APPENDIX 6-G

Whale Tail Pit Core Receiving Environment Monitoring Program 2014-2015 Baseline Studies

June 2016
Report No. 1541520

FINAL

Whale Tail Pit Core Receiving Environment Monitoring Program (CREMP): 2014-2015 Baseline Studies

Prepared for:

Agnico Eagle Mines Ltd.

Meadowbank Division
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January 2016

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Project No. AEM-15-03

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ACKNOWLEDGMENTS

Azimuth would like to thank AEM for their support of this program and for facilitating our work by providing logistical assistance and help whenever needed. Key personnel conducting this project were as follows:

- Gary Mann (Azimuth) – Gary was responsible for overall management of this project. He also provided oversight and logistical support for the field crew, collaborated on the study design, and reviewed the report.
- Eric Franz (Azimuth) – Eric was responsible for overall coordination of the 2015 baseline program. He coordinated field sampling logistics, completed the August sampling event, and was the primary author of the report.
- Morgan Finley (Azimuth) – Morgan completed the July and September sampling events and helped coordinate the field program.

PROFESSIONAL LIABILITY STATEMENT

This report has been prepared by Azimuth Consulting Group Partnership (Azimuth; managing partner Azimuth Consulting Group Inc.), for the use of Agnico Eagle Mines Ltd. (AEM), who has been party to the development of the scope of work for this project and understands its limitations. The extent to which previous investigations were relied on is detailed in the report.

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ACRONYMS

AEM	Agnico Eagle Mines Ltd.
BAER	Baseline Aquatic Ecosystem Report
CCME	Canadian Council of Ministers of the Environment
CREMP	Core Receiving Environment Monitoring Program
CRM	Certified Reference Material
DQO	Data Quality Objective
dw	dry weight
EIA	Environmental Impact Assessment
GCDWQ	Guidelines for Canadian Drinking Water Quality
GPS	Global Positioning System
INUG	Inuggugayualik Lake
ISQG	Interim sediment quality guidelines (CCME sediment quality guidelines)
KIA	Kivalliq Inuit Association
LPL	Lowest practical level (taxonomic identification)
MAM	Mammoth Lake
MB	Method blank
MDL	Method detection limit
MS	Matrix spike
MTG	Major taxa group
NEM	Nemo Lake
NF	Near-field
NTI	Nunavut Tunngavik Incorporated
NWB	Nunavut Water Board
PAHs	Polycyclic aromatic hydrocarbons
PEL	Probable effect level (CCME sediment quality guidelines)
PDL	Pipedream Lake
QA/QC	Quality Assurance / Quality Control
REF	Reference
RPD	Relative percent difference
SOP	Standard Operating Procedure
SQG	Sediment quality guidelines
UTM	Universal Transverse Mercator

WQG	Water quality guidelines
WTN	Whale Tail Lake North Basin
WTN-Ex	Whale Tail Lake North Basin (shallow)
WTS	Whale Tail Lake South Basin
ww	wet weight

1. INTRODUCTION

1.1. Background

The Amaruq Exploration Property is a 408-square kilometer area located on Inuit Owned Land, approximately 150 kilometers north of Baker Lake and approximately 50 kilometers northwest of the Meadowbank mine (**Figure 1ï1**). Agnico Eagle Mines Limited (AEM) leased exploration rights to the Amaruq Exploration Property from Nunavut Tunngavik Incorporated (NTI) in April 2013. AEM's exploration activities have been conducted under a land use permit issued by the Kivalliq Inuit Association (KIA) and a water licence issued by the Nunavut Water Board (NWB).

AEM intends to pursue development of the Whale Tail satellite open pit located on the Amaruq site as an extension to the operational Meadowbank Mine. This report presents results of the aquatic baseline sampling studies carried out in support of the environmental impact assessment (EIA) process for the proposed development of the Whale Tail Pit.

1.2. Environmental Setting

The Whale Tail Pit and Meadowbank projects are situated in the barren-ground central Arctic region of Nunavut within an area of continuous permafrost known as the Wager Bay Plateau (Campbell et al. 2012). The landscape around the Amaruq property consists of rolling hills and relief with low-growing vegetative cover and poor soil development. Numerous lakes are interspersed among boulder fields, eskers and bedrock outcrops, with indistinct and complex drainages (**Figure 1ï2**). The near-field (NF) lakes within the Amaruq Exploration Property are Whale Tail Lake (WTL), Nemo Lake (NEM), and Mammoth Lake (MAM). These are headwater ultra-oligotrophic/oligotrophic (nutrient poor with low biological productivity) lakes, situated on the watershed boundary that separates the Arctic and Hudson Bay drainages. Only a few hundred meters to the north of Third Portage Lake is the divide between water that flows north to the Arctic Ocean or to Chesterfield Inlet and Hudson Bay. Lakes near the Meadowbank project (i.e., Third Portage, Second Portage, and Tehek) flow into the Quoich River system while the CREMP reference lakes (Pipedream [PDL] and Inuggugayualik [INUG]) and lakes within the Amaruq Exploration Property flow north via the Meadowbank and Back River system.

As is common of headwater lakes, all of the project lakes have small drainage areas relative to the surface area of the lakes themselves. A drainage divide separates Nemo Lake to the north from Mammoth and Whale Tail Lake to the south (Golder 2015a). Local inflow from surrounding terrain is the predominant influence on water movement within the system. Small stream channels connect the project area lakes, although there is little flow between lakes except during freshet and possibly none during winter months. Movement by fish between lakes is also rare, as populations remain quite isolated from one another (Portt and Associates 2015b). The ice-free season on these lakes is short, with ice break-up in late-June to mid-July and ice-up beginning in late September or early October.

1.3. Baseline Sampling Overview

This document presents results of the baseline monitoring program completed by Azimuth Consulting Group Partnership (Azimuth) in 2015, as well as baseline data collected by C. Portt and Associates (Portt and Associates) in 2014 and water quality data collected by Golder Associates Ltd (Golder) in 2015. An overview of the sampling programs is provided below.

In addition to characterizing water quality, sediment quality and lower trophic aquatic communities in support of the EIA process, these baseline studies were intended to support the development and implementation of a long-term receiving environment monitoring program consistent with that being implemented at the Meadowbank Mine (i.e., the core receiving environment monitoring program [CREMP]).

1.3.1. 2014 Baseline Program

Preliminary baseline sampling was completed by Portt and Associates during the first week of September in 2014. The field program involved sampling for water chemistry, sediment chemistry, phytoplankton taxonomy, benthic invertebrate taxonomy, and fish community in Whale Tail Lake, Nemo Lake, and Mammoth Lake (**Table 1ï1**). The full report was submitted to AEM in January 2015 (Portt and Associates 2015a).

Water, sediment, phytoplankton, and benthic invertebrate results were provided to Azimuth by Portt and Associates and are included in this report for comparison with results from the 2015 baseline program. Sampling was conducted broadly throughout each lake, in general accordance with the standard operating procedures (SOPs) for the Meadowbank CREMP. Five replicate stations were chosen throughout each lake at a target depth of 8 m ± 1.5 m. The locations were broadly distributed throughout each of the lakes **Figure 1ï3** (Whale Tail), **Figure 1ï4** (Nemo), **Figure 1ï5** (Mammoth).

1.3.2. 2015 Baseline Program

The following sections provide an overview of the 2015 baseline monitoring studies, broken down into three components:

- Whale Tail Pit Study Area lakes (herein referred to as the "Lakes"),
- Stream locations along the proposed the proposed access road (herein referred to as the "Sentinel stations"),
- Streams within the Whale Tail Pit Study Area (herein referred to as the "Tributaries").

