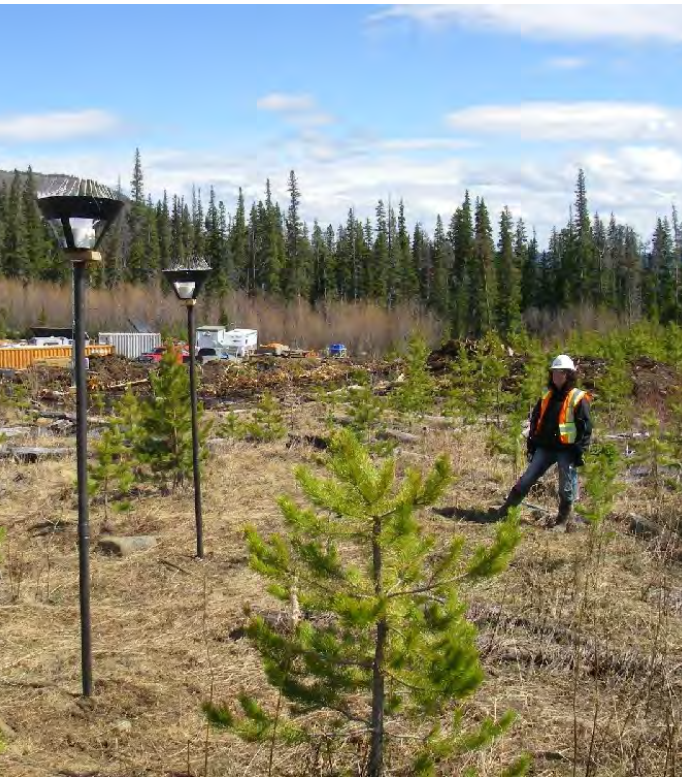
Appendix 6-A

Murray River Coal Project: 2011 Air Quality Baseline Report

HD Mining International Ltd.

MURRAY RIVER COAL PROJECT
2011 Air Quality Baseline Report



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December 2011

MURRAY RIVER COAL PROJECT
2011 AIR QUALITY BASELINE REPORT

December 2011
Project #791-002-03-03

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Prepared for:

HD Mining International Ltd.

Prepared by:

Rescan™ Environmental Services Ltd.
Vancouver, British Columbia

Executive Summary

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Executive Summary

Environmental and socio-economic baseline studies were initiated by Rescan Environmental Services Ltd. (Rescan) on behalf of HD Mining International Ltd. (HD) in 2010 and continued into 2011 for the Murray River Coal Project (the Project). The Murray River Coal Exploration license was acquired in 2009. The licence covers an area of 16,024 hectares with a total of 57 coal licences. The licence area is located within the Peace River Coalfield (PRC), an area that has a long history of metallurgical grade coal mining, mainly from open pit mining. The Project is a proposed coal mine development in British Columbia located approximately 12.5 km southwest of the town of Tumbler Ridge. The project is accessible via Highway 52, Quintette Mine Road and Murray River Forest Service Road. The projected mine capacity for the Project is approximately 6 million tonnes of metallurgical clean coal per year. Based on current knowledge from historical data and an ongoing exploration program, the expected mine life is at least 30 years. The total Project footprint is expected to be approximately 235 hectares. Additional details on the Project area will be documented in the Project Proposal submitted to the British Columbia Ministry of Environment, pursuant to *The Environmental Assessment Act* (2002).

The precise location of surface mine facilities was not known at the outset of the baseline program in 2010; therefore, the main objective of the first year of biophysical baseline data collection was to provide the Project team with a high level and broad overview of present conditions in the Project area to be used as a planning tool to facilitate Project design and to support the preparation of an environmental assessment for the Project. In 2011 the Mine Surface Development Area (MSDA) was defined in the west section of the Local Study Area (LSA). Subsurface development will occur within a larger area where mineral exploration rights have been acquired by HD Mining. In March 2011, a Regional Study Area (RSA) was defined (2277 km^2) based on Predictive Ecosystem Mapping.

This report presents the findings of the 2011 Air Quality baseline study. The main objective of the program was to document current air quality conditions and provide a means of determining and assessing future air quality changes related to the proposed development. Total dustfall values averaged over all non-"control" stations was 0.70 $mg/dm^2/day$ and the maximum occurrence was 1.64 $mg/dm^2/day$. None of the measurements taken exceeded British Columbia Ministry of Environment (BCMoE) standards for total dustfall for mining and related industries. Potential acid deposition at the Project was evaluated using the average of nitrate and sulphate samples from the sampling period. The calculated annual acid deposition of 0.028 $mg/dm^2/day$ was well below all established critical loads for soils in Canadian jurisdictions. Metal content in the dustfall was analyzed and it was found that the concentration of all metals was negligible. From these findings, the air quality in the study area can be summarized as good, based on the fact that all measured parameters fall within applicable objectives and guidelines.

Acknowledgements

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Acknowledgements

This report was prepared for HD Mining International Ltd. by Rescan Environmental Services Ltd. The air quality fieldwork was conducted by Chris Doughty from Via-Sat Data Systems and Emerson Belland (independent contractor). The report was written by Daniel Casanova (B.Sc.). The work was managed by Stephen Monninger and Andrea Daezli (M.Env., R.P.Bio.) and directed by Clem Pelletier (B.Sc.).

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MURRAY RIVER COAL PROJECT
2011 AIR QUALITY BASELINE REPORT

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Glossary and Abbreviations

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Glossary and Abbreviations

Terminology used in this document is defined where it is first used. The following list will assist readers who may choose to review only portions of the document.

ALS	ALS Environmental Laboratory
ASTM	American Society for Testing and Materials
BCMoE	British Columbia Ministry of Environment
CO	Carbon Monoxide
EC	Environment Canada
kg/ha/yr	Kilograms per hectare per year
mg/dm^2/day	Milligrams per square decimetre per day
NO_x	Mono-nitrogen Oxides
PM_{10}	Particulate Matter less than 10 micrometers
$PM_{2.5}$	Particulate Matter less than 2.5 micrometers
SO_x	Sulfur Oxide
TSP	Total Suspended Particulate
VOC	Volatile Organic Compound

1. Introduction

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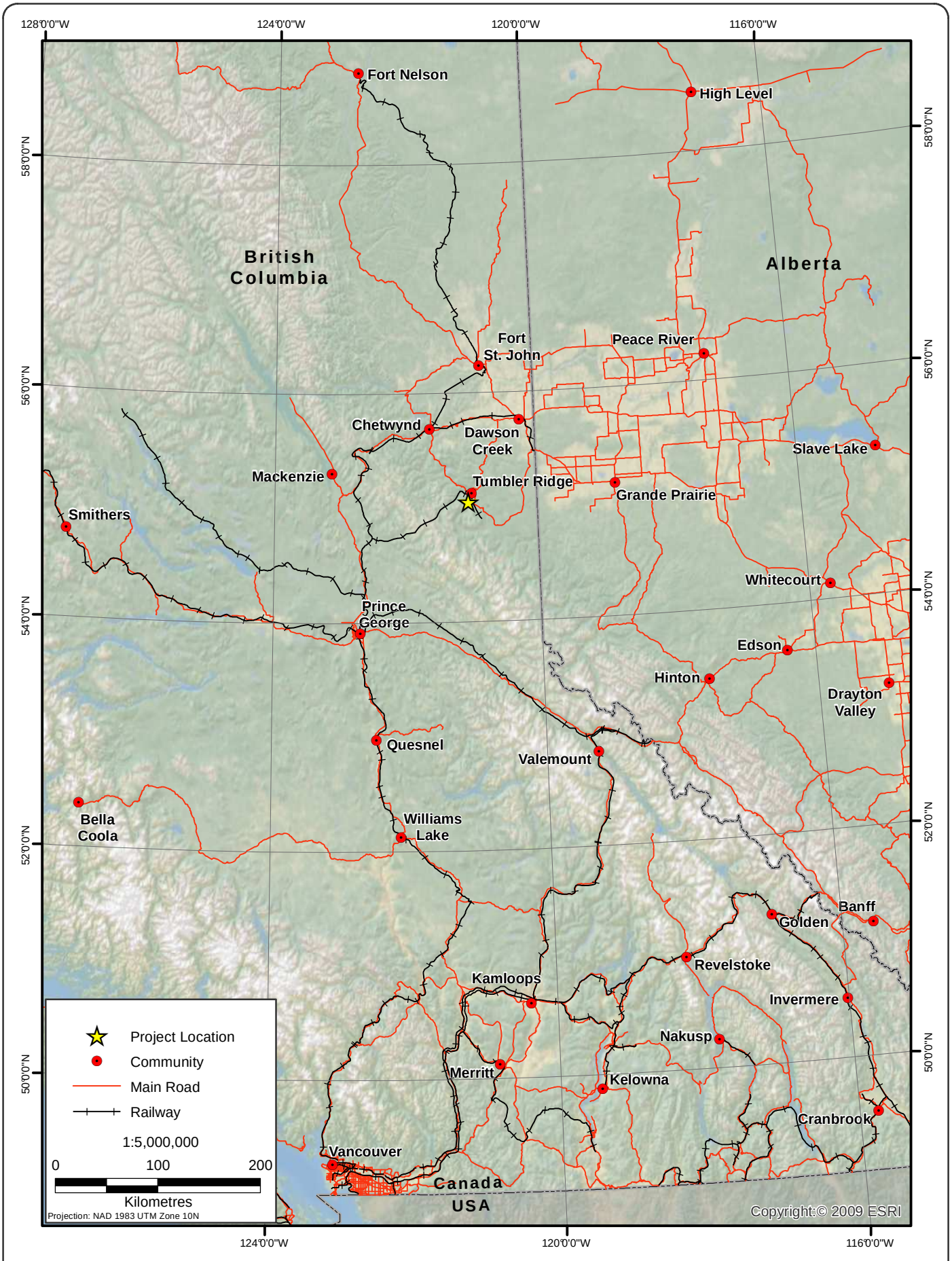
1. Introduction

