.10 mg/L	3.31		102	78-120	
Manganese	0.110	0.0020 mg/L	0.109		101	90-114	
Mercury	0.00485	0.00020 mg/L	0.00456		106	50-150	
Molybdenum	0.193	0.0010 mg/L	0.197		98	90-111	
Nickel	0.239	0.0020 mg/L	0.242		99	90-111	
Phosphorus	0.24	0.20 mg/L	0.233		103	85-115	
Potassium	6.04	0.20 mg/L	5.93		102	84-113	
Selenium	0.121	0.0050 mg/L	0.115		105	85-115	
Sodium	7.81	0.20 mg/L	7.64		102	82-123	
Strontium	0.354	0.010 mg/L	0.363		97	88-112	
Thallium	0.0802	0.00020 mg/L	0.0794		101	91-114	
Uranium	0.0194	0.00020 mg/L	0.0192		101	85-120	
Vanadium	0.364	0.010 mg/L	0.376		97	86-111	
Zinc	2.50	0.040 mg/L	2.42		103	85-111	

CERTIFICATE OF ANALYSIS



CLIENT	Western Water Associates Ltd 10051 Hwy 97 N Lake Country BC V4VC 1P6	TEL 1-250-766-1030 FAX -
ATTENTION	Bryer Manwell	
RECEIVED / TEMP	Oct-26-11 10:25 / 1.0 °C	WORK ORDER K1J0963
REPORTED	Nov-04-11	PROJECT Lillooet - Old Landfill
COC #(s)	32578	

General Comments:

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; protocols published by the British Columbia Ministry of Environment (BCMOE); and/or CCME Canada-wide Standard Reference methods.

Methods not described in these publications are conducted according to procedures accepted by appropriate regulatory agencies, and/or are done in accordance with recognized professional standards using accepted testing methodologies and quality control efforts except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

- All solids results are reported on a dry weight basis unless otherwise noted
- Units:
 - mg/kg = milligrams per kilogram, equivalent to parts per million (ppm)
 - mg/L = milligrams per litre, equivalent to parts per million (ppm)
 - ug/L = micrograms per litre, equivalent to parts per billion (ppb)
 - ug/g = micrograms per gram, equivalent to parts per million (ppm)
 - ug/m3 = micrograms per cubic meter of air
- "RDL" Reported detection limit
- "<" Less than reported detection limit
- "AO" Aesthetic objective
- "MAC" Maximum acceptable concentration (health-related guideline)
- "LAB" RMD = Richmond location, KEL = Kelowna location, EDM = Edmonton location, SUB = Subcontracted

Please contact CARO if more information is needed or to provide feedback on our services.

CARO Analytical Services

A handwritten signature in blue ink, appearing to read "J. Shanko".

Final Review Per: **Jennifer Shanko, ASCT**
Administration Coordinator

CARO Analytical Services

#120 12791 Clarke Place
Richmond, BC V6V 2H9
Tel: 604-279-1499 Fax: 604-279-1599

#102 3677 Highway 97N
Kelowna, BC V1X 5C3
Tel: 250-765-9646 Fax: 250-765-3893

17225 109 Avenue
Edmonton, AB T5S 1H7
Tel: 780-489-9100 Fax: 780-489-9700

www.caro.ca

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

WORK ORDER # K1J0963
REPORTED Nov-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters

MW-01 (K1J0963-01) Matrix: Water Sampled: Oct-25-11

Alkalinity, Total as CaCO ₃	290		1.0	mg/L	Oct-26-11	Oct-26-11	
BOD, 5-day	< 10		10	mg/L	Oct-26-11	Oct-31-11	
Carbon, Total Organic	0.6		0.5	mg/L	Oct-26-11	Oct-28-11	
Chloride	27.8	AO ≤ 250	0.10	mg/L	Oct-28-11	Oct-29-11	
Chemical Oxygen Demand	< 5		5	mg/L	Nov-01-11	Nov-02-11	
Conductivity (EC)	843		2	uS/cm	Oct-26-11	Oct-26-11	
Hardness, Total (Total as CaCO ₃)	472		5.41	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	410		0.499	mg/L	N/A	N/A	
Nitrogen, Ammonia as N	0.02		0.01	mg/L	Oct-26-11	Oct-28-11	
Nitrogen, Nitrate+Nitrite as N	2.76		0.010	mg/L	N/A	N/A	
Nitrogen, Nitrate as N	2.69	MAC = 10	0.010	mg/L	Oct-28-11	Oct-29-11	
Nitrogen, Nitrite as N	0.07	MAC = 1	0.01	mg/L	Oct-28-11	Oct-29-11	
Nitrogen, Total Kjeldahl	0.06		0.05	mg/L	Oct-26-11	Nov-02-11	
Nitrogen, Total	2.82		0.050	mg/L	N/A	N/A	
pH	7.91	AO = 6.5 - 8.5	0.01	pH Units	Oct-26-11	Oct-26-11	
Sulfate	142	AO ≤ 500	10.0	mg/L	Oct-28-11	Oct-29-11	

MW-02 (K1J0963-02) Matrix: Water Sampled: Oct-25-11

Alkalinity, Total as CaCO ₃	287		1.0	mg/L	Oct-26-11	Oct-26-11	
BOD, 5-day	< 10		10	mg/L	Oct-26-11	Oct-31-11	
Carbon, Total Organic	6.6		0.5	mg/L	Oct-26-11	Oct-28-11	
Chloride	40.8	AO ≤ 250	0.10	mg/L	Oct-28-11	Oct-29-11	
Chemical Oxygen Demand	< 5		5	mg/L	Nov-01-11	Nov-02-11	
Conductivity (EC)	893		2	uS/cm	Oct-26-11	Oct-26-11	
Hardness, Total (Total as CaCO ₃)	777		5.41	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	300		0.499	mg/L	N/A	N/A	
Nitrogen, Ammonia as N	0.22		0.01	mg/L	Oct-26-11	Oct-28-11	
Nitrogen, Nitrate+Nitrite as N	< 0.010		0.010	mg/L	N/A	N/A	
Nitrogen, Nitrate as N	< 0.010	MAC = 10	0.010	mg/L	Oct-28-11	Oct-29-11	
Nitrogen, Nitrite as N	< 0.01	MAC = 1	0.01	mg/L	Oct-28-11	Oct-29-11	
Nitrogen, Total Kjeldahl	11.6		0.25	mg/L	Oct-26-11	Nov-02-11	
Nitrogen, Total	11.6		0.250	mg/L	N/A	N/A	
pH	7.72	AO = 6.5 - 8.5	0.01	pH Units	Oct-26-11	Oct-26-11	
Sulfate	154	AO ≤ 500	10.0	mg/L	Oct-28-11	Oct-29-11	

MW-03 (K1J0963-03) Matrix: Water Sampled: Oct-25-11

Alkalinity, Total as CaCO ₃	504		1.0	mg/L	Oct-26-11	Oct-26-11	
BOD, 5-day	< 10		10	mg/L	Oct-26-11	Oct-31-11	
Carbon, Total Organic	2.9		0.5	mg/L	Oct-26-11	Oct-28-11	
Chloride	50.9	AO ≤ 250	0.10	mg/L	Oct-28-11	Oct-29-11	
Chemical Oxygen Demand	< 5		5	mg/L	Nov-01-11	Nov-02-11	
Conductivity (EC)	1260		2	uS/cm	Oct-26-11	Oct-26-11	
Hardness, Total (Total as CaCO ₃)	776		5.41	mg/L	N/A	N/A	
Hardness, Total (Diss. as CaCO ₃)	570		0.499	mg/L	N/A	N/A	
Nitrogen, Ammonia as N	0.06		0.01	mg/L	Oct-26-11	Oct-28-11	
Nitrogen, Nitrate+Nitrite as N	0.336		0.010	mg/L	N/A	N/A	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