1.3.2.1. Whale Tail Pit Study Area Lakes

Whale Tail Lake, Nemo Lake, and Mammoth Lake were sampled by Azimuth in 2015. Whale Tail Lake was divided into two basins, the North Basin (WTN) and South Basin (WTS) to characterize the aquatic resources. WTN is located in the vicinity of the proposed mining operations (**Figure 1ï1**), and it is anticipated that this area of Whale Tail Lake will be dewatered to allow development of the Whale Tail Pit. Five additional shallow sampling stations were established in the North Basin (referred to as WTN-Ex) to document aquatic resources in support of the EIA. The following media were sampled in 2015 at the Lake stations:

- *In-situ* limnology (July, August, and September)
- Water chemistry (July, August, and September)
- Sediment chemistry (August)
- Benthic invertebrate community (August)
- Zooplankton community (July, August, and September)
- Periphyton (qualitative survey, July August, and September)

Sampling locations for the 2015 baseline program in Whale Tail, Nemo, and Mammoth Lakes are presented in **Table 1ï2** and shown in **Figure 1ï3**, **Figure 1ï4**, and **Figure 1ï5**, respectively.

The Meadowbank CREMP reference lakes Inuggugayualik Lake (INUG) and Pipedream Lake (PDL) are considered suitable reference lakes for the Whale Tail Pit Study Area Lakes, and the 2015 data are used herein to provide a broader context where appropriate. INUG is located about 41 km southeast of the Whale Tail Pit Study Area, while PDL is located 40 km to the southeast (**Figure 1ï1**). Pipedream Lake is located northeast of INUG, and the proposed access road runs along the northeast shore of this lake. INUG and PDL satisfied the requirements of an external reference lake for the Meadowbank CREMP from a physical/chemical perspective because they are at similar latitude, have similar geology, relief and climate, do not have any significant inflows and has generally similar limnology, water chemistry and aquatic biological community structure to the project lakes (BAER, 2005). It should be noted that their proximity to the proposed access road may lead to dust deposition into each of the lakes under certain conditions. However, both lakes are quite large and the sampling locations for each are away from the road (i.e., approximately 2 km for PDL and 10 km for INUG), so while road-related trends will be tracked they are not anticipated.

It is anticipated that the baseline data collected from Whale Tail Lake, Nemo Lake, and Mammoth Lake will also be used to define pre-mining conditions for the Core Receiving Environment Monitoring Program (CREMP) designed to detect whether future development of the Whale Tail deposit is adversely affecting aquatic resources.

1.3.2.2. Sentinel Stations

Sentinel stations are defined as the monitoring locations along the route of a proposed access road between the Whale Tail Pit Study Area and the Vault Pit area at Meadowbank (**Figure 1ï1**). The baseline characterization of the Sentinel stations will support making future inferences about road-related changes to water quality once the road is built. The locations were chosen based on the fisheries and habitat surveys completed by Portt and Associates in 2014 (2015b). In general, the monitoring locations were chosen because of the presence of seasonal habitat, suitable spawning habitat, and/or potential migration route for large-bodied fish. The report identified several water bodies and watercourses that intersected the approximate route of the proposed access road, and of the locations surveyed, five were selected as long-term monitoring locations (**Table 1ï2**). Water samples (*in-situ* field parameters and water chemistry) were collected by Azimuth in July, August, and September 2015. Qualitative observations on the periphyton community were also collected during each sampling event.

1.3.2.3. Whale Tail Pit Study Area Tributaries

Several streams in the vicinity of the Whale Tail Pit Study Area were sampled by Golder in August and September 2015 to support water quality model development for the EIA. Water quality data collected from the "tributary" streams are included herein for completeness.

The Tributary locations were named according to a hydrology naming convention established prior to the August sampling event. Lakes within the local watershed boundaries were given alphanumeric names based on the watershed they were located in, termed A, B, or C. Tributaries were defined based on their upstream and downstream lakes. For example, Tributary station A17-A16 is located downstream of Lake A17 and upstream of lake A16. The naming convention was revised after sampling was completed in September, which required updating and cross-referencing the old tributary names with the new naming convention. Table 1 in **Appendix D** provides the new and old tributary names to assist interpreting the original laboratory data reports submitted using the original naming convention. Labels shown in the figures reflect the current, updated naming convention.

Table 1-1. Sampling location coordinates (GPS, UTM, NAD83), Whale Tail Pit Baseline, 2014.

							Sampling Program				
Lake	**Date**	**Location**	**Zone**	**Easting**	**Northing**	**Station Depth (m)**	***In-situ* Water Quality**	**Water Chemistry**	**Sediment Chemistry**	**Phytoplankton Taxonomy**	**Benthic Invertebrate Taxonomy**
Mammoth Lake	04-Sep-14	1	14W	605074	7254893	8.1	✓	✓	✓	✓	✓
		2	14W	604486	7254566	7.3	✓				✓
		3	14W	604398	7254336	8.3	✓	✓	✓	✓	✓
		4	14W	603925	7254200	7.4	✓				✓
		5	14W	604191	7253847	7.3	✓	✓	✓	✓	✓
Whale Tail Lake	05-Sep-14	1	14W	607005	7255983	8.5	✓	✓	✓	✓	✓
		2	14W	607431	7255251	7.8	✓				✓
		3	14W	607538	7254596	8.0	✓	✓	✓	✓	✓
		4	14W	607230	7253781	7.8	✓				✓
		5	14W	607120	7253603	8.0	✓	✓	✓	✓	✓
Nemo Lake	06-Sep-14	1	14W	606358	7257042	7.6	✓	✓	✓	✓	✓
		2	14W	606040	7257418	7.4	✓				✓
		3	14W	606048	7257571	8.3	✓	✓	✓	✓	✓
		4	14W	606963	7257756	8.5	✓				✓
		5	14W	606740	7257566	8.7	✓	✓	✓	✓	✓

Notes:
Baseline 2014 sampling was completed by Portt and Associates (2015b).

Table 1-2. Sampling location coordinates (GPS, UTM, NAD83), Whale Tail Pit Baseline, 2015.