Environmental and socio-economic baseline studies were initiated by Rescan Environmental Services Ltd. (Rescan) on behalf of HD Mining International Ltd. (HD) in 2010 and continued into 2011 for the Murray River Coal Project (the Project). The Murray River Coal Exploration license was acquired in 2009. The licence covers an area of 16,024 hectares with a total of 57 coal licences. The licence area is located within the Peace River Coalfield (PRC), an area that has a long history of metallurgical grade coal mining, mainly from open pit mining. The Project is a proposed coal mine development in British Columbia located approximately 12.5 km southwest of the town of Tumbler Ridge (Figure 1-1). The project is accessible via Highway 52, Quintette Mine Road and Murray River Forest Service Road. As the exact footprint of the Project area was not yet determined at the outset of the 2010 baseline program, for the purpose of baseline studies, a Local Study Area (LSA) of 101 km^2 was defined in which surface facilities may be developed around the Project Site. In early 2011, a Mine Surface Development Area (MSDA) was proposed as an option to develop surface facilities to the west of the Project. This option is illustrated in Figure 1-2. As Project details advanced, the LSA was further refined to 77.5 km^2. The MSDA (2.35 km^2) will contain the surface infrastructure of the Project; hence, surface disturbances related to Project facilities are expected to occur within the MSDA. In March 2011, a Regional Study Area (RSA) was defined (2277 km^2) based on Predictive Ecosystem Mapping (Figure 1-2).

Subsurface development will occur within a larger area where mineral exploration rights have been acquired by HD. The projected mine capacity for the Project is approximately 6 million tonnes of metallurgical clean coal per year. Based on current knowledge from historical data and an ongoing exploration program, the expected mine life is at least 30 years. The total Project footprint is expected to be approximately 235 hectares. Additional details on the Project area will be documented in the Project Proposal submitted to the British Columbia Ministry of Environment, pursuant to *The Environmental Assessment Act* (2002).

The goal of the Project baseline Air Quality program is to document current conditions and provide a means of determining and assessing future air quality changes related to the proposed development. Data obtained from the program can also be used to support the vegetation and wildlife groups for consideration in their ongoing monitoring plans.

This report presents the results of the Air Quality Baseline Study for the Project undertaken in 2011. Dustfall monitoring stations were used to quantify dustfall concentrations for undisturbed areas near the proposed Murray River coal loadout facility.



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Project Location

Figure 1-1

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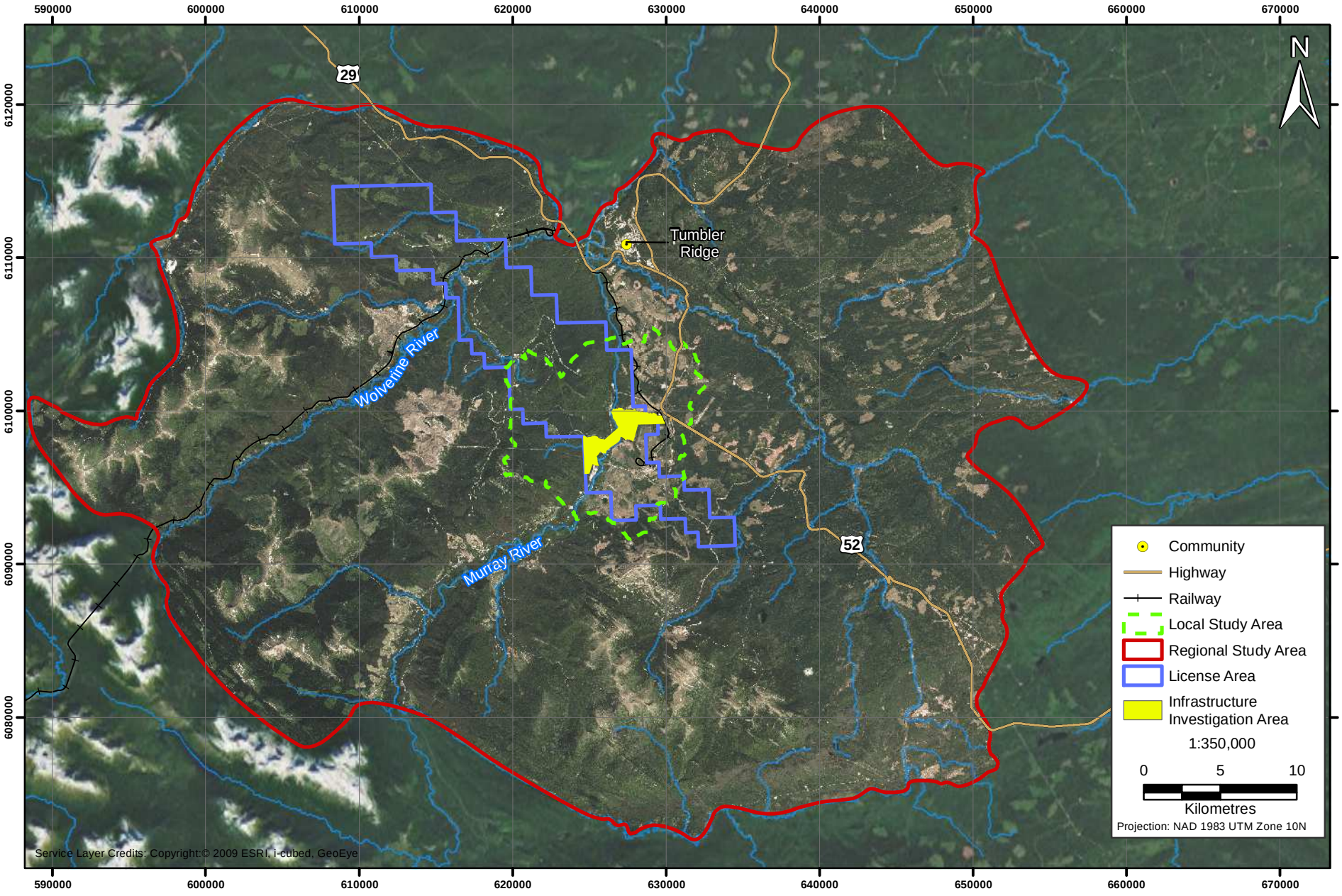

Figure 1-2

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Detailed Project Boundaries

Figure 1.2

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2. Background Information

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2. Background Information

2.1 APPLICABLE STANDARDS AND LEGISLATION

To ensure that results collected were of the highest quality, the methodology outlined in the American Society for Testing and Materials (ASTM) D 1739–98 (reapproved 2010; ASTM 2010) Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter) was followed. The dustfall samples were sent to ALS Environmental Laboratory (ALS) in Vancouver and processed according to the methods outlined in the 2009 BC Environmental Laboratory Manual Section G Air Constituents – Inorganic (BCMoE, 2009).

The baseline data collected was compared to the British Columbia standards for dustfall (BCMoE 1979), as well as the Canadian acid deposition assessment (EC 2004).

2.2 LITERATURE REVIEW

Baseline air quality conditions have been reported for mining Projects in north east British Columbia, including Hermann Mine, Wolverine Mine, Trend Small Mine, and Dillon Mine. Table 2.2-1 summarizes the range of dustfall measured from these mines. Table 2.2-2 lists emissions of SO_x, NO_x, VOC, CO, TSP, PM_{10} and $PM_{2.5}$ for the Hermann Mine Project. Tables 2.2-3 and 2.2-4 summarize the annual coal dust and greenhouse gas emissions of Brule, Trend, Wolverine and Hermann Mine in relation to their coal production rate (Pomeroy 2007).

Table 2.2-1. Range of Dustfall Measurements from Mines in North East BC

Project	Dates	Minimum Dustfall mg/dm2/day	Maximum Dustfall mg/dm2/day
Hermann Mine	August to September 2006	<0.1	0.28
Wolverine Mine	July to October 2006	<0.1	3.08
Trend Small Mine	January to June 2006	<0.1	76.0
Dillon Mine	February to November 2005	<0.1	72.3
Dillon Mine	January to October 2006	<0.1	4.99
Vicinity of Bullmoose and Quintette Mines	1993 to 2000	<0.1	11.0

Source: Pomeroy 2007, Tables 15.3-2, 15.3-4, 15.3-6, 15.3-10

Table 2.2-2. Air Emissions within the Hermann Minesite Study Area

	Emissions (tonnes/year)						
Source Category	SO_x	NO_x	VOC	CO	TSP	PM_{10}	$PM_{2.5}$
Total Point Sources	n/a	117.4	18.5	65.8	1525	608	127
Total Area Sources	0.01	0.08	205	1.3	2.48	0.77	0.40
Total Mobile Sources	1.65	101	23.8	281	2.67	2.67	2.33
Total All Sources	1.67	219	248	1530	1530	611	130

Source: Pomeroy 2007, Table 15.3-11

Table 2.2-3. Annual Coal Dust Emissions at Mines in North East BC

Project	Production Rate of Coal (t/yr)	Emission Rate of Fugitive Dust (t/yr)			Emissions of TSP per Mt Produced Coal (t/Mt)
		TSP	PM_{10}	$PM_{2.5}$	
Brule Mine	840,000	63	29	5	75
Trend Small Mine	2,850,000	121	54	18	43
Wolverine Mine	3,600,000	1525	608	127	423
Hermann Mine	1,150,000	40	18	3	35

Source: Pomeroy 2007, Table 15.7-2

Table 2.2-4. Annual Greenhouse Gas Emissions at Mines in North East BC

Project	Production Rate of Coal (t/yr)	Emission Rate of CO_2E (t/yr)	Emission of CO_2E per tonne of Produced Coal (t/t)
Brule Mine	840,000	101,760	0.12
Trend Small Mine	2,850,000	42,408	0.01
Wolverine Mine	3,600,000	169,630	0.05
Hermann Mine	1,150,000	60,792	0.05

Source: Pomeroy 2007, Table 15.7-3

3. Methodology

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3. Methodology

Five locations were selected for dustfall monitoring that were outside the boundaries of the footprint for the proposed coal mine (Figure 3-1 and Plates 3-1 to 3-5). Two of the dustfall stations (DF3 and DF4) were positioned upwind of the future active mine area and two were positioned downwind (DF1 and DF2). A "control" dustfall monitoring station (DF5) was positioned off of the axis of the two predominant wind directions. Dustfall was monitored for a period equal to five months (mid-May to mid-October 2011). Each site required a monthly visit to exchange canisters and ensure the site had not been tampered with. It was found that two of the dustfall stations had been vandalized and each is missing three months' worth of data.