WORK ORDER # K1J0963
REPORTED Nov-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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General Parameters, Continued

MW-03 (K1J0963-03) Matrix: Water Sampled: Oct-25-11, Continued

Nitrogen, Nitrate as N	0.336	MAC = 10	0.010	mg/L	Oct-28-11	Oct-29-11	
Nitrogen, Nitrite as N	< 0.01	MAC = 1	0.01	mg/L	Oct-28-11	Oct-29-11	
Nitrogen, Total Kjeldahl	1.02		0.05	mg/L	Oct-26-11	Nov-02-11	
Nitrogen, Total	1.35		0.050	mg/L	N/A	N/A	
pH	7.72	AO = 6.5 - 8.5	0.01	pH Units	Oct-26-11	Oct-26-11	
Sulfate	189	AO ≤ 500	10.0	mg/L	Oct-28-11	Oct-29-11	

Dissolved Metals by ICPMS

MW-01 (K1J0963-01) Matrix: Water Sampled: Oct-25-11

Aluminum, dissolved	< 0.005		0.005	mg/L	Oct-28-11	Oct-28-11	
Antimony, dissolved	< 0.0020		0.0020	mg/L	Oct-28-11	Oct-28-11	
Arsenic, dissolved	0.0009		0.0005	mg/L	Oct-28-11	Oct-28-11	
Barium, dissolved	0.071		0.005	mg/L	Oct-28-11	Oct-28-11	
Beryllium, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Bismuth, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Boron, dissolved	0.220		0.004	mg/L	Oct-28-11	Oct-28-11	
Cadmium, dissolved	0.00005		0.00001	mg/L	Oct-28-11	Oct-28-11	
Calcium, dissolved	74.0		0.2	mg/L	Oct-28-11	Oct-28-11	
Chromium, dissolved	< 0.0005		0.0005	mg/L	Oct-28-11	Oct-28-11	
Cobalt, dissolved	0.00033		0.00005	mg/L	Oct-28-11	Oct-28-11	
Copper, dissolved	0.0006		0.0002	mg/L	Oct-28-11	Oct-28-11	
Iron, dissolved	< 0.01		0.01	mg/L	Oct-28-11	Oct-28-11	
Lead, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Lithium, dissolved	0.0121		0.0001	mg/L	Oct-28-11	Oct-28-11	
Magnesium, dissolved	54.0		0.01	mg/L	Oct-28-11	Oct-28-11	
Manganese, dissolved	0.0445		0.0002	mg/L	Oct-28-11	Oct-28-11	
Mercury, dissolved	< 0.00002		0.00002	mg/L	Oct-28-11	Oct-28-11	
Molybdenum, dissolved	0.0104		0.0001	mg/L	Oct-28-11	Oct-28-11	
Nickel, dissolved	0.0038		0.0002	mg/L	Oct-28-11	Oct-28-11	
Phosphorus, dissolved	< 0.02		0.02	mg/L	Oct-28-11	Oct-28-11	
Potassium, dissolved	2.69		0.02	mg/L	Oct-28-11	Oct-28-11	
Selenium, dissolved	0.0029		0.0005	mg/L	Oct-28-11	Oct-28-11	
Silicon, dissolved	7.0		0.5	mg/L	Oct-28-11	Oct-28-11	
Silver, dissolved	< 0.00005		0.00005	mg/L	Oct-28-11	Oct-28-11	
Sodium, dissolved	21.3		0.02	mg/L	Oct-28-11	Oct-28-11	
Strontium, dissolved	1.12		0.001	mg/L	Oct-28-11	Oct-28-11	
Tellurium, dissolved	< 0.0002		0.0002	mg/L	Oct-28-11	Oct-28-11	
Thallium, dissolved	0.00002		0.00002	mg/L	Oct-28-11	Oct-28-11	
Thorium, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Tin, dissolved	< 0.0002		0.0002	mg/L	Oct-28-11	Oct-28-11	
Titanium, dissolved	< 0.005		0.005	mg/L	Oct-28-11	Oct-28-11	
Uranium, dissolved	0.00107		0.00002	mg/L	Oct-28-11	Oct-28-11	
Vanadium, dissolved	< 0.001		0.001	mg/L	Oct-28-11	Oct-28-11	
Zinc, dissolved	0.005		0.004	mg/L	Oct-28-11	Oct-28-11	
Zirconium, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	

SAMPLE DATA



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PROJECT Lillooet - Old Landfill

WORK ORDER # K1J0963
REPORTED Nov-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals by ICPMS, Continued

MW-02 (K1J0963-02) Matrix: Water Sampled: Oct-25-11

Aluminum, dissolved	0.010		0.005	mg/L	Oct-28-11	Oct-28-11	
Antimony, dissolved	0.0047		0.0020	mg/L	Oct-28-11	Oct-28-11	
Arsenic, dissolved	0.0023		0.0005	mg/L	Oct-28-11	Oct-28-11	
Barium, dissolved	0.122		0.005	mg/L	Oct-28-11	Oct-28-11	
Beryllium, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Bismuth, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Boron, dissolved	0.331		0.004	mg/L	Oct-28-11	Oct-28-11	
Cadmium, dissolved	0.00013		0.00001	mg/L	Oct-28-11	Oct-28-11	
Calcium, dissolved	59.9		0.2	mg/L	Oct-28-11	Oct-28-11	
Chromium, dissolved	< 0.0005		0.0005	mg/L	Oct-28-11	Oct-28-11	
Cobalt, dissolved	0.00309		0.00005	mg/L	Oct-28-11	Oct-28-11	
Copper, dissolved	0.0018		0.0002	mg/L	Oct-28-11	Oct-28-11	
Iron, dissolved	0.01		0.01	mg/L	Oct-28-11	Oct-28-11	
Lead, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Lithium, dissolved	0.0025		0.0001	mg/L	Oct-28-11	Oct-28-11	
Magnesium, dissolved	36.1		0.01	mg/L	Oct-28-11	Oct-28-11	
Manganese, dissolved	1.76		0.0002	mg/L	Oct-28-11	Oct-28-11	
Mercury, dissolved	< 0.00002		0.00002	mg/L	Oct-28-11	Oct-28-11	
Molybdenum, dissolved	0.0186		0.0001	mg/L	Oct-28-11	Oct-28-11	
Nickel, dissolved	0.0317		0.0002	mg/L	Oct-28-11	Oct-28-11	
Phosphorus, dissolved	< 0.02		0.02	mg/L	Oct-28-11	Oct-28-11	
Potassium, dissolved	4.26		0.02	mg/L	Oct-28-11	Oct-28-11	
Selenium, dissolved	0.0010		0.0005	mg/L	Oct-28-11	Oct-28-11	
Silicon, dissolved	5.4		0.5	mg/L	Oct-28-11	Oct-28-11	
Silver, dissolved	< 0.00005		0.00005	mg/L	Oct-28-11	Oct-28-11	
Sodium, dissolved	84.7		0.02	mg/L	Oct-28-11	Oct-28-11	
Strontium, dissolved	0.686		0.001	mg/L	Oct-28-11	Oct-28-11	
Tellurium, dissolved	< 0.0002		0.0002	mg/L	Oct-28-11	Oct-28-11	
Thallium, dissolved	0.00017		0.00002	mg/L	Oct-28-11	Oct-28-11	
Thorium, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Tin, dissolved	0.0003		0.0002	mg/L	Oct-28-11	Oct-28-11	
Titanium, dissolved	< 0.005		0.005	mg/L	Oct-28-11	Oct-28-11	
Uranium, dissolved	0.00416		0.00002	mg/L	Oct-28-11	Oct-28-11	
Vanadium, dissolved	< 0.001		0.001	mg/L	Oct-28-11	Oct-28-11	
Zinc, dissolved	0.004		0.004	mg/L	Oct-28-11	Oct-28-11	
Zirconium, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	