		Water & Phytoplankton (monthly)[1]				Zooplankton (monthly)				Benthos & Sediment Grabs (August)				
		Area-	Depth	Coordinates (zone 14W)		Area-	Depth	Coordinates (zone 14W)		Area-	Sample	Depth	Coordinates (zone 14W)	
Lake	Month	Replicate	(m)	Easting	Northing	Replicate	(m)	Easting	Northing	Replicate[2]	Type[3]	(m)	Easting	Northing
Whale Tail (North Basin)	July	WTN-1	7.4	607207	7254975	WTN-1	7.4	607207	7254975	WTN-1	B & C	8.0	606929	7255745
	July	WTN-2	6.7	607252	7254613	WTN-2	6.4	607252	7254613	WTN-2	B & C	8.4	606930	7255703
	August	WTN-3	6.8	607387	7254563	WTN-3	8.6	607393	7254558	WTN-3	B & C	7.9	606922	7255641
	August	WTN-4	7.9	607221	7254980	WTN-4	6.4	607221	7254988	WTN-4	B & C	9.1	606883	7255744
	September	WTN-5	6.7	607244	7255025	WTN-5	6.7	607244	7255025	WTN-5	B & C	7.5	606944	7255763
	September	WTN-6	10.9	607329	7254542	WTN-6	10.9	607329	7254542	WTN-COMP	C			
										WTN-Ex-1	B & C	5.0	607063	7255973
										WTN-Ex-2	B & C	5.4	607048	7256005
										WTN-Ex-3	B & C	5.7	607042	7255883
										WTN-Ex-4	B & C	6.1	607062	7255952
										WTN-Ex-5	B & C	5.4	607071	7255991
Whale Tail (South Basin)	July	WTS-1	9.5	607450	7253884	WTS-1	9.5	607450	7253884	WTS-1	B & C	7.2	607152	7253537
	July	WTS-2	5.1	607621	7254253	WTS-2	5.1	607621	7254253	WTS-2	B & C	7.1	607179	7253534
	August	WTS-3	8.5	607173	7253550	WTS-3	7.8	607155	7253550	WTS-3	B & C	7.8	607110	7253570
	August	WTS-4	7.5	607571	7254138	WTS-4	7.5	607571	7254138	WTS-4	B & C	7.4	607099	7253641
	September	WTS-5	6.5	607612	7253907	WTS-5	6.5	607612	7253907	WTS-5	B & C	7.8	607160	7253639
	September	WTS-6	7.8	607568	7254259	WTS-6	7.8	607568	7254259	WTS-COMP	C			
Nemo	July	NEM-1	10.5	606604	7257508	NEM-1	10.5	606604	7254415	NEM-1	B & C	8.0	606553	7257356
	July	NEM-2	11.1	606454	7257135	NEM-2	11.9	606454	7257135	NEM-2	B & C	9.0	606528	7257358
	August	NEM-3	8.0	606553	7257360	NEM-3	8.0	606553	7257360	NEM-3	B & C	8.9	606534	7257302
	August	NEM-4	11.8	606378	7257257	NEM-4	10.2	606370	7257235	NEM-4	B & C	8.0	606572	7257370
	September	NEM-5	10.5	606288	7257418	NEM-5	10.5	606289	7257418	NEM-5	B & C	8.5	606544	7257328
	September	NEM-6	15.2	606611	7257938	NEM-6	15.2	606611	7257938	NEM-COMP	C			
Mammoth	July	MAM-1	5.1	604278	7254163	MAM-1	7.8	604145	7254415	MAM-1	B & C	8.0	605073	7254864
	July	MAM-2	7.8	604145	7254415	MAM-2	5.1	604278	7254163	MAM-2	B & C	8.1	605056	7254887
	August	MAM-3	7.2	604273	7254244	MAM-3	7.4	604273	7254244	MAM-3	B & C	7.5	605033	7254895
	August	MAM-4	7.8	604239	7253860	MAM-4	7.8	604239	7253860	MAM-4	B & C	8.1	605001	7254886
	September	MAM-5	8.9	604357	7254348	MAM-5	8.9	604357	7254348	MAM-5	B & C	8.8	605010	7254862
	September	MAM-6	6.4	604228	7253834	MAM-6	6.4	604228	7253834	MAM-COMP	C			
Sentinel Stations	July, August, September[5]	C2	-	638199	7221598									
		C14	-	632916	7232202									
		C17	-	630583	7234684									
		C20	-	627265	7236464									
		C41	-	620607	7244690									

Notes:

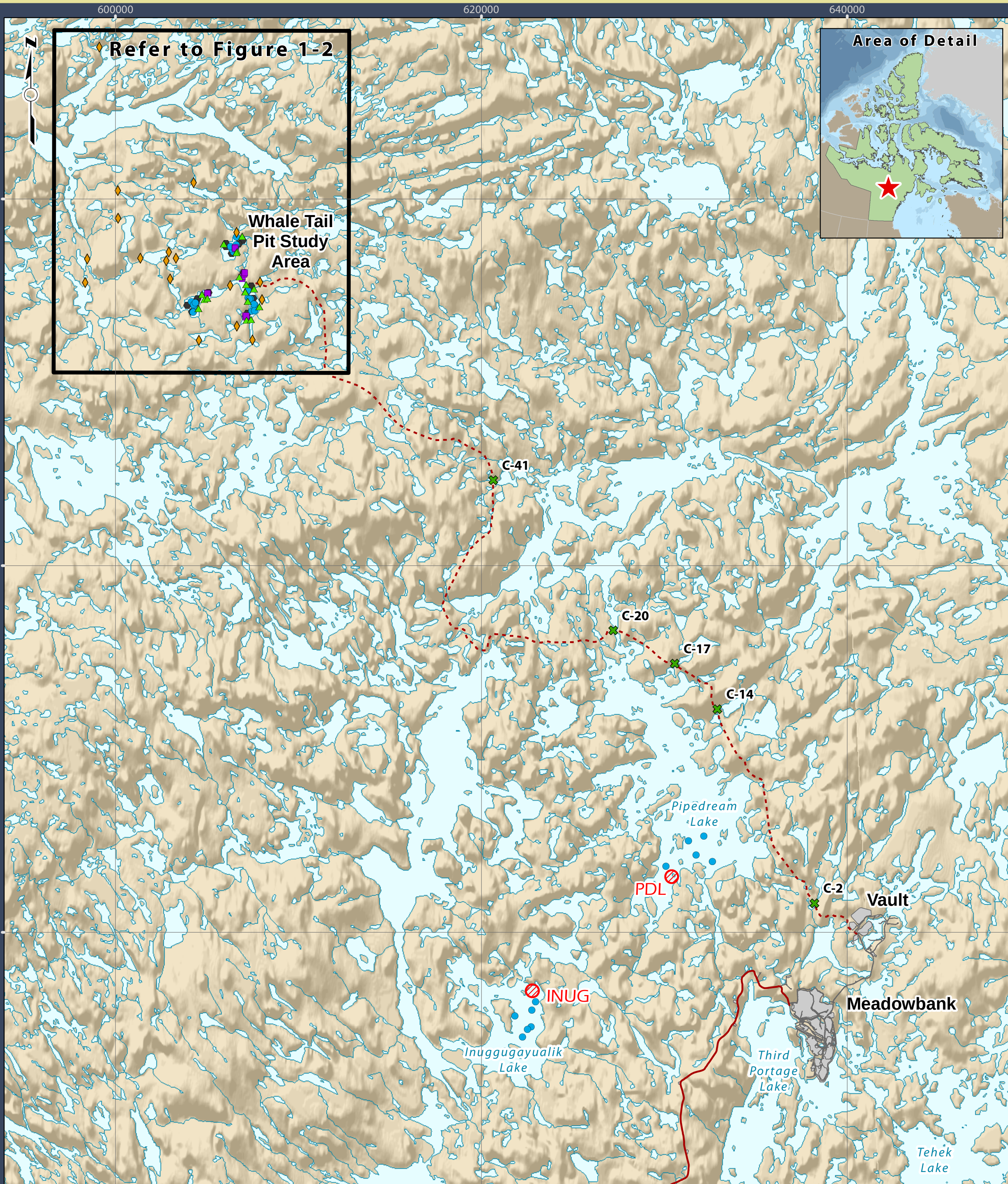
[1] Water and phytoplankton from the Lake stations were collected 3 m below the surface. Phytoplankton was not collected at the Sentinel stations.

[2] Area IDs are as follows: WTN = Whale Tail Lake North Basin; WTN-Ex = Whale Tail Lake North Basin (shallow); WTS = Whale Tail Lake South Basin.

[3] Sample types: B = Benthos; C = chemistry.

[4] COMP = composite sample of all 5 replicate samples from each area. COMP samples are analzyed for Mineral oil and grease, PAHs,

[5] Water sampling at the Sentinel stations was conducted in the same general location during each event (month).



Legend

2015 Sampling Locations
- Tributary Station
- Periphyton Station
- Sentinel Station
- Sediment and Benthos Station
- Water Quality Station

2014 Sampling Locations
- Water, Sediment, and Benthos Station

* Note: water, phytoplankton, sediment, and benthos were submitted for analysis at these locations in 2014.

- Sediment/Coring/Benthic Invertebrate Quality Sampling Station
- All Weather Access Road
- Proposed Access Road
- Meadowbank Mine Plan 2015
- Lake
- River

0 2 4 6 8
Kilometres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.