Each dustfall monitoring station consisted of two canisters sitting within a black wind screen mounted on a 2 m pole. Bird spikes were placed on the wind screens to prevent birds from contaminating the samples. The two canisters collected the same data, but were analyzed differently in the lab. The contents of the first container were analyzed for total particulate, soluble particulate, insoluble particulate, sulphate, nitrate, ammonia (NH_3 and NH_{4+}), and chloride anions (Cl_-). The contents of the second container were analyzed for total metals and base cations (Mg_+, Ca_+, K_+). The canisters were open to the atmosphere for approximately 30 days (+/- 3 days), before being switched out and sent to the lab for analysis. The dustfall samples were sent to ALS Environmental Laboratory (ALS) in Vancouver and processed according to the methods outlined in the 2009 BC Environmental Laboratory Manual Section G Air Constituents – Inorganic (BC MOE, 2009). The full dustfall methodology is contained in ASTM D 1739–98 (reapproved 2010; ASTM 2010) Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter).

Plate 3-1. Dustfall Monitoring Station DF1

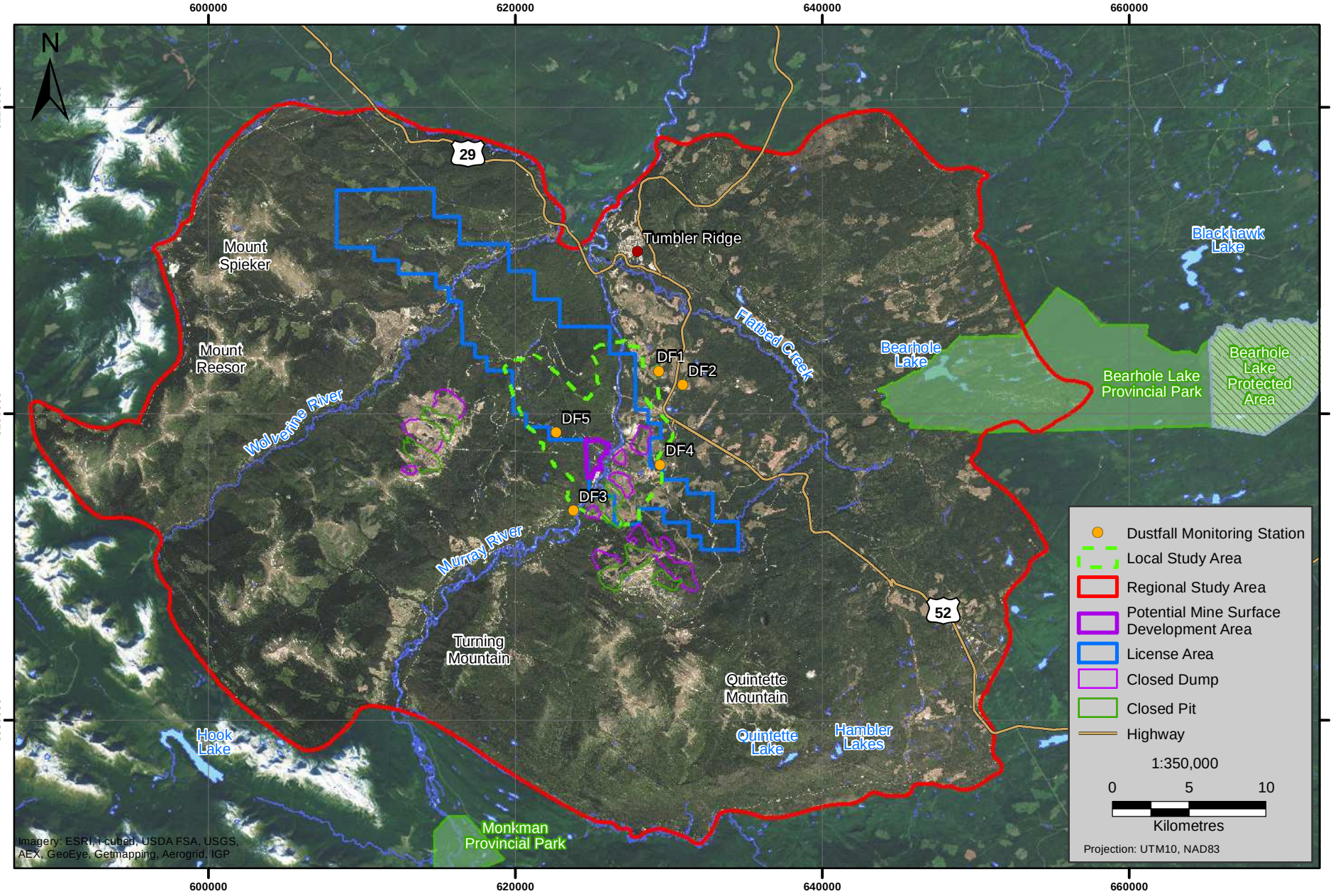

Figure 3-1

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Murray River 2011 Dustfall Monitoring Stations

Figure 3-1

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Plate 3-2. Dustfall Monitoring Station DF2

Plate 3-3. Dustfall Monitoring Station DF3

Plate 3-4. Dustfall Monitoring Station DF4

Plate 3-5. Dustfall Monitoring Station DF5

4. Results

4. Results

The baseline data collected from May to October 2011 for dustfall, including total dustfall, potential acid deposition and metal deposition are summarized below. In addition, detailed summaries of dustfall laboratory reports are presented in Appendix 1.

4.1 TOTAL DUSTFALL

Figure 4.1-1 and Tables 4.1-1 to 4.1-3 summarize total dustfall, insoluble dustfall and soluble dustfall, respectively, for the monitoring period of May to October 2011. The BCMoE standards for total dustfall due to mining and related industries are 1.7 to 2.9 mg/dm^2/day (BCMoE 1979). All collected samples are below the lower 1.7 mg/dm^2/day limit. Dustfall collected during May and June is significantly higher than other 30 day periods. As expected, the "control" site, DF5, received the lowest amounts of dustfall because the prevailing winds are from the south. Excluding DF5, each dustfall station received similar amounts of total dustfall when averaged over all months. The average dustfall from all non-control stations (0.70 mg/dm^2/day) was 49% higher than the dustfall from "control" station DF5.

Table 4.1-1. Total Dustfall (mg/dm^2/day)

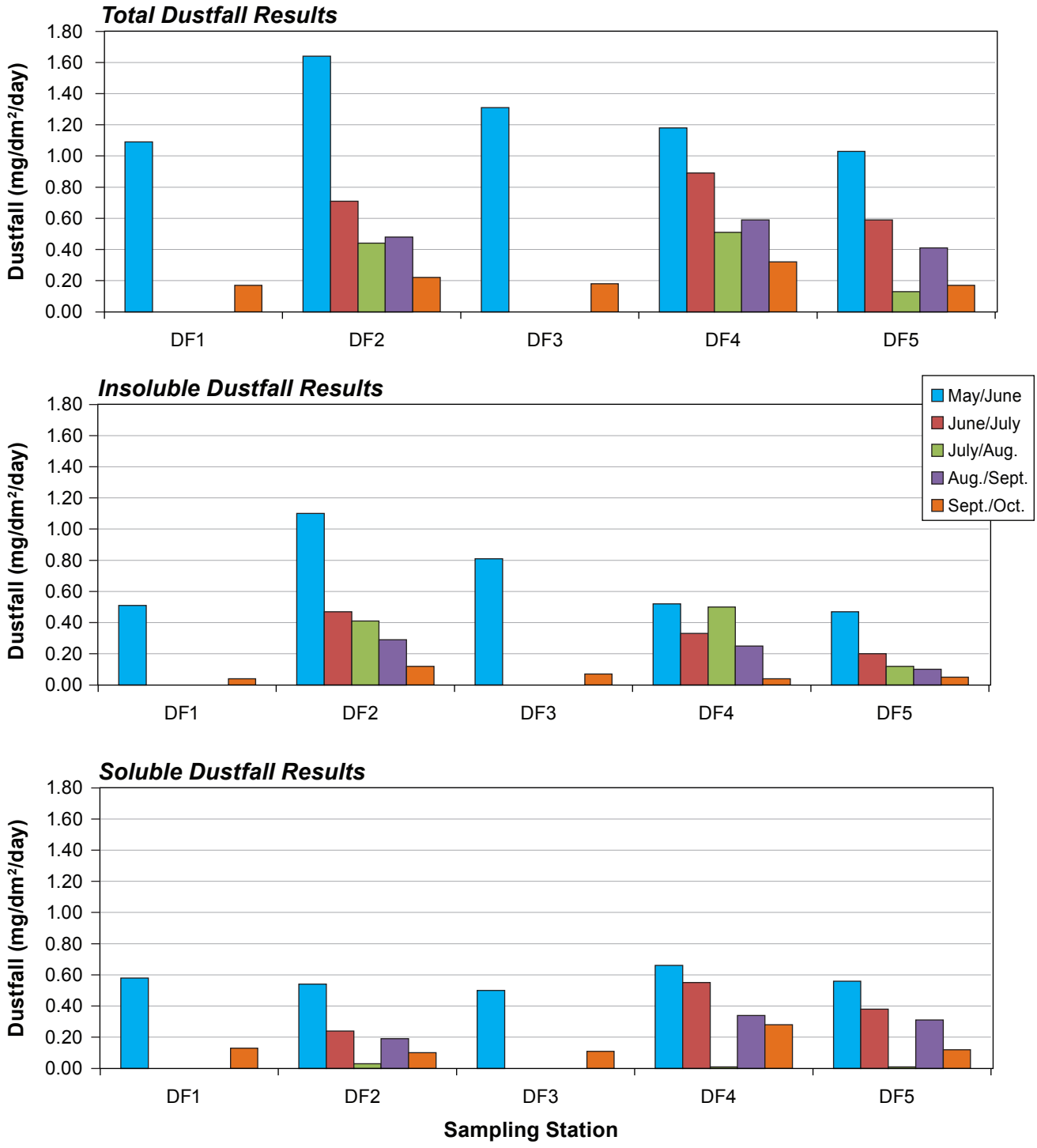
Time Period[1]	DF1	DF2	DF3	DF4	DF5[2]	Average of DF1 to DF4
May/June	1.09	1.64	1.31	1.18	1.03	1.31
June/July	n/a	0.71	n/a	0.89	0.59	0.80
July/Aug.	n/a	0.44	n/a	0.51	0.13	0.48
Aug./Sept.	n/a	0.48	n/a	0.59	0.41	0.54
Sept./Oct.	0.17	0.22	0.18	0.32	0.17	0.22
Average of All Months	0.63	0.70	0.75	0.70	0.47	