MW-03 (K1J0963-03) Matrix: Water Sampled: Oct-25-11

Aluminum, dissolved	0.029		0.005	mg/L	Oct-28-11	Oct-28-11	
Antimony, dissolved	0.0025		0.0020	mg/L	Oct-28-11	Oct-28-11	
Arsenic, dissolved	0.0006		0.0005	mg/L	Oct-28-11	Oct-28-11	
Barium, dissolved	0.060		0.005	mg/L	Oct-28-11	Oct-28-11	
Beryllium, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Bismuth, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Boron, dissolved	0.523		0.004	mg/L	Oct-28-11	Oct-28-11	
Cadmium, dissolved	0.00005		0.00001	mg/L	Oct-28-11	Oct-28-11	

SAMPLE DATA



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PROJECT Lillooet - Old Landfill

WORK ORDER # K1J0963
REPORTED Nov-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Dissolved Metals by ICPMS, Continued

MW-03 (K1J0963-03) Matrix: Water Sampled: Oct-25-11, Continued

Calcium, dissolved	91.7		0.2	mg/L	Oct-28-11	Oct-28-11	
Chromium, dissolved	< 0.0005		0.0005	mg/L	Oct-28-11	Oct-28-11	
Cobalt, dissolved	0.00308		0.00005	mg/L	Oct-28-11	Oct-28-11	
Copper, dissolved	0.0014		0.0002	mg/L	Oct-28-11	Oct-28-11	
Iron, dissolved	0.04		0.01	mg/L	Oct-28-11	Oct-28-11	
Lead, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Lithium, dissolved	0.0203		0.0001	mg/L	Oct-28-11	Oct-28-11	
Magnesium, dissolved	81.6		0.01	mg/L	Oct-28-11	Oct-28-11	
Manganese, dissolved	0.436		0.0002	mg/L	Oct-28-11	Oct-28-11	
Mercury, dissolved	< 0.00002		0.00002	mg/L	Oct-28-11	Oct-28-11	
Molybdenum, dissolved	0.0040		0.0001	mg/L	Oct-28-11	Oct-28-11	
Nickel, dissolved	0.0094		0.0002	mg/L	Oct-28-11	Oct-28-11	
Phosphorus, dissolved	< 0.02		0.02	mg/L	Oct-28-11	Oct-28-11	
Potassium, dissolved	3.11		0.02	mg/L	Oct-28-11	Oct-28-11	
Selenium, dissolved	0.0015		0.0005	mg/L	Oct-28-11	Oct-28-11	
Silicon, dissolved	7.8		0.5	mg/L	Oct-28-11	Oct-28-11	
Silver, dissolved	< 0.00005		0.00005	mg/L	Oct-28-11	Oct-28-11	
Sodium, dissolved	74.3		0.02	mg/L	Oct-28-11	Oct-28-11	
Strontium, dissolved	2.30		0.001	mg/L	Oct-28-11	Oct-28-11	
Tellurium, dissolved	< 0.0002		0.0002	mg/L	Oct-28-11	Oct-28-11	
Thallium, dissolved	0.00005		0.00002	mg/L	Oct-28-11	Oct-28-11	
Thorium, dissolved	< 0.0001		0.0001	mg/L	Oct-28-11	Oct-28-11	
Tin, dissolved	< 0.0002		0.0002	mg/L	Oct-28-11	Oct-28-11	
Titanium, dissolved	< 0.005		0.005	mg/L	Oct-28-11	Oct-28-11	
Uranium, dissolved	0.00255		0.00002	mg/L	Oct-28-11	Oct-28-11	
Vanadium, dissolved	< 0.001		0.001	mg/L	Oct-28-11	Oct-28-11	
Zinc, dissolved	0.050		0.004	mg/L	Oct-28-11	Oct-28-11	
Zirconium, dissolved	0.0003		0.0001	mg/L	Oct-28-11	Oct-28-11	

Total Recoverable Metals by ICPMS

MW-01 (K1J0963-01) Matrix: Water Sampled: Oct-25-11

Calcium	89.0	2.0	mg/L	Oct-28-11	Oct-29-11
Magnesium	60.6	0.10	mg/L	Oct-28-11	Oct-29-11

MW-02 (K1J0963-02) Matrix: Water Sampled: Oct-25-11

Calcium	172	2.0	mg/L	Oct-28-11	Oct-29-11
Magnesium	84.1	0.10	mg/L	Oct-28-11	Oct-29-11

MW-03 (K1J0963-03) Matrix: Water Sampled: Oct-25-11

Calcium	147	2.0	mg/L	Oct-28-11	Oct-29-11
Magnesium	99.4	0.10	mg/L	Oct-28-11	Oct-29-11

Volatile Organic Compounds by GCMS

SAMPLE DATA



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Volatile Organic Compounds by GCMS, Continued

MW-01 (K1J0963-01) Matrix: Water Sampled: Oct-25-11

Benzene	< 0.000500	MAC = 0.005	0.000500	mg/L	Oct-28-11	Nov-03-11	
Bromodichloromethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Bromoform	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Carbon tetrachloride	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
Chlorobenzene	< 0.00100	MAC = 0.08	0.00100	mg/L	Oct-28-11	Nov-03-11	
Chloroethane	< 0.00200		0.00200	mg/L	Oct-28-11	Nov-03-11	
Chloroform	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Dibromochloromethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,2-Dibromoethane	< 0.000300		0.000300	mg/L	Oct-28-11	Nov-03-11	
Dibromomethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,2-Dichlorobenzene	< 0.000500	MAC = 0.2	0.000500	mg/L	Oct-28-11	Nov-03-11	
1,3-Dichlorobenzene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,4-Dichlorobenzene	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1-Dichloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,2-Dichloroethane	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1-Dichloroethene	< 0.00100	MAC = 0.01	0.00100	mg/L	Oct-28-11	Nov-03-11	
cis-1,2-Dichloroethene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
trans-1,2-Dichloroethene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,2-Dichloropropane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
cis-1,3-Dichloropropene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
trans-1,3-Dichloropropene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Ethylbenzene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Methyl tert-butyl ether	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Dichloromethane	< 0.00300	MAC = 0.05	0.00300	mg/L	Oct-28-11	Nov-03-11	
Styrene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1,2,2-Tetrachloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Tetrachloroethylene	< 0.00100	MAC = 0.03	0.00100	mg/L	Oct-28-11	Nov-03-11	
Toluene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1,1-Trichloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1,2-Trichloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Trichloroethylene	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
Trichlorofluoromethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Vinyl chloride	< 0.00200	MAC = 0.002	0.00200	mg/L	Oct-28-11	Nov-03-11	
Xylenes (total)	< 0.00200		0.00200	mg/L	Oct-28-11	Nov-03-11	
Surrogate: Toluene-d8	89 %		80-120		Oct-28-11	Nov-03-11	
Surrogate: 4-Bromofluorobenzene	91 %		80-120		Oct-28-11	Nov-03-11	
Surrogate: 1,4-Dichlorobenzene-d4	87 %		80-120		Oct-28-11	Nov-03-11	