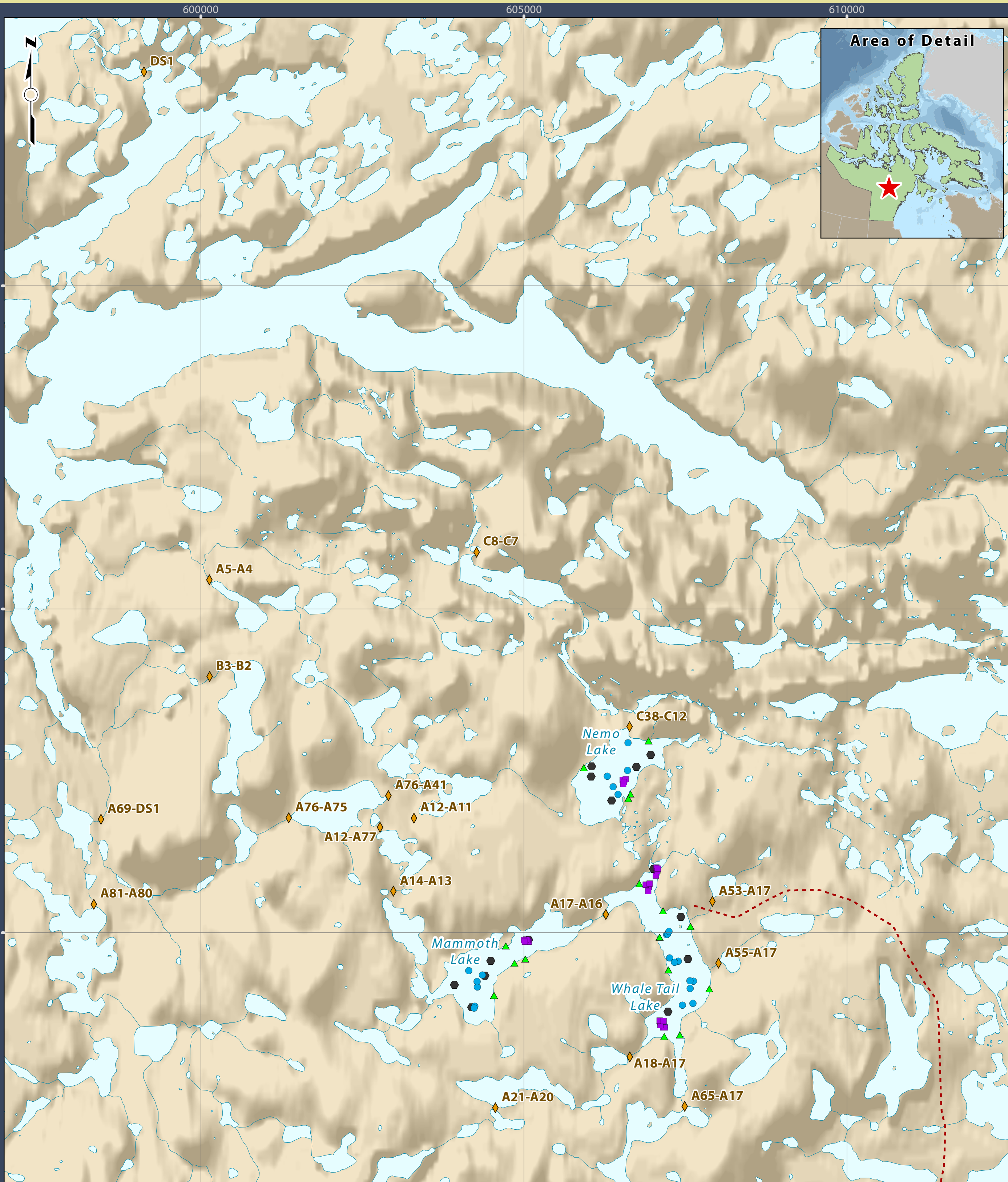
Figure 1-1
Meadowbank - Whale Tail Pit Study Area Overview

Whale Tail Pit Project

Prepared for: AGNICO EAGLE

By: CASLYS CONSULTING

December 21, 2015



Legend

2015 Sampling Locations
- Tributary Station
- Periphyton Station
- Sediment and Benthos Station
- Water and Zooplankton Station

2014 Sampling Locations
- Water, Sediment, and Benthos Station

* Note: water, phytoplankton, sediment, and benthos were submitted for analysis at these locations in 2014.

- Proposed Access Road
- Lake
- River

0 0.5 1 1.5 2
Kilometres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.

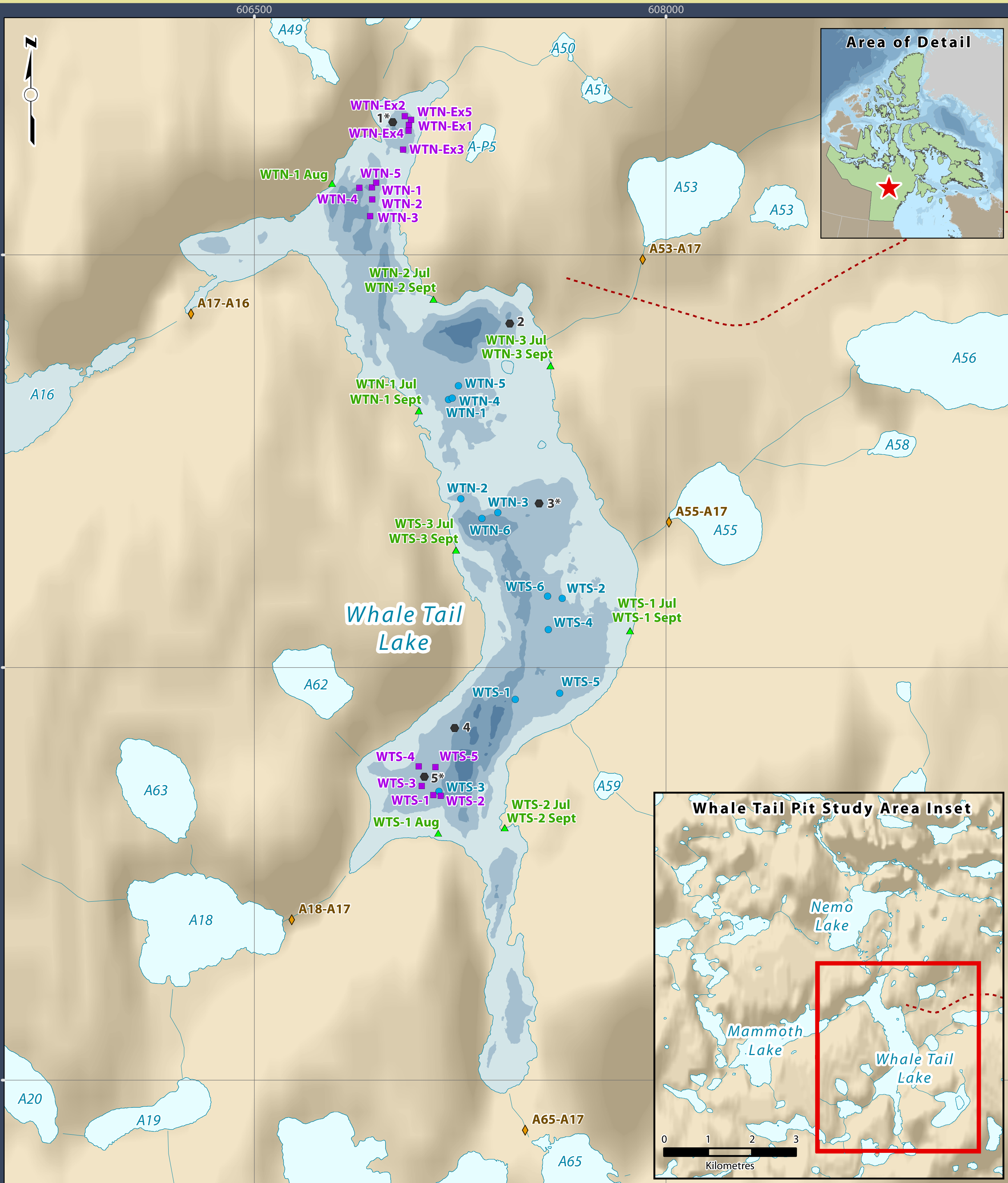
Figure 1-2
Whale Tail Pit
Study Area Overview

Whale Tail Pit Project

Prepared for: AGNICO EAGLE

By: CASLYS CONSULTING

December 21, 2015



Legend

2015 Sampling Locations

- Tributary Station
- Periphyton Station
- Sediment and Benthos Station
- Water and Zooplankton Station

2014 Sampling Locations

- Water, Sediment, and Benthos Station

* Note: water, phytoplankton, and sediment were submitted for analysis at these locations in 2014.