[1]Each time period is 30 consecutive days (+/- 3 days) starting in one month, and ending in the next month.
[2]DF5 was the "control" station, and is excluded from the station averaging.
n/a = Data is not available.

Table 4.1-2. Insoluble Dustfall (mg/dm^2/day)

Time Period[1]	DF1	DF2	DF3	DF4	DF5[2]	Average of DF1 to DF4
May/June	0.51	1.10	0.81	0.52	0.47	0.74
June/July	n/a	0.47	n/a	0.33	0.20	0.40
July/Aug.	n/a	0.41	n/a	0.50	0.12	0.46
Aug./Sept.	n/a	0.29	n/a	0.25	0.10	0.27
Sept./Oct.	0.04	0.12	0.07	0.04	0.05	0.07
Average of All Months	0.28	0.48	0.44	0.33	0.19	

[1]Each time period is 30 consecutive days (+/- 3 days) starting in one month, and ending in the next month.
[2]DF5 was the "control" station, and is excluded from the station averaging.
n/a = Data is not available.



Notes: DF1 and DF3 have missing for June/July, July/Aug., Aug./Sept.
Each time period is 30 consecutive days (+/- 3 days) starting in one month, and ending in the next month.

MURRAY RIVER PROJECT

2011 Murray River Dustfall Results

Figure 4.1-1

Table 4.1-3. Soluble Dustfall (mg/dm^2/day)

Time Period[1]	DF1	DF2	DF3	DF4	DF5[2]	Average of DF1 to DF4
May/June	0.58	0.54	0.50	0.66	0.56	0.57
June/July	n/a	0.24	n/a	0.55	0.38	0.40
July/Aug.	n/a	0.03	n/a	0.01	0.01	0.02
Aug./Sept.	n/a	0.19	n/a	0.34	0.31	0.27
Sept./Oct.	0.13	0.10	0.11	0.28	0.12	0.16
Average of All Months	0.36	0.22	0.31	0.37	0.28	

[1]Each time period is 30 consecutive days (+/- 3 days) starting in one month, and ending in the next month.
[2]DF5 was the "control" station, and is excluded from the station averaging.
n/a = Data is not available.

4.2 POTENTIAL ACID DEPOSITION

Acid deposition is primarily the result of sulphur dioxide (SO_2) and oxides of nitrogen (NO_x) emissions from industrial facilities. Environment Canada (EC) has studied the sources and potential adverse effects of acid deposition on the Canadian environment since its emergence in the public conscience in the early eighties. Critical load estimates have been established for both aquatic and terrestrial ecosystems and for forested areas throughout Canada (Table 4.2-1). Although no critical loads have been established for British Columbia, other Canadian jurisdictions can be used for comparison in order to provide some context.

Table 4.2-1. Established Critical Loads for Soil in Canadian jurisdictions (EC 2004)

Province	Median (kg/ha/yr)
Newfoundland	28
Nova Scotia	39
Prince Edward Island	99
New Brunswick	56
Quebec	25
Ontario	26

Chemical indicators of acid deposition are sulphates (SO_4^{2-}) and nitrate (NO_3^-) anions. Commonly used units for quantifying acid deposition and critical loads are kilograms per hectare per year (kg/ha/yr) of sulphate and nitrate. The calculated acid deposition and loadings of sulphate and nitrate deposition observed in dustfall samples at each site are presented in Table 4.2-2. Laboratory results of all anions and nutrients are located in Appendix 1. Acid deposition was calculated from averaging the sum of Nitrate and Sulphate loads for each month. The maximum calculated potential acid deposition of 11.9 kg/ha/yr collected at DF3 is well below any of the established critical soil loads for each province with a standard listed in in Table 4.2-1. The average calculated potential acid deposition for stations DF1 through DF4 was 55% higher than the "control" station DF5. It is important to note that the acid deposition calculations neglect the effect of neutralizing compounds found in dustfall and soil; therefore, actual loading is likely below these predictions.

4.3 METAL DEPOSITION

Metal concentrations in the dustfall samples were analyzed, and the laboratory results are located in Appendix 1. The results indicate that most of the metal concentrations were below the detection limit.

Table 4.2-2. Average Acid Deposition

	DF1	DF2	DF3	DF4	DF5[2]	Average of DF1 to DF4
Nitrate (mg/dm^2/day)	0.0038	0.0033	0.0040	0.0071	0.0027	0.0046
Nitrate (kg/ha/yr)	1.4	1.2	1.5	2.6	1.0	1.7
Sulphate[1] (mg/dm^2/day)	0.026	0.021	0.029	0.019	0.015	0.024
Sulphate[1] (kg/ha/yr)	9.5	7.6	10.4	7.0	5.6	8.6
Acid Deposition (mg/dm^2/day)	0.030	0.024	0.033	0.026	0.018	0.028
Acid Deposition (kg/ha/yr)	10.9	8.8	11.9	9.6	6.6	10.3

[1] Sulphate collected at some stations had amounts below the limit of detection; these were estimated to be half of the detection limit for calculation purposes.
[2]DF5 was the "control" station, and is excluded from the station averaging.

The metal concentrations that were above the detection limits were still very low and can be considered negligible. There are no specific criteria for total metals in environmental dustfall; however, there are workplace/occupational air quality standards for metals that are of concern with respect to human health. These include cadmium, lead and arsenic. In comparison to these standards, the concentrations of all metals were very low and can be considered negligible in all samples.

5. Summary

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5. Summary

The dustfall air quality monitoring program conducted from May to October 2011 provided baseline data of total dustfall, potential acid deposition and metals deposition. The five dustfall stations were installed according to the ASTM D1739-98 (Reapproved 2010) method. Based on the predominant wind direction, two stations were located downwind of the future active mine area, and two were positioned upwind. An additional station was used as a "control" and was positioned off the axis of the predominant wind direction.

Total dustfall values averaged over all non-"control" stations was 0.70 mg/dm^2/day and the maximum occurrence was 1.64 mg/dm^2/day. None of the measurements taken exceeded British Columbia Ministry of Environment (BCMoE) standards for total dustfall for mining and related industries. Potential acid deposition at the Project was evaluated using the average of nitrate and sulphate measurements from the sampling period. The calculated annual acid deposition of 0.028 mg/dm^2/day (10.3 kg/ha/yr) was well below all established critical loads for soils in Canadian jurisdictions. Metal content in the dustfall was analyzed and it was found that the concentration of all metals was negligible. From these findings, the air quality in the study area can be described as good, based on the fact that all measured parameters fall within applicable objectives and guidelines.

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Appendix 1

ALS Dustfall Sample Analytical Results

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RESCAN ENVIRONMENTAL SERVICES
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1111 West Hastings Street
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Date Received: 21-JUN-11
Report Date: 30-JUN-11 14:43 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #:	**L1021015**
Project P.O. #:	NOT SUBMITTED
Job Reference:	0791-002-03-03
Legal Site Desc:	
C of C Numbers:	10-154819