MW-02 (K1J0963-02) Matrix: Water Sampled: Oct-25-11

Benzene	< 0.000500	MAC = 0.005	0.000500	mg/L	Oct-28-11	Nov-03-11	
Bromodichloromethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Bromoform	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Carbon tetrachloride	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
Chlorobenzene	< 0.00100	MAC = 0.08	0.00100	mg/L	Oct-28-11	Nov-03-11	
Chloroethane	< 0.00200		0.00200	mg/L	Oct-28-11	Nov-03-11	
Chloroform	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	

SAMPLE DATA



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REPORTED Nov-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Volatile Organic Compounds by GCMS, Continued

MW-02 (K1J0963-02) Matrix: Water Sampled: Oct-25-11, Continued

Dibromochloromethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,2-Dibromoethane	< 0.000300		0.000300	mg/L	Oct-28-11	Nov-03-11	
Dibromomethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,2-Dichlorobenzene	< 0.000500	MAC = 0.2	0.000500	mg/L	Oct-28-11	Nov-03-11	
1,3-Dichlorobenzene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,4-Dichlorobenzene	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1-Dichloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,2-Dichloroethane	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1-Dichloroethene	< 0.00100	MAC = 0.01	0.00100	mg/L	Oct-28-11	Nov-03-11	
cis-1,2-Dichloroethene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
trans-1,2-Dichloroethene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,2-Dichloropropane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
cis-1,3-Dichloropropene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
trans-1,3-Dichloropropene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Ethylbenzene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Methyl tert-butyl ether	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Dichloromethane	< 0.00300	MAC = 0.05	0.00300	mg/L	Oct-28-11	Nov-03-11	
Styrene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1,2,2-Tetrachloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Tetrachloroethylene	< 0.00100	MAC = 0.03	0.00100	mg/L	Oct-28-11	Nov-03-11	
Toluene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1,1-Trichloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1,2-Trichloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Trichloroethylene	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
Trichlorofluoromethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Vinyl chloride	< 0.00200	MAC = 0.002	0.00200	mg/L	Oct-28-11	Nov-03-11	
Xylenes (total)	< 0.00200		0.00200	mg/L	Oct-28-11	Nov-03-11	
Surrogate: Toluene-d8	89 %		80-120		Oct-28-11	Nov-03-11	
Surrogate: 4-Bromofluorobenzene	88 %		80-120		Oct-28-11	Nov-03-11	
Surrogate: 1,4-Dichlorobenzene-d4	85 %		80-120		Oct-28-11	Nov-03-11	

MW-03 (K1J0963-03) Matrix: Water Sampled: Oct-25-11

Benzene	< 0.000500	MAC = 0.005	0.000500	mg/L	Oct-28-11	Nov-03-11	
Bromodichloromethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Bromoform	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Carbon tetrachloride	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
Chlorobenzene	< 0.00100	MAC = 0.08	0.00100	mg/L	Oct-28-11	Nov-03-11	
Chloroethane	< 0.00200		0.00200	mg/L	Oct-28-11	Nov-03-11	
Chloroform	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Dibromochloromethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,2-Dibromoethane	< 0.000300		0.000300	mg/L	Oct-28-11	Nov-03-11	
Dibromomethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,2-Dichlorobenzene	< 0.000500	MAC = 0.2	0.000500	mg/L	Oct-28-11	Nov-03-11	
1,3-Dichlorobenzene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,4-Dichlorobenzene	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1-Dichloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	

SAMPLE DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

WORK ORDER # K1J0963
REPORTED Nov-04-11

Analyte	Result	Canadian DW Guideline (Dec 10)	RDL	Units	Prepared	Analyzed	Notes
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Volatile Organic Compounds by GCMS, Continued

MW-03 (K1J0963-03) Matrix: Water Sampled: Oct-25-11, Continued

1,2-Dichloroethane	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1-Dichloroethene	< 0.00100	MAC = 0.01	0.00100	mg/L	Oct-28-11	Nov-03-11	
cis-1,2-Dichloroethene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
trans-1,2-Dichloroethene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,2-Dichloropropane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
cis-1,3-Dichloropropene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
trans-1,3-Dichloropropene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Ethylbenzene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Methyl tert-butyl ether	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Dichloromethane	< 0.00300	MAC = 0.05	0.00300	mg/L	Oct-28-11	Nov-03-11	
Styrene	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1,2,2-Tetrachloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Tetrachloroethylene	< 0.00100	MAC = 0.03	0.00100	mg/L	Oct-28-11	Nov-03-11	
Toluene	0.00182		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1,1-Trichloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
1,1,2-Trichloroethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Trichloroethylene	< 0.00100	MAC = 0.005	0.00100	mg/L	Oct-28-11	Nov-03-11	
Trichlorofluoromethane	< 0.00100		0.00100	mg/L	Oct-28-11	Nov-03-11	
Vinyl chloride	< 0.00200	MAC = 0.002	0.00200	mg/L	Oct-28-11	Nov-03-11	
Xylenes (total)	< 0.00200		0.00200	mg/L	Oct-28-11	Nov-03-11	
Surrogate: Toluene-d8	85 %		80-120		Oct-28-11	Nov-03-11	
Surrogate: 4-Bromofluorobenzene	84 %		80-120		Oct-28-11	Nov-03-11	
Surrogate: 1,4-Dichlorobenzene-d4	80 %		80-120		Oct-28-11	Nov-03-11	

Sample Qualifiers:

F1 The sample was not field-filtered and was therefore filtered (0.45um) in the laboratory prior to analysis.

ANALYSIS / REPORT INFORMATION

CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

WORK ORDER # K1J0963
REPORTED Nov-04-11

Analysis Description	Method Reference(s) (* = modified from)		LAB
	Preparation	Analysis	
Dissolved Metals by ICPMS	N/A	EPA 6020A	RMD
Alkalinity, total	N/A	APHA 2320 B *	KEL
BOD, 5-day Total	N/A	APHA 5210 B	KEL
Total Organic Carbon	N/A	APHA 5310 B	KEL
Chloride by IC	N/A	APHA 4110 B	KEL
Chemical Oxygen Demand	N/A	APHA 5220 D	KEL
Conductivity-Water	N/A	APHA 2510 B	KEL
Ammonia-N	N/A	APHA 4500-NH3 G *	KEL
Nitrate by IC	N/A	APHA 4110 B	KEL
Nitrite by IC	N/A	APHA 4110 B	KEL
Total Nitrogen (TKN + NO3-N+NO2-N)		Calc	KEL
Total Kjeldahl Nitrogen	EPA 351.2 *	EPA 351.2 *	KEL
pH	N/A	APHA 4500-H+ B	KEL
Sulfate by IC	N/A	APHA 4110 B	KEL
Total Recoverable Metals by ICPMS	EPA 200.2 *	EPA 6020A	RMD
VOC in Water	EPA 5030B	EPA 8260B	RMD

QUALITY CONTROL DATA



CLIENT
PROJECT

Western Water Associates Ltd
Lillooet - Old Landfill

WORK ORDER #
REPORTED

K1J0963
Nov-04-11

The following section reports quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with quality control samples that ensure your data is of the highest quality. Common QC types include:

- Method Blank (Blk): Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- Duplicate (Dup): Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- Blank Spike (BS): A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- Standard Reference Material (SRM): A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested for.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC	% REC Limits	% RPD	% RPD Limit	Notes
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Dissolved Metals by ICPMS, Batch B1J0371

Blank (B1J0371-BLK1)

Prepared: Oct-28-11, Analyzed: Oct-28-11

Aluminum, dissolved	< 0.005	0.005 mg/L
Antimony, dissolved	< 0.0001	0.0001 mg/L
Arsenic, dissolved	< 0.0005	0.0005 mg/L
Barium, dissolved	< 0.005	0.005 mg/L
Beryllium, dissolved	< 0.0001	0.0001 mg/L
Bismuth, dissolved	< 0.0001	0.0001 mg/L
Boron, dissolved	< 0.004	0.004 mg/L
Cadmium, dissolved	< 0.00001	0.00001 mg/L
Calcium, dissolved	< 0.500	0.500 mg/L
Chromium, dissolved	< 0.0005	0.0005 mg/L
Cobalt, dissolved	< 0.00005	0.00005 mg/L
Copper, dissolved	< 0.0002	0.0002 mg/L
Iron, dissolved	< 0.0100	0.0100 mg/L
Lead, dissolved	< 0.0001	0.0001 mg/L
Lithium, dissolved	< 0.0001	0.0001 mg/L
Magnesium, dissolved	< 0.0100	0.0100 mg/L
Manganese, dissolved	< 0.0002	0.0002 mg/L
Mercury, dissolved	< 0.00002	0.00002 mg/L
Molybdenum, dissolved	< 0.0001	0.0001 mg/L
Nickel, dissolved	< 0.0002	0.0002 mg/L
Phosphorus, dissolved	< 0.0200	0.0200 mg/L
Potassium, dissolved	< 0.0200	0.0200 mg/L
Selenium, dissolved	< 0.0005	0.0005 mg/L
Silicon, dissolved	< 0.500	0.500 mg/L
Silver, dissolved	< 0.00005	0.00005 mg/L
Sodium, dissolved	< 0.0200	0.0200 mg/L
Strontium, dissolved	< 0.001	0.001 mg/L
Tellurium, dissolved	< 0.0002	0.0002 mg/L
Thallium, dissolved	< 0.00002	0.00002 mg/L
Thorium, dissolved	< 0.0001	0.0001 mg/L
Tin, dissolved	< 0.0002	0.0002 mg/L
Titanium, dissolved	< 0.005	0.005 mg/L
Uranium, dissolved	< 0.00002	0.00002 mg/L
Vanadium, dissolved	< 0.001	0.001 mg/L
Zinc, dissolved	< 0.004	0.004 mg/L
Zirconium, dissolved	< 0.0001	0.0001 mg/L

Reference (B1J0371-SRM1)

Prepared: Oct-28-11, Analyzed: Oct-28-11

Aluminum, dissolved	0.202	0.005 mg/L	0.209	96	74-127
Antimony, dissolved	0.0391	0.0001 mg/L	0.0400	98	86-116
Arsenic, dissolved	0.421	0.0005 mg/L	0.404	104	84-111
Barium, dissolved	3.32	0.005 mg/L	3.12	107	87-114

QUALITY CONTROL DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

WORK ORDER # K1J0963
REPORTED Nov-04-11

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	% REC	% REC Limits	% RPD	% RPD Limit	Notes
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Dissolved Metals by ICPMS, Batch B1J0371, Continued

Reference (B1J0371-SRM1), Continued

Prepared: Oct-28-11, Analyzed: Oct-28-11

Beryllium, dissolved	0.208	0.0001	mg/L	0.197		106	78-127			
Boron, dissolved	1.70	0.004	mg/L	1.61		105	74-117			
Cadmium, dissolved	0.200	0.00001	mg/L	0.200		100	89-110			
Calcium, dissolved	7.3	0.500	mg/L	6.50		113	83-128			
Chromium, dissolved	0.410	0.0005	mg/L	0.401		102	87-112			
Cobalt, dissolved	0.118	0.00005	mg/L	0.119		100	88-113			
Copper, dissolved	0.822	0.0002	mg/L	0.781		105	91-115			
Iron, dissolved	1.21	0.0100	mg/L	1.17		103	81-117			
Lead, dissolved	0.104	0.0001	mg/L	0.102		102	90-114			
Lithium, dissolved	0.110	0.0001	mg/L	0.0960		114	77-134			
Magnesium, dissolved	6.33	0.0100	mg/L	6.11		104	79-122			
Manganese, dissolved	0.310	0.0002	mg/L	0.318		97	86-114			
Molybdenum, dissolved	0.407	0.0001	mg/L	0.387		105	92-113			
Nickel, dissolved	0.821	0.0002	mg/L	0.789		104	89-114			
Phosphorus, dissolved	0.42	0.0200	mg/L	0.448		94	60-117			
Potassium, dissolved	2.82	0.0200	mg/L	2.84		99	80-113			
Selenium, dissolved	0.0314	0.0005	mg/L	0.0300		105	84-120			
Sodium, dissolved	17.5	0.0200	mg/L	17.4		100	78-118			
Strontium, dissolved	1.01	0.001	mg/L	0.979		103	88-113			
Thallium, dissolved	0.0383	0.00002	mg/L	0.0350		110	96-129			
Uranium, dissolved	0.199	0.00002	mg/L	0.244		82	68-95			
Vanadium, dissolved	0.786	0.001	mg/L	0.798		99	83-110			
Zinc, dissolved	0.797	0.004	mg/L	0.800		100	90-115			

General Parameters, Batch K104667

Blank (K104667-BLK1)

Prepared: Oct-26-11, Analyzed: Oct-28-11

Carbon, Total Organic	< 0.5	0.5	mg/L							
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Blank (K104667-BLK2)

Prepared: Oct-26-11, Analyzed: Oct-28-11

Carbon, Total Organic	< 0.5	0.5	mg/L							
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LCS (K104667-BS1)

Prepared: Oct-26-11, Analyzed: Oct-28-11

Carbon, Total Organic	9.7	0.5	mg/L	10.0		97	80-120			
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LCS (K104667-BS2)

Prepared: Oct-26-11, Analyzed: Oct-28-11

Carbon, Total Organic	9.8	0.5	mg/L	10.0		98	80-120			
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General Parameters, Batch K104669

Blank (K104669-BLK1)

Prepared: Oct-26-11, Analyzed: Oct-31-11

BOD, 5-day	< 10	10	mg/L							
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Blank (K104669-BLK2)

Prepared: Oct-26-11, Analyzed: Oct-31-11

BOD, 5-day	< 10	10	mg/L							
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LCS (K104669-BS1)

Prepared: Oct-26-11, Analyzed: Oct-31-11

BOD, 5-day	210	10	mg/L	198		104	80-120			
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LCS (K104669-BS2)

Prepared: Oct-26-11, Analyzed: Oct-31-11

BOD, 5-day	210	10	mg/L	198		105	80-120			
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General Parameters, Batch K104676

Blank (K104676-BLK1)

Prepared: Oct-26-11, Analyzed: Oct-26-11

Alkalinity, Total as CaCO3	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2	2	uS/cm							

Blank (K104676-BLK2)

Prepared: Oct-26-11, Analyzed: Oct-26-11

Alkalinity, Total as CaCO3	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2	2	uS/cm							