- Proposed Access Road
- Lake
- River

Bathymetry - Depth (m)

- 0 - 4
- 5 - 9
- 10 - 14
- 15 - 19
- 20 - 24

0 100 200 300 400 500

Metres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.

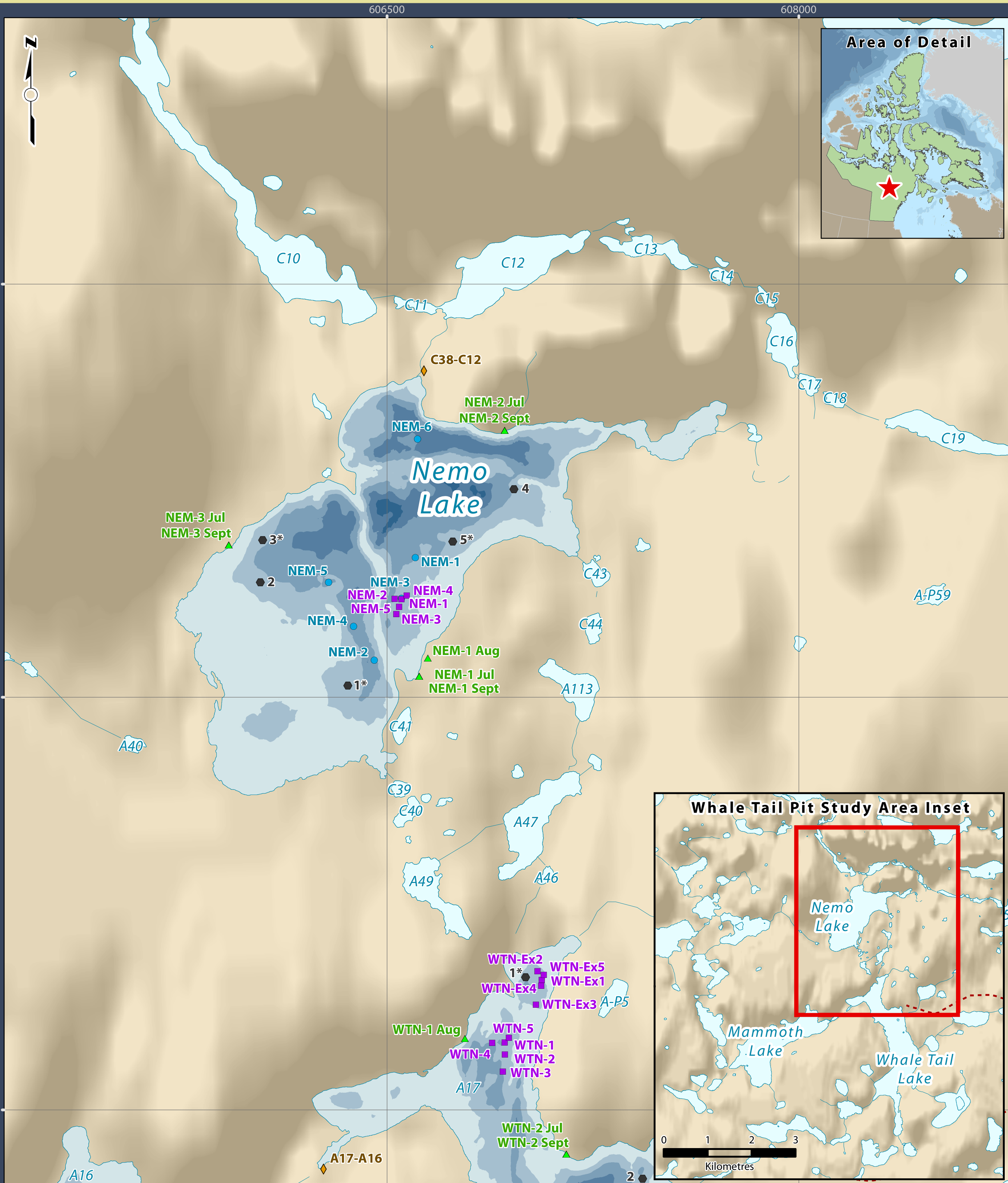
Figure 1-3
Whale Tail Lake
Baseline Sampling Locations, 2014 & 2015

Whale Tail Pit Project

Prepared for: AGNICO EAGLE

By: CASLYS CONSULTING

December 21, 2015



Legend

2015 Sampling Locations
- Tributary Station
- Periphyton Station
- Sediment and Benthos Station
- Water and Zooplankton Station

2014 Sampling Locations
- Water, Sediment, and Benthos Station

* Note: water, phytoplankton, and sediment were submitted for analysis at these locations in 2014.

- Proposed Access Road
- Lake
- River

Bathymetry - Depth (m)
- 0 - 4
- 5 - 9
- 10 - 14
- 15 - 19
- 20 - 24

0 100 200 300 400 500
Metres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.

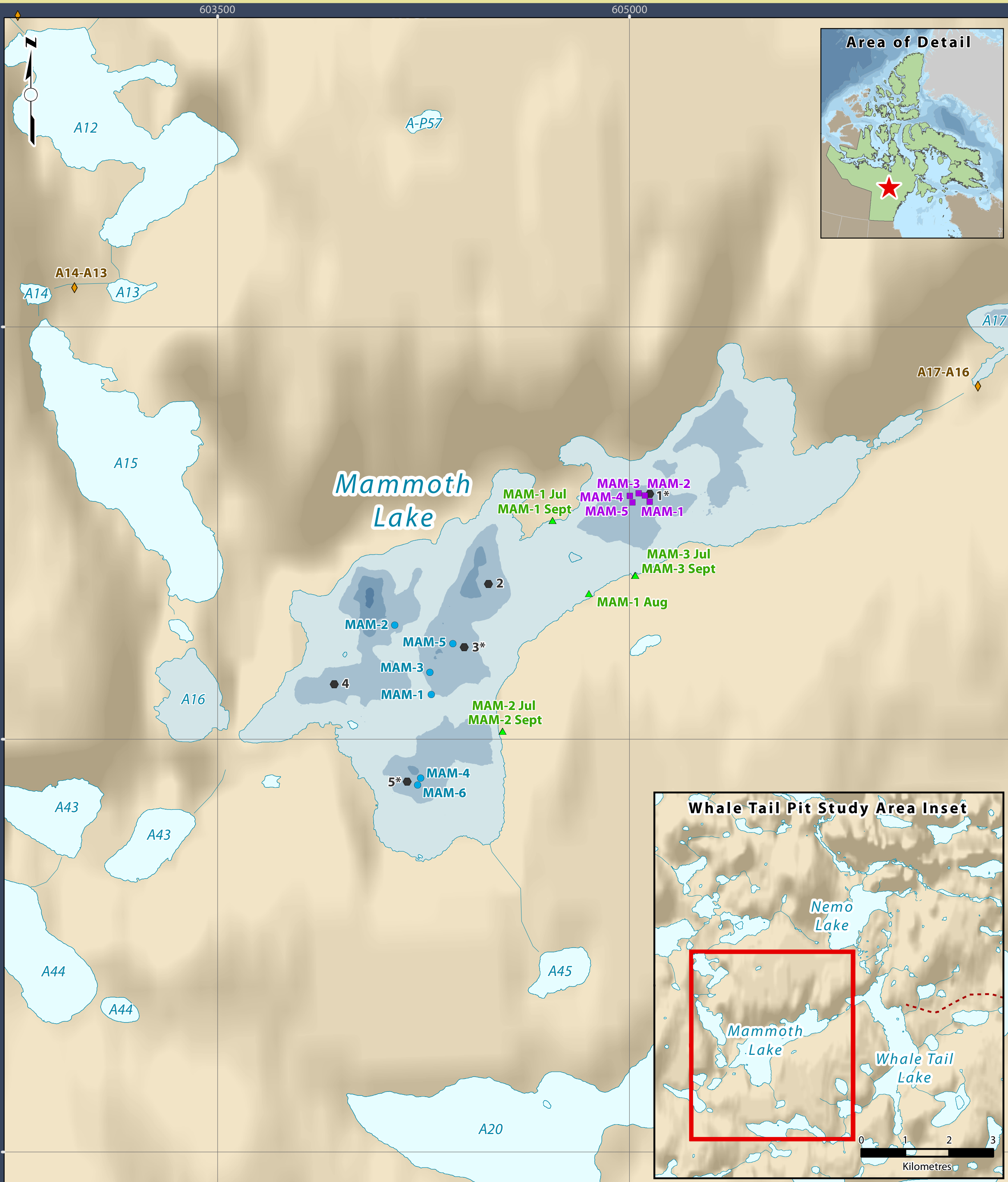
Figure 1-4
Nemo Lake
Baseline Sampling Locations, 2014 & 2015