Dean Watt
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1021015-1 DUST 14-JUN-11 14:06 DF1 (FROM MAY 12 - JUNE 14)	L1021015-2 DUST 14-JUN-11 12:51 DF2 (FROM MAY 12 - JUNE 14)	L1021015-3 DUST 14-JUN-11 11:15 DF3 (FROM MAY 12 - JUNE 14)	L1021015-4 DUST 14-JUN-11 12:00 DF4 (FROM MAY 12 - JUNE 14)	L1021015-5 DUST 14-JUN-11 10:46 DF5 (FROM MAY 12 - JUNE 14)
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	1.09	1.64	1.31	1.18	1.03
	Total Insoluble Dustfall (mg/dm2.day)	0.51	1.10	0.81	0.52	0.47
	Total Soluble Dustfall (mg/dm2.day)	0.58	0.54	0.50	0.66	0.56
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	0.00681	<0.010	<0.0027	<0.0036	<0.0033
	Chloride (Cl) (mg/dm2.day)	0.049	0.053	0.052	0.052	0.045
	Nitrate (as N) (mg/dm2.day)	0.00666	0.00662	0.00679	0.00797	0.00698
	Sulfate (SO4) (mg/dm2.day)	0.046	0.054	0.049	0.050	0.051
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.00256	0.00293	0.00342	0.00279	0.00448
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000019	<0.0000040	<0.0000021	<0.0000023	<0.0000030
	Arsenic (As)-Total (mg/dm2.day)	0.0000071	0.0000317	0.0000097	0.0000284	0.0000052
	Barium (Ba)-Total (mg/dm2.day)	0.000121	0.00154	0.000164	0.000196	0.000180
	Beryllium (Be)-Total (mg/dm2.day)	<0.0000093	<0.000020	<0.000011	<0.000011	<0.000015
	Bismuth (Bi)-Total (mg/dm2.day)	<0.0000093	<0.000020	<0.000011	<0.000011	<0.000015
	Boron (B)-Total (mg/dm2.day)	<0.00019	<0.00040	<0.00021	<0.00023	<0.00030
	Cadmium (Cd)-Total (mg/dm2.day)	0.00000109	0.0000054	0.0000018	0.0000013	<0.0000015
	Calcium (Ca)-Total (mg/dm2.day)	0.0102	0.0349	0.0430	0.0256	0.0231
	Chromium (Cr)-Total (mg/dm2.day)	<0.0000093	<0.000020	0.000016	0.000015	0.000021
	Cobalt (Co)-Total (mg/dm2.day)	0.0000035	<0.0000040	0.0000042	0.0000037	0.0000033
	Copper (Cu)-Total (mg/dm2.day)	0.000165	0.000144	0.000166	0.0000348	0.0000487
	Iron (Fe)-Total (mg/dm2.day)	0.00336	0.0042	0.00476	0.00496	0.00547
	Lead (Pb)-Total (mg/dm2.day)	0.0000102	0.0000135	0.0000156	0.0000115	0.0000135
	Lithium (Li)-Total (mg/dm2.day)	<0.000093	<0.00020	<0.00011	<0.00011	<0.00015
	Magnesium (Mg)-Total (mg/dm2.day)	0.0032	0.0127	0.0104	0.0066	0.0065
	Manganese (Mn)-Total (mg/dm2.day)	0.000197	0.000360	0.000421	0.000329	0.000350
	Mercury (Hg)-Total (mg/dm2.day)	<0.00000093	<0.0000020	<0.0000011	<0.0000011	<0.0000015
	Molybdenum (Mo)-Total (mg/dm2.day)	0.00000353	0.0000027	0.0000046	0.0000023	0.0000018
	Nickel (Ni)-Total (mg/dm2.day)	<0.0000093	<0.000020	0.000013	0.000013	<0.000015
	Phosphorus (P)-Total (mg/dm2.day)	<0.0056	0.054	<0.0064	<0.0068	<0.0089
	Potassium (K)-Total (mg/dm2.day)	<0.037	<0.080	<0.043	<0.045	<0.060
	Selenium (Se)-Total (mg/dm2.day)	<0.000019	<0.000040	<0.000021	<0.000023	<0.000030
	Silicon (Si)-Total (mg/dm2.day)	0.00405	0.0047	0.0054	0.0044	0.0072
	Silver (Ag)-Total (mg/dm2.day)	0.00000028	0.00000057	<0.00000021	<0.00000023	0.00000039
	Sodium (Na)-Total (mg/dm2.day)	<0.037	<0.080	<0.043	<0.045	<0.060
	Strontium (Sr)-Total (mg/dm2.day)	0.0000393	0.0000948	0.000100	0.0000743	0.0000742
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000019	<0.0000040	<0.0000021	<0.0000023	<0.0000030
	Tin (Sn)-Total (mg/dm2.day)	<0.0000019	<0.0000040	<0.0000021	<0.0000023	<0.0000030
	Titanium (Ti)-Total (mg/dm2.day)	<0.00019	<0.00040	<0.00021	<0.00023	<0.00030

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1021015-1	L1021015-2	L1021015-3	L1021015-4	L1021015-5
	Description	DUST	DUST	DUST	DUST	DUST
	Sampled Date	14-JUN-11	14-JUN-11	14-JUN-11	14-JUN-11	14-JUN-11
	Sampled Time	14:06	12:51	11:15	12:00	10:46
	Client ID	DF1 (FROM MAY 12 - JUNE 14)	DF2 (FROM MAY 12 - JUNE 14)	DF3 (FROM MAY 12 - JUNE 14)	DF4 (FROM MAY 12 - JUNE 14)	DF5 (FROM MAY 12 - JUNE 14)
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	0.00000019	<0.00000040	0.00000029	0.00000028	0.00000037
	Vanadium (V)-Total (mg/dm2.day)	<0.000019	<0.000040	<0.000021	<0.000023	<0.000030
	Zinc (Zn)-Total (mg/dm2.day)	0.000125	0.000342	0.000242	0.000162	0.000260

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

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

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-F-VA	Dustfall	Dustfall Ammonia by Fluorescence	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

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

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

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

10-154819

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

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

10-154819

ALS Environmental

L1021015-COFC

Chain of Custody / Analytical Request Form

~~Canada Toll Free: 1 800 668 9878~~

www.alsglobal.com

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	RESCAN	Standard: ✓	Other (specify):	Regular (Standard Turnaround Times - Business Days)	YES PLEASE
Contact:	CHERYL ZANDBERGEN	Select: PDF ✓	Excel ✓ Digital Fax	Priority (2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT	
Address:	RESCAN VANCOUVER	Email 1:	CZANDBERGEN@RESCAN.COM	Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT	
		Email 2:	WBENNHAM@RESCAN.COM	Same Day or Weekend Emergency - Contact ALS to confirm TAT	
Phone:	604-689-9460 Fax: 604-687-4277				
Invoice To	Same as Report ? (circle) Yes or No (if No, provide details)	**Client / Project Information**		**Analysis Request**	
	Copy of Invoice with Report? (circle) Yes or No	Job #:	0741-007-03-03	(Indicate Filtered or Preserved, F/P)	
Company:		PO / AFE:			
Contact:		LSD:			
Address:					
Phone:	Fax:	Quote #:			
Lab Work Order # (lab use only)	L1021015	**ALS Contact:**	**Sampler:**		

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
	DF1	JUNE 19	~~1445~~ 1403	DUST	
	DF1		~~1046~~ 1406		
	DF2		1250		
	DF2		1251		
	DF3		~~1117~~		
	DF3		1116		
	DF4		1155		
	DF4		1200		
	DF5		1045		
	DF5		1096		

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

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

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)			SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No? If Yes add SIF
	JUNE 20		R.C	21-JUNE-11	8:45AM	19.2°C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

GENF 18.01 Front

RESCAN ENVIRONMENTAL SERVICES
ATTN: Dean Shaw
Sixth Floor
1111 West Hastings Street
Vancouver BC V6E 2J3

Date Received: 28-JUL-11
Report Date: 09-AUG-11 11:52 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #: L1037495

Project P.O. #: NOT SUBMITTED
Job Reference: 0791-002-03 AIR QUALITY
C of C Numbers: 10-049733
Legal Site Desc:

STEFANIE TEO
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1037495-1 DUSTFALL 26-JUL-11 DF4-TM	L1037495-2 DUSTFALL 26-JUL-11 DF4-TP	L1037495-3 DUSTFALL 26-JUL-11 DF2-TM	L1037495-4 DUSTFALL 26-JUL-11 DF2-TP	L1037495-5 DUSTFALL 26-JUL-11 DF5-TM
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)		0.89		0.71	
	Total Insoluble Dustfall (mg/dm2.day)		0.33		0.47	
	Total Soluble Dustfall (mg/dm2.day)		0.55		0.24	
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)		0.00299		0.00354	
	Chloride (Cl) (mg/dm2.day)		0.047		0.049	
	Nitrate (as N) (mg/dm2.day)		0.0194		0.00772	
	Sulfate (SO4) (mg/dm2.day)		0.027		0.031	
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.00295		0.00162		0.00112
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000028		<0.0000045		<0.0000040
	Arsenic (As)-Total (mg/dm2.day)	0.0000037		0.0000078		<0.0000040
	Barium (Ba)-Total (mg/dm2.day)	0.000176		0.000114		0.0000514
	Beryllium (Be)-Total (mg/dm2.day)	<0.000014		<0.000022		<0.000020
	Bismuth (Bi)-Total (mg/dm2.day)	<0.000014		<0.000022		<0.000020
	Boron (B)-Total (mg/dm2.day)	<0.00028		<0.00045		<0.00040
	Cadmium (Cd)-Total (mg/dm2.day)	<0.0000014		<0.0000022		<0.0000020
	Calcium (Ca)-Total (mg/dm2.day)	0.0363		0.0111		0.0085
	Chromium (Cr)-Total (mg/dm2.day)	<0.000014		<0.000022		0.000021
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000028		<0.0000045		<0.0000040
	Copper (Cu)-Total (mg/dm2.day)	0.0000637		0.0000992		0.0000465
	Iron (Fe)-Total (mg/dm2.day)	0.00499		0.0017		0.0013
	Lead (Pb)-Total (mg/dm2.day)	0.0000126		0.0000057		0.0000033
	Lithium (Li)-Total (mg/dm2.day)	<0.00014		<0.00022		<0.00020
	Magnesium (Mg)-Total (mg/dm2.day)	0.0093		<0.0045		<0.0040
	Manganese (Mn)-Total (mg/dm2.day)	0.000164		0.000108		0.0000821
	Mercury (Hg)-Total (mg/dm2.day)	<0.0000014		<0.0000022		<0.0000020
	Molybdenum (Mo)-Total (mg/dm2.day)	0.0000019		<0.0000022		<0.0000020
	Nickel (Ni)-Total (mg/dm2.day)	<0.000014		<0.000022		<0.000020
	Phosphorus (P)-Total (mg/dm2.day)	<0.0085		<0.013		<0.012
	Potassium (K)-Total (mg/dm2.day)	<0.057		<0.090		<0.080
	Selenium (Se)-Total (mg/dm2.day)	<0.000028		<0.000045		<0.000040
	Silicon (Si)-Total (mg/dm2.day)	0.0044		<0.0022		<0.0020
	Silver (Ag)-Total (mg/dm2.day)	<0.00000028		<0.00000045		<0.00000040
	Sodium (Na)-Total (mg/dm2.day)	<0.057		<0.090		<0.080
	Strontium (Sr)-Total (mg/dm2.day)	0.0000508		0.0000265		0.0000136
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000028		<0.0000045		<0.0000040
	Tin (Sn)-Total (mg/dm2.day)	<0.0000028		<0.0000045		<0.0000040
	Titanium (Ti)-Total (mg/dm2.day)	<0.00028		<0.00045		<0.00040