QUALITY CONTROL DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet - Old Landfill

**WORK ORDER #
REPORTED**

K1J0963
Nov-04-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch K104676, Continued

Blank (K104676-BLK3)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
Alkalinity, Total as CaCO3	< 1.0	1.0 mg/L					
Conductivity (EC)	< 2	2 uS/cm					
Blank (K104676-BLK4)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
Alkalinity, Total as CaCO3	< 1.0	1.0 mg/L					
Conductivity (EC)	< 2	2 uS/cm					
LCS (K104676-BS1)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
Alkalinity, Total as CaCO3	104	1.0 mg/L	100		104	96-108	
LCS (K104676-BS2)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
Alkalinity, Total as CaCO3	102	1.0 mg/L	100		102	96-108	
LCS (K104676-BS3)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
Alkalinity, Total as CaCO3	102	1.0 mg/L	100		102	96-108	
LCS (K104676-BS4)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
Alkalinity, Total as CaCO3	102	1.0 mg/L	100		102	96-108	
LCS (K104676-BS5)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
Conductivity (EC)	1410	2 uS/cm	1410		100	93-104	
LCS (K104676-BS6)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
Conductivity (EC)	1410	2 uS/cm	1410		100	93-104	
LCS (K104676-BS7)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
Conductivity (EC)	1410	2 uS/cm	1410		100	93-104	
LCS (K104676-BS8)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
Conductivity (EC)	1410	2 uS/cm	1410		100	93-104	
Duplicate (K104676-DUP4)		Source: K1J0963-01		Prepared: Oct-26-11, Analyzed: Oct-26-11			
Alkalinity, Total as CaCO3	291	1.0 mg/L		290		< 1	10
Conductivity (EC)	842	2 uS/cm		843		< 1	5
pH	7.94	0.01 pH Units		7.91		< 1	5
Reference (K104676-SRM1)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
pH	6.98	0.01 pH Units	7.00		100	98-102	
Reference (K104676-SRM2)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
pH	7.00	0.01 pH Units	7.00		100	98-102	
Reference (K104676-SRM3)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
pH	6.99	0.01 pH Units	7.00		100	98-102	
Reference (K104676-SRM4)		Prepared: Oct-26-11, Analyzed: Oct-26-11					
pH	6.99	0.01 pH Units	7.00		100	98-102	

General Parameters, Batch K104695

Blank (K104695-BLK1)		Prepared: Oct-27-11, Analyzed: Oct-27-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
Blank (K104695-BLK2)		Prepared: Oct-27-11, Analyzed: Oct-27-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
Blank (K104695-BLK3)		Prepared: Oct-27-11, Analyzed: Oct-27-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					

QUALITY CONTROL DATA



CLIENT
PROJECT

Western Water Associates Ltd
Lillooet - Old Landfill

WORK ORDER #
REPORTED

K1J0963
Nov-04-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch K104695, Continued

Blank (K104695-BLK4)		Prepared: Oct-27-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
Blank (K104695-BLK5)		Prepared: Oct-27-11, Analyzed: Oct-27-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
Blank (K104695-BLK6)		Prepared: Oct-27-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
Blank (K104695-BLK7)		Prepared: Oct-27-11, Analyzed: Oct-27-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
Blank (K104695-BLK8)		Prepared: Oct-27-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
Blank (K104695-BLK9)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
Blank (K104695-BLKA)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
Blank (K104695-BLKB)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	< 0.01	0.01 mg/L					
LCS (K104695-BS1)		Prepared: Oct-27-11, Analyzed: Oct-27-11					
Nitrogen, Ammonia as N	9.32	0.10 mg/L	10.0		93	86-111	
LCS (K104695-BS2)		Prepared: Oct-27-11, Analyzed: Oct-27-11					
Nitrogen, Ammonia as N	9.94	0.10 mg/L	10.0		99	86-111	
LCS (K104695-BS3)		Prepared: Oct-27-11, Analyzed: Oct-27-11					
Nitrogen, Ammonia as N	9.21	0.10 mg/L	10.0		92	86-111	
LCS (K104695-BS4)		Prepared: Oct-27-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	10.2	0.10 mg/L	10.0		102	86-111	
LCS (K104695-BS5)		Prepared: Oct-27-11, Analyzed: Oct-27-11					
Nitrogen, Ammonia as N	9.32	0.10 mg/L	10.0		93	86-111	
LCS (K104695-BS6)		Prepared: Oct-27-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	10.1	0.10 mg/L	10.0		101	86-111	
LCS (K104695-BS7)		Prepared: Oct-27-11, Analyzed: Oct-27-11					
Nitrogen, Ammonia as N	10.2	0.10 mg/L	10.0		102	86-111	
LCS (K104695-BS8)		Prepared: Oct-27-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	10.2	0.10 mg/L	10.0		102	86-111	
LCS (K104695-BS9)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	9.51	0.10 mg/L	10.0		95	86-111	
LCS (K104695-BSA)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	9.48	0.10 mg/L	10.0		95	86-111	
LCS (K104695-BSB)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Nitrogen, Ammonia as N	9.52	0.10 mg/L	10.0		95	86-111	

General Parameters, Batch K104722

QUALITY CONTROL DATA



**CLIENT
PROJECT**

Western Water Associates Ltd
Lillooet - Old Landfill

**WORK ORDER #
REPORTED**

K1J0963
Nov-04-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch K104722, Continued

Blank (K104722-BLK1)			Prepared: Oct-28-11, Analyzed: Oct-28-11				
Chloride	< 0.10	0.10 mg/L					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.01	0.01 mg/L					
Sulfate	< 1.0	1.0 mg/L					
Blank (K104722-BLK2)			Prepared: Oct-28-11, Analyzed: Oct-28-11				
Chloride	< 0.10	0.10 mg/L					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.01	0.01 mg/L					
Sulfate	< 1.0	1.0 mg/L					
Blank (K104722-BLK3)			Prepared: Oct-28-11, Analyzed: Oct-28-11				
Chloride	< 0.10	0.10 mg/L					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.01	0.01 mg/L					
Sulfate	< 1.0	1.0 mg/L					
Blank (K104722-BLK4)			Prepared: Oct-28-11, Analyzed: Oct-29-11				
Chloride	< 0.10	0.10 mg/L					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.01	0.01 mg/L					
Sulfate	< 1.0	1.0 mg/L					
Blank (K104722-BLK5)			Prepared: Oct-28-11, Analyzed: Oct-29-11				
Chloride	< 0.10	0.10 mg/L					
Nitrogen, Nitrate as N	< 0.010	0.010 mg/L					
Nitrogen, Nitrite as N	< 0.01	0.01 mg/L					
Sulfate	< 1.0	1.0 mg/L					
LCS (K104722-BS1)			Prepared: Oct-28-11, Analyzed: Oct-28-11				
Chloride	4.21	0.10 mg/L	4.00		105	85-115	
Nitrogen, Nitrate as N	4.30	0.010 mg/L	4.00		107	85-115	
Nitrogen, Nitrite as N	4.08	0.01 mg/L	4.00		102	85-115	
Sulfate	4.1	1.0 mg/L	4.00		103	85-115	
LCS (K104722-BS2)			Prepared: Oct-28-11, Analyzed: Oct-28-11				
Chloride	4.20	0.10 mg/L	4.00		105	85-115	
Nitrogen, Nitrate as N	4.28	0.010 mg/L	4.00		107	85-115	
Nitrogen, Nitrite as N	4.07	0.01 mg/L	4.00		102	85-115	
Sulfate	4.1	1.0 mg/L	4.00		102	85-115	
LCS (K104722-BS3)			Prepared: Oct-28-11, Analyzed: Oct-29-11				
Chloride	4.20	0.10 mg/L	4.00		105	85-115	
Nitrogen, Nitrate as N	4.31	0.010 mg/L	4.00		108	85-115	
Nitrogen, Nitrite as N	4.07	0.01 mg/L	4.00		102	85-115	
Sulfate	4.2	1.0 mg/L	4.00		104	85-115	
LCS (K104722-BS4)			Prepared: Oct-28-11, Analyzed: Oct-29-11				
Chloride	4.17	0.10 mg/L	4.00		104	85-115	
Nitrogen, Nitrate as N	4.28	0.010 mg/L	4.00		107	85-115	
Nitrogen, Nitrite as N	4.07	0.01 mg/L	4.00		102	85-115	
Sulfate	4.1	1.0 mg/L	4.00		103	85-115	
LCS (K104722-BS5)			Prepared: Oct-28-11, Analyzed: Oct-29-11				
Chloride	4.28	0.10 mg/L	4.00		107	85-115	
Nitrogen, Nitrate as N	4.28	0.010 mg/L	4.00		107	85-115	
Nitrogen, Nitrite as N	4.20	0.01 mg/L	4.00		105	85-115	
Sulfate	4.1	1.0 mg/L	4.00		103	85-115	