Whale Tail Pit Project

Prepared for: AGNICO EAGLE

By: CASLYS CONSULTING

December 21, 2015



Legend

2015 Sampling Locations
- Tributary Station
- Periphyton Station
- Sediment and Benthos Station
- Water and Zooplankton Station

2014 Sampling Locations
- Water, Sediment, and Benthos Station

* Note: water, phytoplankton, and sediment were submitted for analysis at these locations in 2014.

- Proposed Access Road
- Lake
- River

Bathymetry - Depth (m)
- 0 - 4
- 5 - 9
- 10 - 14
- 15 - 19
- 20 - 24

0 100 200 300 400 500
Metres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.

Figure 1-5
Mammoth Lake
Baseline Sampling Locations, 2014 & 2015

Whale Tail Pit Project

Prepared for: AGNICO EAGLE

By: CASLYS CONSULTING

December 21, 2015

2. WATER QUALITY

2.1. Methods Overview

Baseline water quality sampling at Whale Tail Lake, Nemo Lake, and Mammoth Lake was completed by Portt and Associates in 2014 and Azimuth in 2015. Water samples were collected by Azimuth at the Sentinel stations along the proposed access road in 2015. Tributaries within the Whale Tail Pit Study Area were sampled by Golder in 2015. Water sampling at the Lake and Sentinel stations was conducted according to the SOP used for the Meadowbank CREMP program[1]. The collection method/SOP used by Golder for water sampling at the Tributary stations is included as **Appendix D** of this report.

2.1.1. Sample Collection

Lake Stations (2014)

Details on the sample collection and analysis plan for the 2014 baseline study can be found in the original report prepared by Portt and Associates (2015a). The water samples were collected according to methods outlined in the Azimuth SOP described below. *In-situ* water quality measurements (temperature, pH, DO, specific conductance, and turbidity) were recorded at 1 m depth intervals at 5 locations where benthic invertebrate sampling was conducted. Water samples were collected for chemistry at stations 1, 3, and 5 in each lake at a depth of 3 m, consistent with the Azimuth SOP.

Lake and Sentinel Stations (2015)

2015 baseline water quality sampling for the Lake stations and the Sentinel stations was carried out by Azimuth in July, August, and September. Reference areas INUG and PDL are routinely sampled as part of Meadowbank CREMP monitoring and are included in this baseline report for additional context where appropriate; samples were collected in July (by AEM), August (by Azimuth) and September (by AEM). The 2015 Lake sampling locations were pre-determined by bounding the sample areas and using a random number generator to select coordinates within those bounds. Coordinates were then recorded in MapSource (Garmin Ltd.) and in the hand-held GPS units (NAD 83) before going out into the field. Lake stations (two per basin per event) were sampled in areas with a minimum water depth of 5 m. In the event that the location associated with the random sampling coordinates was situated in less than 5 m of water, the station was relocated to the nearest appropriate location

As described in **Section 1.3.2.2**, the initial locations of the Sentinel stations were established based on existing information about the proposed access road route provided by Portt and Associates (2015b). Upon arriving in the general area of each Sentinel station, the sampling locations were chosen in areas downstream of the proposed road crossing, and if possible, downwind.

In situ water quality measurements (pH, temperature, dissolved oxygen, and specific conductance) were collected using a multi-parameter probe (YSI Pro Plus). At the Lake stations, profiles were collected at 1 m intervals to a depth of approximately 1 m above the sediment. Water samples for chemistry were collected at a depth of 3 m using a battery-operated pump and tubing system according to methods outlined in the SOP (Azimuth 2015b). The pump and tubing was flushed with water from the location for approximately 2 minutes prior to collecting a sample. Dissolved water samples were collected by attaching an in-line high capacity filter (0.45 µm; Pine Environmental) to the outlet tubing. Samples were

[1] Refer to the 2014 Meadowbank CREMP report (Azimuth 2015b) for details of the SOP.

kept cool while in the field and were preserved back at the camp. Chlorophyll-*a*[2] samples were processed at camp by filtering 500 mL of water using a hand-pump vacuum filter system and 0.45 µm filter. The filters were placed in 15 mL black tubes and stored frozen prior to shipping.

Tributary Stations (2015)

Tributaries in the Whale Tail Pit Study Area were sampled by Golder in August and September 2015. Details regarding the tributary sampling program were provided as a memorandum by Golder (**Appendix D** of this report). *In situ* water quality measurements were taken with an YSI Pro Plus from 16 stations in August and 11 stations in September. Water samples for chemistry were collected from 11 stations in August and 6 stations in September. The samples were collected by hand (i.e., grab samples) at a depth of 30 cm, if possible, or 10 cm at locations with lower water levels. Samples for dissolved parameters were filtered back at the camp using a hand-pump vacuum system (0.45 µm filter).

2.1.2. Laboratory Methods

All water samples were submitted to ALS (Burnaby, BC) for analysis. The samples were transported in coolers with ice packs and shipped to ALS at the earliest convenience to minimize the possibility of exceeding the recommended hold-times between collection and analysis. A complete list of parameters, detection limits, data quality objectives, and method references is present in Table 1 of the Water Sampling SOP (Azimuth 2015b).

2.1.3. Data Handling and Analysis

Water chemistry results from the 2014 baseline study were provided to Azimuth by Portt and Associates. Water chemistry data collected from the Lake, Sentinel, and Tributary stations were tabulated in Microsoft Excel and screened against the following criteria:

1. Freshwater aquatic life water quality guidelines (CCME 2015a).
2. Guidelines for Canadian Drinking Water Quality (Health Canada 2014). Health-based standards were given priority over aesthetic and operational guidelines. Standards for the following parameters are aesthetic and meant to protect against taste and odour: chloride, sulphate, copper, iron, manganese, sodium, zinc.

Lake water quality data were also compared against trigger and threshold values developed for the Meadowbank CREMP (Azimuth 2015a). These values were included in the screening to help put the baseline water quality data in context with screening values applied to the Meadowbank project lakes[3]. A brief description of the trigger and threshold values is provided below. For more information, refer to Azimuth (2015a, Appendix D).

- Thresholds are legal requirements, regulatory guidelines (e.g., CCME), or other discrete benchmarks, below which unacceptable adverse effects are not expected and above which adverse effects may occur. If effects-based thresholds do not exist for a particular variable, then early warning triggers (based on statistical criteria) were developed without thresholds.
- Triggers are considered "early warning" criteria and are typically more conservative (lower) than threshold values. They are intended to alert management to changes so that the situation can be assessed in advance of thresholds being exceeded.

[2] Chlorophyll-*a* results are discussed in the Phytoplankton section.

[3] Meadowbank project lakes are Third Portage Lake (North, South, and East basins), Second Portage Lake, and Tehek Lake.