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1037495-6				
	Description	DUSTFALL				
	Sampled Date	26-JUL-11				
	Sampled Time					
	Client ID	DF5-TP				
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	0.59				
	Total Insoluble Dustfall (mg/dm2.day)	0.20				
	Total Soluble Dustfall (mg/dm2.day)	0.38				
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	0.00367				
	Chloride (Cl) (mg/dm2.day)	0.047				
	Nitrate (as N) (mg/dm2.day)	0.00404				
	Sulfate (SO4) (mg/dm2.day)	<0.020				
Metals	Aluminum (Al)-Total (mg/dm2.day)					
	Antimony (Sb)-Total (mg/dm2.day)					
	Arsenic (As)-Total (mg/dm2.day)					
	Barium (Ba)-Total (mg/dm2.day)					
	Beryllium (Be)-Total (mg/dm2.day)					
	Bismuth (Bi)-Total (mg/dm2.day)					
	Boron (B)-Total (mg/dm2.day)					
	Cadmium (Cd)-Total (mg/dm2.day)					
	Calcium (Ca)-Total (mg/dm2.day)					
	Chromium (Cr)-Total (mg/dm2.day)					
	Cobalt (Co)-Total (mg/dm2.day)					
	Copper (Cu)-Total (mg/dm2.day)					
	Iron (Fe)-Total (mg/dm2.day)					
	Lead (Pb)-Total (mg/dm2.day)					
	Lithium (Li)-Total (mg/dm2.day)					
	Magnesium (Mg)-Total (mg/dm2.day)					
	Manganese (Mn)-Total (mg/dm2.day)					
	Mercury (Hg)-Total (mg/dm2.day)					
	Molybdenum (Mo)-Total (mg/dm2.day)					
	Nickel (Ni)-Total (mg/dm2.day)					
	Phosphorus (P)-Total (mg/dm2.day)					
	Potassium (K)-Total (mg/dm2.day)					
	Selenium (Se)-Total (mg/dm2.day)					
	Silicon (Si)-Total (mg/dm2.day)					
	Silver (Ag)-Total (mg/dm2.day)					
	Sodium (Na)-Total (mg/dm2.day)					
	Strontium (Sr)-Total (mg/dm2.day)					
	Thallium (Tl)-Total (mg/dm2.day)					
	Tin (Sn)-Total (mg/dm2.day)					
	Titanium (Ti)-Total (mg/dm2.day)					

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1037495-1	L1037495-2	L1037495-3	L1037495-4	L1037495-5
	Description	DUSTFALL	DUSTFALL	DUSTFALL	DUSTFALL	DUSTFALL
	Sampled Date	26-JUL-11	26-JUL-11	26-JUL-11	26-JUL-11	26-JUL-11
	Sampled Time					
	Client ID	DF4-TM	DF4-TP	DF2-TM	DF2-TP	DF5-TM
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.00000028		<0.00000045		<0.00000040
	Vanadium (V)-Total (mg/dm2.day)	<0.000028		<0.000045		<0.000040
	Zinc (Zn)-Total (mg/dm2.day)	0.000345		<0.00018 DLB		<0.00016 DLB

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1037495-6				
	Description	DUSTFALL				
	Sampled Date	26-JUL-11				
	Sampled Time					
	Client ID	DF5-TP				
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)					
	Vanadium (V)-Total (mg/dm2.day)					
	Zinc (Zn)-Total (mg/dm2.day)					

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

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection limit was raised due to detection of analyte at comparable level in Method Blank.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

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

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-F-VA	Dustfall	Dustfall Ammonia by Fluorescence	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

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

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

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

10-049733

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

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

Short Holding Time

Rush Processing

t Form B

10-049733

Page ___ of ___

Report To	Bescan Environmental Services		**Service Requested:** (Rush subject to availability)
Company:	Bescan Environmental Services	Standard: ✓ Other (specify):	✓ Regular (Standard Turnaround Times))
Contact:	Olga Olcay	Select: PDF ✓ Excel ✓ Digital Fax	Priority, Date Req'd: _____ (Surcharges apply)
Address:	6th Floor 1111 West Hastings St Vancouver BC V6E 2J3	Email 1:	Emergency (1 Business Day) - 100% Surcharge
		Email 2:	For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	604 689-9460 Fax: 604-689-4277		**Analysis Request**
Invoice To	Same as Report ? (circle) Yes or No (If No, provide details)	**Client / Project Information**	(Indicate Filtered or Preserved, F/P)
	Copy of Invoice with Report? (circle) Yes or No	Job #: 0791-002-02	
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	L1037495	**ALS Contact:**	**Sampler:**

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Soluble/ insoluble particles	Cl_2SO_4, NO_3, NH_3	Total Mg, Ca, K									Number of Containers
DUP-TM		26-07-11					X									
DUP-TP		26-07-11			X	X										
DUP2-TM		25-07-11					X									
DUP2-TP		25-07-11			X	X										
DUP5-TM		26-07-11					X									
DUP5-TP					X	X										

Special Instructions / Regulations / Hazardous Details

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

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			Ryan	Jul 27	9:50	16 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

GENF 18.01 Front

RESCAN ENVIRONMENTAL SERVICES
ATTN: Derek Shaw
Sixth Floor
1111 West Hastings Street
Vancouver BC V6E 2J3

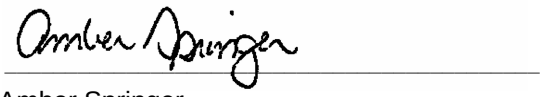
Date Received: 23-AUG-11
Report Date: 02-SEP-11 10:37 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #: L1048842

Project P.O. #: NOT SUBMITTED
Job Reference: MURRAY RIVER DUSTFALL 0791-002-03
C of C Numbers:
Legal Site Desc:



Amber Springer
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1048842-1	L1048842-2	L1048842-3		
	Description	WATER	WATER	WATER		
	Sampled Date	21-AUG-11	21-AUG-11	20-AUG-11		
	Sampled Time					
	Client ID	DF-2 (JULY 25-AUG 21)	DF-4 (JULY 26-AUG 21)	DF-5 (JULY 26-AUG 20)		
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	0.44	0.51	0.13		
	Total Insoluble Dustfall (mg/dm2.day)	0.41	0.50	0.12		
	Total Soluble Dustfall (mg/dm2.day)	<0.10	<0.10	<0.10		
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	0.00107	0.00327	0.00030		
	Chloride (Cl) (mg/dm2.day)	0.027	0.029	0.046		
	Nitrate (as N) (mg/dm2.day)	0.00055	0.00046	0.00059		
	Sulfate (SO4) (mg/dm2.day)	<0.012	<0.012	<0.011		
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.00162	0.00331	0.000387		
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000020	<0.0000020	<0.0000014		
	Arsenic (As)-Total (mg/dm2.day)	0.0000024	0.0000022	<0.0000014		
	Barium (Ba)-Total (mg/dm2.day)	0.000135	0.000144	0.0000213		
	Beryllium (Be)-Total (mg/dm2.day)	<0.0000099	<0.0000098	<0.0000072		
	Bismuth (Bi)-Total (mg/dm2.day)	<0.0000099	<0.0000098	<0.0000072		
	Boron (B)-Total (mg/dm2.day)	<0.00020	<0.00020	<0.00014		
	Cadmium (Cd)-Total (mg/dm2.day)	0.00000103	<0.00000098	0.00000112		
	Calcium (Ca)-Total (mg/dm2.day)	0.0116	0.0331	0.00466		
	Chromium (Cr)-Total (mg/dm2.day)	<0.0000099	<0.0000098	<0.0000072		
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000020	<0.0000020	<0.0000014		
	Copper (Cu)-Total (mg/dm2.day)	0.000695	0.000202	0.000244		
	Iron (Fe)-Total (mg/dm2.day)	0.00288	0.00460	<0.00043		
	Lead (Pb)-Total (mg/dm2.day)	0.00000783	0.00000585	0.00000198		
	Lithium (Li)-Total (mg/dm2.day)	<0.000099	<0.000098	<0.000072		
	Magnesium (Mg)-Total (mg/dm2.day)	0.0033	0.0085	<0.0014		
	Manganese (Mn)-Total (mg/dm2.day)	0.0000783	0.000103	0.0000293		
	Mercury (Hg)-Total (mg/dm2.day)	<0.00000099	<0.00000098	<0.00000072		
	Molybdenum (Mo)-Total (mg/dm2.day)	0.00000326	0.00000205	<0.00000072		
	Nickel (Ni)-Total (mg/dm2.day)	0.0000102	<0.0000098	<0.0000072		
	Phosphorus (P)-Total (mg/dm2.day)	0.0063	<0.0059	<0.0043		
	Potassium (K)-Total (mg/dm2.day)	<0.040	<0.039	<0.029		
	Selenium (Se)-Total (mg/dm2.day)	<0.000020	<0.000020	<0.000014		
	Silicon (Si)-Total (mg/dm2.day)	0.00224	0.00482	<0.00072		
	Silver (Ag)-Total (mg/dm2.day)	<0.00000020	0.00000069	0.00000015		
	Sodium (Na)-Total (mg/dm2.day)	<0.040	<0.039	<0.029		
	Strontium (Sr)-Total (mg/dm2.day)	0.0000372	0.0000475	0.0000094		
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000020	<0.0000020	<0.0000014		
	Tin (Sn)-Total (mg/dm2.day)	<0.0000020	<0.0000020	<0.0000014		
	Titanium (Ti)-Total (mg/dm2.day)	<0.00020	<0.00020	<0.00014		