General Parameters, Batch K104759

QUALITY CONTROL DATA



**CLIENT
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Western Water Associates Ltd
Lillooet - Old Landfill

**WORK ORDER #
REPORTED**

K1J0963
Nov-04-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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General Parameters, Batch K104759, Continued

Blank (K104759-BLK1)		Prepared: Oct-31-11, Analyzed: Nov-02-11					
Nitrogen, Total Kjeldahl	< 0.05	0.05 mg/L					
Blank (K104759-BLK2)		Prepared: Oct-31-11, Analyzed: Nov-02-11					
Nitrogen, Total Kjeldahl	< 0.05	0.05 mg/L					
LCS (K104759-BS1)		Prepared: Oct-31-11, Analyzed: Nov-02-11					
Nitrogen, Total Kjeldahl	10.2	0.05 mg/L	10.0	102	89-116		
LCS (K104759-BS2)		Prepared: Oct-31-11, Analyzed: Nov-02-11					
Nitrogen, Total Kjeldahl	10.4	0.05 mg/L	10.0	104	89-116		

General Parameters, Batch K104772

Blank (K104772-BLK1)		Prepared: Nov-01-11, Analyzed: Nov-02-11					
Chemical Oxygen Demand	< 5	5 mg/L					
LCS (K104772-BS1)		Prepared: Nov-01-11, Analyzed: Nov-02-11					
Chemical Oxygen Demand	51	5 mg/L	50.0	102	82-119		

Total Recoverable Metals by ICPMS, Batch B1J0373

Blank (B1J0373-BLK1)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Calcium	< 2.0	2.0 mg/L					
Magnesium	< 0.10	0.10 mg/L					
Blank (B1J0373-BLK2)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Calcium	< 2.0	2.0 mg/L					
Magnesium	< 0.10	0.10 mg/L					
Blank (B1J0373-BLK3)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Calcium	< 2.0	2.0 mg/L					
Magnesium	< 0.10	0.10 mg/L					
Reference (B1J0373-SRM1)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Calcium	10.4	2.0 mg/L	10.2	101	86-121		
Magnesium	3.38	0.10 mg/L	3.31	102	78-120		
Reference (B1J0373-SRM2)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Calcium	10.1	2.0 mg/L	10.2	99	86-121		
Magnesium	3.35	0.10 mg/L	3.31	101	78-120		
Reference (B1J0373-SRM3)		Prepared: Oct-28-11, Analyzed: Oct-28-11					
Calcium	10.4	2.0 mg/L	10.2	102	86-121		
Magnesium	3.49	0.10 mg/L	3.31	105	78-120		

Volatile Organic Compounds by GCMS, Batch B1J0380

Blank (B1J0380-BLK1)		Prepared: Oct-28-11, Analyzed: Oct-31-11					
Benzene	< 0.0005	0.0005 mg/L					
Bromodichloromethane	< 0.0010	0.0010 mg/L					
Bromoform	< 0.0010	0.0010 mg/L					
Carbon tetrachloride	< 0.0010	0.0010 mg/L					
Chlorobenzene	< 0.0010	0.0010 mg/L					
Chloroethane	< 0.0020	0.0020 mg/L					
Chloroform	< 0.0010	0.0010 mg/L					
Dibromochloromethane	< 0.0010	0.0010 mg/L					
1,2-Dibromoethane	< 0.0003	0.0003 mg/L					
Dibromomethane	< 0.0010	0.0010 mg/L					
1,2-Dichlorobenzene	< 0.0005	0.0005 mg/L					
1,3-Dichlorobenzene	< 0.0010	0.0010 mg/L					

QUALITY CONTROL DATA



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Western Water Associates Ltd
Lillooet - Old Landfill

WORK ORDER #
REPORTED

K1J0963
Nov-04-11

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	% REC	% REC Limits	% RPD	% RPD Limit	Notes
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Volatile Organic Compounds by GCMS, Batch B1J0380, Continued

Blank (B1J0380-BLK1), Continued

Prepared: Oct-28-11, Analyzed: Oct-31-11

1,4-Dichlorobenzene	< 0.0010	0.0010	mg/L							
1,1-Dichloroethane	< 0.0010	0.0010	mg/L							
1,2-Dichloroethane	< 0.0010	0.0010	mg/L							
1,1-Dichloroethene	< 0.0010	0.0010	mg/L							
cis-1,2-Dichloroethene	< 0.0010	0.0010	mg/L							
trans-1,2-Dichloroethene	< 0.0010	0.0010	mg/L							
1,2-Dichloropropane	< 0.0010	0.0010	mg/L							
cis-1,3-Dichloropropene	< 0.0010	0.0010	mg/L							
trans-1,3-Dichloropropene	< 0.0010	0.0010	mg/L							
Ethylbenzene	< 0.0010	0.0010	mg/L							
Methyl tert-butyl ether	< 0.0010	0.0010	mg/L							
Dichloromethane	< 0.0030	0.0030	mg/L							
Styrene	< 0.0010	0.0010	mg/L							
1,1,2,2-Tetrachloroethane	< 0.0010	0.0010	mg/L							
Tetrachloroethylene	< 0.0010	0.0010	mg/L							
Toluene	< 0.0010	0.0010	mg/L							
1,1,1-Trichloroethane	< 0.0010	0.0010	mg/L							
1,1,2-Trichloroethane	< 0.0010	0.0010	mg/L							
Trichloroethylene	< 0.0010	0.0010	mg/L							
Trichlorofluoromethane	< 0.0010	0.0010	mg/L							
Vinyl chloride	< 0.0020	0.0020	mg/L							
Xylenes (total)	< 0.0020	0.0020	mg/L							
Surrogate: Toluene-d8	0.0266		mg/L	0.0250		106	80-120			
Surrogate: 4-Bromofluorobenzene	0.0199		mg/L	0.0250		80	80-120			
Surrogate: 1,4-Dichlorobenzene-d4	0.0202		mg/L	0.0250		81	80-120			

LCS (B1J0380-BS1)