2.2. Quality Assurance / Quality Control

2.2.1. QA/QC Methods

The objective of quality assurance / quality control (QA/QC) is to assure that the chemical data collected are representative of the material or populations being sampled, are of known quality, have sufficient laboratory precision to be highly repeatable, are properly documented, and are scientifically defensible. Data quality was assured throughout the collection and analysis of samples using specified standardized procedures, by the employment of laboratories that have been certified for all applicable methods, and by staffing the program with experienced technicians.

Laboratory QC

Data Quality Objectives (DQOs) are numerically definable measures of analytical precision, bias and completeness. Analytical precision is a measurement of the variability associated with duplicate analyses of the same sample in the laboratory. The laboratory duplicate is a new aliquot from the sample bottle/jar and is analyzed from the start in the same manner as the original aliquot taken from the bottle/jar. Bias refers to a systematic deviation from a known result. Certified Reference Materials (CRM), method blanks (MB), and matrix spikes (MS) are always included as part of routine laboratory QC to ensure that any bias is within the specified acceptable range. Results of the CRM, MB, and MS analyses are included in the laboratory data reports in **Appendix C**.

Field QA/QC

The standard QA/QC procedures include thoroughly flushing the flexible tubing and pump to prevent cross-contamination between areas and thoroughly rinsing the sample containers with site water prior to sample collection. Field QA procedures include collection and/or analysis of the following:

- Field Duplicates – An independent collection of water samples at the same time and location as the original, as a measure of consistency in sampling methodology and heterogeneity of chemical parameters at discrete locations. The number of field duplicates taken is approximately 10% of original samples.
- Travel Blanks – Laboratory supplied bottles of distilled water that are transported to site, carried back and forth into the field and returned to the laboratory, unopened, to test for inadvertent contamination during the transport and field sampling process.
- Equipment Blanks – Equipment blanks are included in the QA/QC program for samples collected according to the Azimuth SOP (Lake and Sentinel stations). At the beginning or end of a field sampling episode, after routine rinsing of the pump and tubing, distilled water is run through the equipment and placed in sampling bottles for analysis of a wide suite of parameters (e.g., metals, nutrients, and conventional parameters). This sample tests for possible cross-contamination of samples from the water sampling equipment (i.e., the pump and tubing).

Data Quality Objectives (DQOs)

Quality control results of the laboratory and field duplicates are assessed by measuring the relative percent difference (RPD) between original and duplicate measurements as measure of precision by the laboratory and the magnitude of variability between original and field duplicate samples, respectively. The equation used to calculate a RPD is:

$$RPD = \frac{(A - B)}{(\frac{A + B}{2})} x\ 100$$

where: A = analytical result; B = duplicate result[4].

Laboratory duplicate DQOs are parameter-specific and depend on the concentration in the sample. For most parameters including metals, anions, and nutrients, the DQO is an RPD of less than 20% when the concentration is greater than 10-times the MDL. For parameters with concentrations less than 10-times the MDL, the DQO is a difference in concentration between the original and duplicate samples of less than 2-times the MDL. The DQOs for field duplicates is RPDs less than 50% when concentrations exceed 10-times the MDL. RPD values may be either positive or negative, and ideally should provide a mix of the two, clustered around zero. RPDs are not calculated for cases where one of the samples (i.e., either A or B above) is below detection and the other is not.

Results from both the equipment and travel blanks are examined for detectable concentrations of any of the parameters measured; no parameter in either blank should exceed laboratory method detection limits (MDLs). If an analyte is detected in a blank, the results for the batch of samples submitted with the blank are compared with the measured concentration in the blank; results that are less than 5-times the detected analyte concentration in the equipment blank are flagged to examine the potential for cross-contamination to affect the results[5]. Results carried forward in the QA/QC assessment are given either a cautionary flag or an unreliable flag. Cautionary flags are applied to sample results if the analyte was detected in the blank, but the effect of potential cross-contamination is considered minor (e.g., the concentration in the equipment blank is a small percentage of the concentration in the samples). Unreliable data flags are applied to water quality results that are anomalous or unrepresentative of the water quality (e.g., elevated metals concentrations in a sample that are not observed in other replicate sample(s) collected during the same event). The "cautionary" and "unreliable" data flags are provided for clarity on which results should be excluded from decision making.

2.2.2. QA/QC Results

Detailed results of the water quality QA/QC assessment are provided in **Appendix A1**. A summary of the laboratory QC and field QA/QC results are provided below.

Laboratory QC

The QC results provided by ALS were within the DQOs for the MB, CRM, MS, and laboratory duplicates for the majority of the water quality analyses in 2015. There were a few isolated instances of elevated MDLs due to sample matrix effects and method blanks that were slightly above detection. Despite the DQOs not being met, ALS's concluded the data were reliable.

Field QA/QC

No data quality issues were reported in the QA/QC assessment of the field duplicate samples and travel blanks for the 2014 and 2015 baseline studies. The equipment blanks submitted for Lake samples in 2014 and Lake and Sentinel stations in 2015 had a few parameters that were occasionally detected above the MDL, namely aluminum, barium, lead, and manganese. Lake and Sentinel station samples that were submitted with equipment blanks that had metals concentrations above the MDL were flagged to assess the reliability of the results. The barium and manganese results were considered reliable in spite of detectable concentrations in some of the equipment blanks because the concentrations represent a small percentage of the concentrations in the Lake and Sentinel station samples (**Appendix A1**, **Section A1-1**). Cautionary flags were applied to some of the aluminum data from samples that were submitted with

[4] RPD values are not calculated when one of the analytical results is below the MDL.

[5] This approach is consistent with how ALS flags unreliable results for the laboratory method blanks.

equipment blanks in September 2014 (dissolved), July 2015 (dissolved), and August 2015 (total), specifically, samples where the dissolved and total aluminum concentrations were less than 5-times the detected concentration in the equipment blank. Total lead was detected in the September 2014 equipment blank, and all three equipment blanks submitted in 2015; however, the majority of the Lake and Sentinel station samples were below the MDL (**Table 2ï1** [2014 Lake stations], **Table 2ï2** [2015 Lake stations], **Table 2ï3** [2015 Sentinel stations]). The few detected concentrations of lead in the Lake and Sentinel station samples from 2014 and 2015 were considered unreliable based on the QA/QC assessment. A few other anomalous results were flagged as unreliable in **Section A1-1**, and were not included in the discussion of the water quality results below.

2.3. Results

2.3.1. Lake Stations

Locations of the 2014 and 2015 baseline water quality stations and bathymetry are shown in **Figure 1ï3** (Whale Tail Lake), **Figure 1ï4** (Nemo Lake), and **Figure 1ï5** (Mammoth Lake). An overview of the water quality monitoring stations sampled at INUG and PDL in are shown in **Figure 1ï1**.

Field Measurements

Field-collected data from the water quality stations are presented in **Appendix B**. *In-situ* water quality depth profiles from the 2014 and 2015 Lake stations are provided in **Table B1ï1** and **Table B2ï1**, respectively.

Water temperatures were between 9°C and 12°C during the summer months in 2014 and 2015 (July to early September). Some minor thermal stratification was noted at a few of the deeper locations (> 9 m) in the July 2015 sampling event (i.e., shortly after ice-off), but the difference in temperature was less than 4°C. For the majority of the open-water season, wind maintains uniform temperature and high oxygen profiles in the water column in all lakes due to vertical mixing. Whale Tail, Nemo, and Mammoth Lakes are shallow oligotrophic lakes with low concentrations of dissolved solids and major ions as evidenced by specific conductance measuring at or below 25 µS/cm. Conductivity was uniform throughout the water column at all stations sampled during the open water season and consistent with results collected during the 2014 survey (Portt and Associates 2015a).