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1048842-1	L1048842-2	L1048842-3		
	Description	WATER	WATER	WATER		
	Sampled Date	21-AUG-11	21-AUG-11	20-AUG-11		
	Sampled Time					
	Client ID	DF-2 (JULY 25-AUG 21)	DF-4 (JULY 26-AUG 21)	DF-5 (JULY 26-AUG 20)		
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	0.00000031	0.00000031	<0.00000014		
	Vanadium (V)-Total (mg/dm2.day)	<0.000020 DLB	<0.000020 DLB	<0.000014 DLB		
	Zinc (Zn)-Total (mg/dm2.day)	<0.00012	<0.000079	<0.000058		

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

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection limit was raised due to detection of analyte at comparable level in Method Blank.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

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

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-F-VA	Dustfall	Dustfall Ammonia by Fluorescence	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

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

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

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

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

L10488 42-COFC

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES
Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

COC #

CANADA TOLL FREE 1-800-668-9878
www.alsenviro.com

REPORT TO:		REPORT FORMAT / DISTRIBUTION	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD
CONTACT:	Derek Shaw	ELECTRONIC	PDF and EXCEL
ADDRESS:	6th Flr, 1111 West Hastings Street	EMAIL 1:	czandbergen@rescan.com
CITY/ PROV	Vancouver, BC V6E 2J3	EMAIL 2:	dshaw@rescan.com
PHONE: 604-689-9460	604-689-4277		

SERVICE REQUESTED	
REGULAR SERVICE (DEFAULT)	X
PRIORITY SERVICE (2-3 DAYS)	
EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
OTHER (<1 DAY / WEEKEND) - CONTACT ALS	

INVOICE TO: SAME AS REPORT ? YES / NO		CLIENT / PROJECT INFORMATION:	
COMPANY:	SAME AS ABOVE	JOB #:	Murray River Dustfall 0791-002-03
CONTACT:		PO /AFE:	
ADDRESS:		Legal Site Description:	
CITY/ PROV		QUOTE #:	
PHONE:	FAX:		
Lab Work Order # (lab use only)	L10488 42	ALS CONTACT	

ANALYSIS REQUEST

Please indicate below Filtered. Preserved or both (F, P, F/P)

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	Total, Soluble, Insoluble Partic	Cl, SO4, NO3, NH3	Total Mg, Ca, K	NUMBER OF CONTAINERS
	DF-1-TM	station damaged		Water				
	DF-1-TP	station damaged		Water				
	DF-2-TM	July 25 - Aug 21		Water			X	
	DF-2-TP	July 25 - Aug 21		Water	X	X		
	DF-3-TM	station damaged		Water				
	DF-3-TP	station damaged		Water				
	DF-4-TM	July 26 - Aug 21		Water			X	
	DF-4-TP	July 26 - Aug 21		Water	X	X		
	DF-5-TM	Jul 26 - Aug 20		Water			X	
	DF-5-TP	Jul 26 - Aug 20		Water	X	X		

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
Forwarded by TOLGA OLCAY	Aug 23, 2011		
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
		[signature] Aug 23 2011	RTW

SAMPLE CONDITION (lab use only)	
TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
25.6 °C	
	If NO, Explain

Note: Samples collected and brought by Dean McAllister and Natasha Bush

RESCAN ENVIRONMENTAL SERVICES
ATTN: Cheryl Zandbergen
Sixth Floor
1111 West Hastings Street
Vancouver BC V6E 2J3

Date Received: 23-SEP-11
Report Date: 04-OCT-11 16:36 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #: L1063582

Project P.O. #: NOT SUBMITTED
Job Reference: 0791-002-03-02
C of C Numbers: 10-049736
Legal Site Desc:

Amber Springer
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1063582-1	L1063582-2	L1063582-3		
	Description	DUSTFALL	DUSTFALL	DUSTFALL		
	Sampled Date	19-SEP-11	19-SEP-11	19-SEP-11		
	Sampled Time	13:15	12:50	12:14		
	Client ID	DF2	DF4	DF5		
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	0.48	0.59	0.41		
	Total Insoluble Dustfall (mg/dm2.day)	0.29	0.25	<0.10		
	Total Soluble Dustfall (mg/dm2.day)	0.19	0.34	0.31		
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	0.000690	<0.000060	0.00159		
	Chloride (Cl) (mg/dm2.day)	0.0309	0.0337	0.0185		
	Nitrate (as N) (mg/dm2.day)	0.000353	<0.000060	0.000695		
	Sulfate (SO4) (mg/dm2.day)	0.0065	0.0064	<0.0079		
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.000260	0.00212	0.000360		
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000012	<0.0000012	<0.0000016		
	Arsenic (As)-Total (mg/dm2.day)	0.0000013	0.0000014	<0.0000016		
	Barium (Ba)-Total (mg/dm2.day)	0.0000362	0.000122	0.0000213		
	Beryllium (Be)-Total (mg/dm2.day)	<0.0000062	<0.0000062	<0.0000079		
	Bismuth (Bi)-Total (mg/dm2.day)	<0.0000062	<0.0000062	<0.0000079		
	Boron (B)-Total (mg/dm2.day)	<0.00012	<0.00012	<0.00016		
	Cadmium (Cd)-Total (mg/dm2.day)	0.00000124	0.00000083	<0.00000079		
	Calcium (Ca)-Total (mg/dm2.day)	0.00482	0.0283	0.00706		
	Chromium (Cr)-Total (mg/dm2.day)	<0.0000062	<0.0000062	<0.0000079		
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000012	0.0000016	<0.0000016		
	Copper (Cu)-Total (mg/dm2.day)	0.000163	0.0000641	0.000124		
	Iron (Fe)-Total (mg/dm2.day)	0.00054	0.00319	0.00049		
	Lead (Pb)-Total (mg/dm2.day)	0.00000154	0.00000345	0.00000103		
	Lithium (Li)-Total (mg/dm2.day)	<0.000062	<0.000062	<0.000079		
	Magnesium (Mg)-Total (mg/dm2.day)	0.0020	0.0071	<0.0016		
	Manganese (Mn)-Total (mg/dm2.day)	0.0000507	0.0000898	0.0000464		
	Mercury (Hg)-Total (mg/dm2.day)	<0.00000062	<0.00000062	<0.00000079		
	Molybdenum (Mo)-Total (mg/dm2.day)	<0.00000062	0.00000096	<0.00000079		
	Nickel (Ni)-Total (mg/dm2.day)	<0.0000062	0.0000072	<0.0000079		
	Phosphorus (P)-Total (mg/dm2.day)	0.0044	<0.0037	<0.0047		
	Potassium (K)-Total (mg/dm2.day)	<0.025	<0.025	<0.031		
	Selenium (Se)-Total (mg/dm2.day)	<0.000012	<0.000012	<0.000016		
	Silicon (Si)-Total (mg/dm2.day)	<0.00062	0.00317	<0.00079		
	Silver (Ag)-Total (mg/dm2.day)	<0.00000012	<0.00000012	<0.00000016		
	Sodium (Na)-Total (mg/dm2.day)	<0.025	<0.025	<0.031		
	Strontium (Sr)-Total (mg/dm2.day)	0.0000117	0.0000413	0.0000116		
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000012	<0.0000012	<0.0000016		
	Tin (Sn)-Total (mg/dm2.day)	<0.0000012	<0.0000012	<0.0000016		
	Titanium (Ti)-Total (mg/dm2.day)	<0.00012	<0.00012	<0.00016		

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1063582-1	L1063582-2	L1063582-3		
	Description	DUSTFALL	DUSTFALL	DUSTFALL		
	Sampled Date	19-SEP-11	19-SEP-11	19-SEP-11		
	Sampled Time	13:15	12:50	12:14		
	Client ID	DF2	DF4	DF5		
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.00000012	0.00000022	<0.00000016		
	Vanadium (V)-Total (mg/dm2.day)	<0.000012	<0.000012	<0.000016		
	Zinc (Zn)-Total (mg/dm2.day)	0.000054	0.000049	0.000047		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

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

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-F-VA	Dustfall	Dustfall Ammonia by Fluorescence	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

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

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

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

10-049736

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

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

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custo
Canada T

10-049736

Page 1 of 1

Report To	Report Format / Distribution	Service Requested: (Rush subject to availability)
Company: RESCAN ENVIRONMENTAL SVCS.	Standard: ✓ Other (specify):	✓ Regular (Standard Turnaround Times))
Contact: CHERYL ZANDBERGEN	Select: PDF ✓ Excel ✓ Digital Fax	Priority, Date Req'd: (Surcharges apply)
Address: 6TH FLR, 1111 W HASTINGS ST	Email 1: CZandbergen@rescan.com	Emergency (1 Business Day) - 100% Surcharge
VANCOUVER BC	Email 2:	For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone: (604) 689-9460 Fax:		

Invoice To	Client / Project Information
Same as Report ? (circle) Yes or No (if No, provide details)	Job #: 0791-007[redacted]-02
Copy of Invoice with Report? (circle) Yes or No	PO / AFE:
Company:	LSD:
Contact:	
Address:	Quote #:
Phone: Fax:	

Lab Work Order # (lab use only): L1063582 [redacted]