Prepared: Oct-28-11, Analyzed: Nov-01-11

Benzene	0.0194	0.0005	mg/L	0.0200		97	80-120			
Bromodichloromethane	0.0228	0.0010	mg/L	0.0200		114	80-120			
Bromoform	0.0187	0.0010	mg/L	0.0200		94	80-120			
Carbon tetrachloride	0.0204	0.0010	mg/L	0.0200		102	80-120			
Chlorobenzene	0.0202	0.0010	mg/L	0.0200		101	80-120			
Chloroethane	0.0194	0.0020	mg/L	0.0200		97	80-120			
Chloroform	0.0208	0.0010	mg/L	0.0200		104	80-120			
Dibromochloromethane	0.0210	0.0010	mg/L	0.0200		105	80-120			
1,2-Dibromoethane	0.0200	0.0003	mg/L	0.0200		100	80-120			
Dibromomethane	0.0222	0.0010	mg/L	0.0200		111	80-120			
1,2-Dichlorobenzene	0.0191	0.0005	mg/L	0.0200		96	80-120			
1,3-Dichlorobenzene	0.0194	0.0010	mg/L	0.0200		97	80-120			
1,4-Dichlorobenzene	0.0192	0.0010	mg/L	0.0200		96	80-120			
1,1-Dichloroethane	0.0184	0.0010	mg/L	0.0200		92	80-120			
1,2-Dichloroethane	0.0219	0.0010	mg/L	0.0200		110	80-120			
1,1-Dichloroethene	0.0172	0.0010	mg/L	0.0200		86	80-120			
cis-1,2-Dichloroethene	0.0210	0.0010	mg/L	0.0200		105	80-120			
trans-1,2-Dichloroethene	0.0230	0.0010	mg/L	0.0200		115	80-120			
1,2-Dichloropropane	0.0197	0.0010	mg/L	0.0200		99	80-120			
cis-1,3-Dichloropropene	0.0198	0.0010	mg/L	0.0200		99	80-120			
trans-1,3-Dichloropropene	0.0194	0.0010	mg/L	0.0200		97	80-120			
Ethylbenzene	0.0199	0.0010	mg/L	0.0200		100	80-120			
Methyl tert-butyl ether	0.0230	0.0010	mg/L	0.0200		115	80-120			
Dichloromethane	0.0215	0.0030	mg/L	0.0200		107	80-120			
Styrene	0.0193	0.0010	mg/L	0.0200		96	80-120			
1,1,2,2-Tetrachloroethane	0.0188	0.0010	mg/L	0.0200		94	80-120			
Tetrachloroethylene	0.0233	0.0010	mg/L	0.0200		116	80-120			
Toluene	0.0230	0.0010	mg/L	0.0200		115	80-120			
1,1,1-Trichloroethane	0.0214	0.0010	mg/L	0.0200		107	80-120			
1,1,2-Trichloroethane	0.0216	0.0010	mg/L	0.0200		108	80-120			
Trichloroethylene	0.0202	0.0010	mg/L	0.0200		101	80-120			
Trichlorofluoromethane	0.0187	0.0010	mg/L	0.0200		93	70-130			
Vinyl chloride	0.0185	0.0020	mg/L	0.0200		92	70-130			
Xylenes (total)	0.0586	0.0020	mg/L	0.0600		98	80-120			
Surrogate: Toluene-d8	0.0272		mg/L	0.0250		109	80-120			
Surrogate: 4-Bromofluorobenzene	0.0243		mg/L	0.0250		97	80-120			

QUALITY CONTROL DATA



CLIENT Western Water Associates Ltd
PROJECT Lillooet - Old Landfill

WORK ORDER # K1J0963
REPORTED Nov-04-11

Analyte	Result	Reporting Limit Units	Spike Level	Source Result	% REC Limits	% RPD Limit	Notes
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Volatile Organic Compounds by GCMS, Batch B1J0380, Continued

LCS (B1J0380-BS1), Continued

Prepared: Oct-28-11, Analyzed: Nov-01-11

Surrogate: 1,4-Dichlorobenzene-d4	0.0250	mg/L	0.0250	100	80-120		
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Appendix F

Table from USEPA
Characteristic of Leachate and
Domestic Waster Waters



TABLE 1
CHARACTERISTICS OF LEACHATE AND DOMESTIC WASTE WATERS

Constituent	Range* (mg/l)	Range + (mg/l)	Range† (mg/l)	Leachate§		Waste water§	Ratio§
				Fresh	old		
Chloride (Cl)	34-2,800	100-2,400	600-800	742	197	50	15
Iron (Fe)	0.2-5,500	200-1,700	210-325	500	1.5	0.1	5,000
Manganese (Mn)	.06-1,400	--	75-125	49	--	0.1	490
Zinc (Zn)	0-1,000	1-135	10-30	45	0.16	--	--
Magnesium (Mg)	16.5-15,600	--	160-250	277	81	30	9
Calcium (Ca)	5-4,080	--	900-1,700	2,136	254	50	43
Potassium (K)	2.8-3,770	--	295-310	--	--	--	--
Sodium (Na)	0-7,700	100-3,800	450-500	--	--	--	--
Phosphate (P)	0-154	5-130	--	7.35	4.96	10	0.7
Copper (Cu)	0-9.9	--	0.5	0.5	0.1	--	--
Lead (Pb)	0-5.0	--	1.6	--	--	--	--
Cadmium (Cd)	--	--	0.4	--	--	--	--
Sulfate (SO ₄)	1-1,826	25-500	400-650	--	--	--	--
Total N	0-1,416	20-500	--	989	7.51	40	25
Conductivity (Mmhos)	--	--	6,000-9,000	9,200	1,400	700	13
TDS	0-42,276	--	10,000-14,000	12,620	1,144	--	--
TSS	6-2,685	--	100-700	327	266	200	1.6
pH	3.7-8.5	4.0-8.5	5.2-6.4	5.2	7.3	8.0	--
Alk as CaCO ₃	0-20,850	--	800-4,000	--	--	--	--
Hardness tot.	0-22,800	200-5,250	3,500-5,000	--	--	--	--
BOD ₅	9-54,610	--	7,500-10,000	14,950	--	200	75
COD	0-89,520	100-51,000	16,000-22,000	22,650	81	500	45

*Office of Solid Waste Management Programs, Hazardous Waste Management Division. An environmental assessment of potential gas and leachate problems at land disposal sites. Environmental Protection Publication SW-110.0f. [Cincinnati], U.S. Environmental Protection Agency, 1973. 33 p. [Open-file report, restricted distribution.]

+Steiner, R. C., A. A. Fungaroli, R. J. Schoenberger, and P. W. Purdom. Criteria for sanitary landfill development. Public Works, 102(3): 77-79, Mar. 1971.

‡Gas and Leachate from land disposal of municipal solid waste; summary report. Cincinnati, U.S. Environmental Protection Agency, Municipal Environmental Research Laboratory, 1975. (In preparation.)

§Brunner, D. R., and R. A. Carnes. Characteristics of percolate of solid and hazardous waste deposits. Presented at AWWA [American Water Works Association] 54th Annual Conference, June 17, 1974. Boston, Mass. 23 p.



Groundwater Supply Development and Management

Source Water Assessment and Protection

Well Monitoring & Maintenance

Environmental & Water Quality Monitoring

Storm & Wastewater Disposal to Ground

Groundwater Modeling

Aquifer Test Design and Analysis

Geothermal / Geoexchange Systems

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