ALS Contact: **Sampler:** CHRIS DOUGHTY

Analysis Request (Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TOTAL PARTICULATE	SOLUBLE PARTICULATE	INSOLUBLE PARTICULATE	SULPHATE, NITRATE	AMMONIA, CHLORIDE	TOTAL METALS	CATIONS Mg Ca K						Number of Containers
[redacted]	DF2	19-SEP-11	13:15	DUST PAIR	✓	✓	✓	✓	✓	✓	✓						2
[redacted]	DF 4	"	12:50	"	✓	✓	✓	✓	✓	✓	✓						2
[redacted]	DF 5	"	12:14	"	✓	✓	✓	✓	✓	✓	✓						2
[redacted]																	
[redacted]																	
[redacted]																	
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[redacted]																	
[redacted]																	
[redacted]																	

Special Instructions / Regulations / Hazardous Details

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

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C DOUGHTY	21 SEP 11	14:00	[redacted]	Sep 23,11	13:12	20.9 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

RESCAN ENVIRONMENTAL SERVICES
ATTN: Cheryl Zandbergen
Sixth Floor
1111 West Hastings Street
Vancouver BC V6E 2J3

Date Received: 20-OCT-11
Report Date: 31-OCT-11 14:15 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #: L1074796

Project P.O. #: NOT SUBMITTED
Job Reference: 0791-002-03-02
C of C Numbers: 10-169603
Legal Site Desc:

Amber Springer
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1074796-1	L1074796-2	L1074796-3	L1074796-4	L1074796-5
	Description	DUSTFALL	DUSTFALL	DUSTFALL	DUSTFALL	DUSTFALL
	Sampled Date	17-OCT-11	17-OCT-11	17-OCT-11	17-OCT-11	17-OCT-11
	Sampled Time	14:05	13:30	12:10	12:40	11:40
	Client ID	DF-1 (20SEP-17OCT/11)	DF-2 (20SEP-17OCT/11)	DF-3 (20SEP-17OCT/11)	DF-4 (20SEP-17OCT/11)	DF-5 (20SEP-17OCT/11)
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	0.17	0.22	0.18	0.32	0.17
	Total Insoluble Dustfall (mg/dm2.day)	<0.10	0.12	<0.10	<0.10	<0.10
	Total Soluble Dustfall (mg/dm2.day)	0.13	<0.10	0.11	0.28	0.12
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	<0.00012	0.00040	<0.00015	<0.00014	0.00032
	Chloride (Cl) (mg/dm2.day)	0.033	0.038	0.039	0.042	0.040
	Nitrate (as N) (mg/dm2.day)	0.00103	0.00110	0.00127	0.00060	0.00139
	Sulfate (SO4) (mg/dm2.day)	<0.012	<0.013	<0.015	<0.014	<0.014
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.000450	0.000799	0.000719	0.00224	0.000561
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000025 DLB	<0.0000037 DLB	<0.0000025	<0.0000020	<0.0000024
	Arsenic (As)-Total (mg/dm2.day)	<0.0000013	<0.0000018	<0.0000025	<0.0000020	<0.0000024
	Barium (Ba)-Total (mg/dm2.day)	0.0000281	0.0000748	0.0000265	0.000135	0.0000331
	Beryllium (Be)-Total (mg/dm2.day)	<0.0000064	<0.0000092	<0.000013	<0.000010	<0.000012
	Bismuth (Bi)-Total (mg/dm2.day)	<0.0000064	<0.0000092	<0.000013	<0.000010	<0.000012
	Boron (B)-Total (mg/dm2.day)	<0.00013	<0.00018	<0.00025	<0.00020	<0.00024
	Cadmium (Cd)-Total (mg/dm2.day)	<0.00000064	<0.00000092	0.0000017	<0.0000010	<0.0000012
	Calcium (Ca)-Total (mg/dm2.day)	0.00364	0.00632	0.0064	0.0263	0.0067
	Chromium (Cr)-Total (mg/dm2.day)	<0.0000064	<0.0000092	<0.000013	<0.000010	<0.000012
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000013	<0.0000018	0.0000049	<0.0000020	<0.0000024
	Copper (Cu)-Total (mg/dm2.day)	0.000104	0.000125	0.000187	0.000120	0.0000918
	Iron (Fe)-Total (mg/dm2.day)	0.00053	0.00099	<0.00076	0.00256	0.00071
	Lead (Pb)-Total (mg/dm2.day)	0.0000137	0.00000255	0.0000052	0.0000041	0.0000031
	Lithium (Li)-Total (mg/dm2.day)	<0.000064	<0.000092	<0.00013	<0.00010	<0.00012
	Magnesium (Mg)-Total (mg/dm2.day)	<0.0013	<0.0018	<0.0025	0.0058	<0.0024
	Manganese (Mn)-Total (mg/dm2.day)	0.0000367	0.0000581	0.000348	0.000105	0.0000471
	Mercury (Hg)-Total (mg/dm2.day)	<0.00000064	<0.00000092	<0.0000013	<0.0000010	<0.0000012
	Molybdenum (Mo)-Total (mg/dm2.day)	<0.00000089 DLB	<0.00000092	<0.0000013	<0.0000010	<0.0000012
	Nickel (Ni)-Total (mg/dm2.day)	<0.0000064	<0.0000092	<0.000013	<0.000010	<0.000012
	Phosphorus (P)-Total (mg/dm2.day)	<0.0038	<0.0055	<0.0076	<0.0061	<0.0071
	Potassium (K)-Total (mg/dm2.day)	<0.025	<0.037	<0.051	<0.041	<0.047
	Selenium (Se)-Total (mg/dm2.day)	<0.000013	<0.000018	<0.000025	<0.000020	<0.000024
	Silicon (Si)-Total (mg/dm2.day)	0.00076	0.00104	<0.0013	0.0036	<0.0012
	Silver (Ag)-Total (mg/dm2.day)	<0.00000025 DLB	<0.00000055 DLB	<0.00000076 DLB	<0.00000041 DLB	<0.00000071 DLB
	Sodium (Na)-Total (mg/dm2.day)	<0.025	<0.037	<0.051	<0.041	<0.047
	Strontium (Sr)-Total (mg/dm2.day)	0.0000099	0.0000178	0.0000118	0.0000420	0.0000132
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000013	<0.0000018	<0.0000025	<0.0000020	<0.0000024
	Tin (Sn)-Total (mg/dm2.day)	<0.0000025 DLB	<0.0000018	<0.0000025	<0.0000020	<0.0000024
	Titanium (Ti)-Total (mg/dm2.day)	<0.00013	<0.00018	<0.00025	<0.00020	<0.00024

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1074796-1	L1074796-2	L1074796-3	L1074796-4	L1074796-5
	Description	DUSTFALL	DUSTFALL	DUSTFALL	DUSTFALL	DUSTFALL
	Sampled Date	17-OCT-11	17-OCT-11	17-OCT-11	17-OCT-11	17-OCT-11
	Sampled Time	14:05	13:30	12:10	12:40	11:40
	Client ID	DF-1 (20SEP-17OCT/11)	DF-2 (20SEP-17OCT/11)	DF-3 (20SEP-17OCT/11)	DF-4 (20SEP-17OCT/11)	DF-5 (20SEP-17OCT/11)
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.00000013	<0.00000018	<0.00000025	<0.00000020	<0.00000024
	Vanadium (V)-Total (mg/dm2.day)	<0.000013	<0.000018	<0.000025	<0.000020	<0.000024
	Zinc (Zn)-Total (mg/dm2.day)	0.000032	0.000039	0.000086	0.000083	0.000047

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

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection limit was raised due to detection of analyte at comparable level in Method Blank.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

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

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-F-VA	Dustfall	Dustfall Ammonia by Fluorescence	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

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

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

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

10-169603

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

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

10-169603

ALS Enviro

L1074796-COFC

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

Page 1 of 1

Report To	**Report Format / Distribution**	**Service Request:** (Rush subject to availability - Contact ALS to confirm TAT)
Company: RESCAN	Standard: ✓ Other (specify):	✓ Regular (Standard Turnaround Times - Business Days)
Contact: CHERYL ZANDBERGEN	Select: PDF ✓ Excel ✓ Digital Fax	Priority (2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address: 6TH FLOOR, 1111 W HASTINGS ST, VANCOUVER BC [redacted] V6E 2J3	Email 1: CZandbergen@rescan.com	Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
Phone: 604-689-9460 Fax:	Email 2:	Same Day or Weekend Emergency - Contact ALS to confirm TAT

Invoice To Same as Report ? (circle) Yes or No (if No, provide details)	**Client / Project Information**	**Analysis Request**
Copy of Invoice with Report? (circle) Yes or No	Job #: 0791-002-03-02	(Indicate Filtered or Preserved, F/P)
Company:	PO / AFE:	
Contact:	LSD:	
Address:		
Phone: Fax:	Quote #:	
Lab Work Order # (lab use only) L1074796	**ALS Contact:** AMBER SPRINGER **Sampler:** CHRIS DOUGHTY	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TOTAL PARTICULATE	SOLUBLE PARTICULATE	INSOLUBLE PARTICULATE	SULPHATE	NITRATE	AMMONIA NH_3 NH_4^+	CHLORIDE Cl^-	TOTAL METALS	CATIONS Mg^{+2} Ca^{+2}				Number of Containers
	DF-1	17-OCT-11	14:05	DUSTFALL	✓	✓	✓	✓	✓	✓	✓	✓	✓				2
	DF-2	"	13:30	"	✓	✓	✓	✓	✓	✓	✓	✓	✓				2
	DF-3	"	12:10	"	✓	✓	✓	✓	✓	✓	✓	✓	✓				2
	DF-4	"	12:40	"	✓	✓	✓	✓	✓	✓	✓	✓	✓				2
	DF-5	"	11:40	"	✓	✓	✓	✓	✓	✓	✓	✓	✓				2

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

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

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
CHRIS DOUGHTY	20 OCT 11	09:00	BP	Oct. 20	14:18	15 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — GENF 18.01 Front