Chemistry

Water chemistry data from the 2014 and 2015 baseline studies are presented in **Table 2ï1** and **Table 2ï2**, respectively. The 2014 data presented in **Table 2ï1** were adapted from Portt and Associates (2015a). ALS laboratory reports for the 2015 baseline study are included in **Appendix C** of this document. Chlorophyll-*a* results are discussed in **Section 4.3** along with the phytoplankton taxonomy and biomass results.

Surface water collected during the open water season was soft, measuring less than 10 mg/L (as $CaCO_3$) at all of the sampling stations. The buffering capacity of the surface water is also quite low as evidenced by alkalinity concentrations (as bicarbonate) of approximately 5 mg/L, characteristic of low productivity headwater lakes in the Arctic. Consistent with the low turbidity and high Secchi depth results, TSS levels were at or below detection for all Lake samples (**Table 2ï1**, and **Table 2ï2**).

The majority of the chemistry parameters were below their respective MDLs for the samples collected in 2014 and 2015, including cyanides (free and total), most metals (total and dissolved fractions), nitrates and nitrites, and ammonia (as N) to name a few. Importantly, there were no exceedances of the

GCDWQs or the CCME freshwater aquatic life criteria in the Lake samples collected in 2014 and 2015[6]. There were a few instances of parameters exceeding the Meadowbank trigger values, particularly at Nemo Lake in 2014 and 2015 and Mammoth Lake in 2015, namely conductivity, hardness, calcium, magnesium, and potassium. However, triggers for all those parameters were based on baseline/reference data from the Meadowbank project lakes and are shown for context only. Overall, the water quality results from the Lakes were similar to results from the reference areas in 2015.

2.3.2. Sentinel Stations

Field Measurements

Field measured water quality parameters are presented in **Table B3ï1**. *In-situ* water quality measurements from the Sentinel stations were overall quite similar to the field measurements reported for the Lake stations. Conductivity was below 25 µS/cm, the dissolved oxygen concentrations were high, and pH was circumneutral (6.78 to 7.36) at all of the Sentinel stations in 2015.

Chemistry

Results of the water chemistry analyses for the Sentinel stations are presented in **Table 2ï3**. The ALS laboratory reports are included in **Appendix C**.

Water chemistry results were generally quite similar between the Lake and Sentinel station samples. There were three instances in September where total phosphorus was measured above the CCME aquatic life guideline of 0.004 mg/L (C14, C20, and C41). The elevated phosphorus at C14 and C41 may be related to detectable TSS in the sample (all other Sentinel station samples had TSS below the DL). A few results were also flagged because of detectable concentrations in the equipment blank, dissolved analyses that were detected when the total concentration was less than the MDL, or TSS-related issues. Refer to **Section A1-1.2** for more information on the data that were flagged when interpreting the water chemistry at the Sentinel stations.

2.3.3. Tributary Stations

Field Measurements

In-situ water quality results were provided to Azimuth by Golder and are attached as **Appendix D** of this report. August water temperatures in the Tributaries were between 12.6°C and 17.2°C. September temperatures were below 6°C, and depth was recorded as less than 30 cm at the 11 stations. Dissolved oxygen saturation levels were high (>95%) at all locations sampled in August and September, corresponding to DO concentrations above 9.5 mg/L at most locations. pH in August ranged between slight acidic (6.23) to neutral (7.02), while the September samples were neutral (7.08) to slightly alkaline (8.04). It's unclear whether the difference in pH is an artifact of the variability in the instrument or actual seasonal difference in pH. By comparison, pH measurements taken at the Sentinel stations in August and September were circumneutral, with little temporal variability (August = 7.19 ± 0.24; September = 6.96 ± 0.05).

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[6] Rep-1 from Whale Tail exceeds the CCME aquatic life guideline for lead, but the result was flagged as unreliable in the QA/QC assessment (see **Section A1-1.1**).

Chemistry

Water chemistry results for the Tributary stations are presented in **Table 2ï4**. Concentrations of metals, major ions, and nutrients were largely below the aquatic life and human health screening criteria, with the exception of the following:

- Total aluminum concentrations exceeded the CCME aquatic life criteria at A55-A17 (stream to the east of Whale Tail Lake) and A5-A4 (6 km NW of the camp) in August and A55-A17 in September. The August samples had pH values below 6.5, triggering the application of the more sensitive WQG for aluminum of 0.005 mg/L. As noted above, it is unclear if the lower pH values seen in August are real or the result of measurement error. The September exceedance coincided with elevated TSS in the sample and is not considered a reliable measurement (see below).
- Elevated TSS (11 mg/L) was noted in sample A55-A17 that also had exceedances of the WQG for aluminum (CCME), chromium (CCME), and iron (CCME and GCWQG). The elevated TSS concentration is likely an artifact of sample collection and the WQG exceedance are not considered reflective of September water quality at these locations. A few other metals, including lead, molybdenum, vanadium, and zinc were detected in the total fraction that were below the MDL for all other locations. The metals concentrations from this sample should be interpreted cautiously in light of the effect of high TSS.

Table 2-1. Water chemistry data for the Lake stations, Whale Tail Pit Baseline, 2014.

Lake Station Area-Replicate ID Depth (m) Date	Aquatic Life Guidelines CCME[1]	Human Health Guidelines GCDWQ[2]	Trigger[3] Meadowbank	Threshold[3]	Whale Tail Lake IVR-WHALE-REP-1 3 5-Sep-14	 IVR-WHALE-REP-3 3 5-Sep-14	 IVR-WHALE-REP-5 3 4-Sep-14	Nemo Lake IVR-NEMO-REP-1 3 6-Sep-14	 IVR-NEMO-REP-3 3 6-Sep-14	 IVR-NEMO-REP-5 3 6-Sep-14	Mammoth Lake IVR-LAKE3-REP-1 3 4-Sep-14	 IVR-LAKE3-REP-3 3 4-Sep-14	 IVR-LAKE3-REP-5 3 4-Sep-14
Field Measurements (Surface)													
Temperature (°C)					9.3	9.4	9.2	9.2	9.3	9.4	9.3	9.4	9.2
Specific Conductivity (µS/cm)					21.8	17.3	17.4	25.1	25.1	25.0	21.6	20.9	20.8
Dissolved Oxygen (mg/L)					11.6	11.5	11.4	11.5	11.4	11.4	11.5	11.7	11.2
pH	6.5 - 9.0		6.5 - 7.94	6.5 - 9.0	7.30	7.02	7.12	7.32	7.09	7.29	7.59	7.00	7.04
Physical Tests (mg/L)													
Conductivity (µS/cm)			23.5		21	17	17	**25**	**25**	**25**	23	20	20
Hardness			8.5		8.2	6.7	6.6	**9.3**	**10.0**	**10.0**	8.1	8.0	8.0
pH (Laboratory)	6.5 - 9.0		6.50 - 7.94	6.5 - 9.0	6.99	6.91	6.92	7.11	7.11	7.11	7.17	6.83	7.14
Total Suspended Solids			3.0	5.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	1	*<1.0*
Total Dissolved Solids			18.0		**20**	14	**21**	**22**	**20**	**21**	**21**	**22**	17
Turbidity (NTU)					0.38	0.40	0.39	0.28	0.28	0.25	0.49	0.40	0.42
Anions and Nutrients (mg/L)													
Alkalinity - Bicarbonate			8.6		5.5	4.7	4.7	7.1	7.0	6.9	5.8	4.4	5.7
Alkalinity - Carbonate			4		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide					*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total			8.5		5.5	4.7	4.7	7.1	7.0	6.9	5.8	4.4	5.7
Ammonia (as N)[4]	***equation***		0.065	0.126	*<0.0050*	**0.10**	0.02	*<0.0050*	0.01	*<0.0050*	0.03	0.03	0.03
Bromide					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Chloride	120	250	60.28	120	0.93	0.72	0.73	0.55	0.55	0.55	0.86	0.69	0.69
Fluoride	0.120	1.5			0.034	0.031	0.033	0.026	0.026	0.027	0.033	0.032	0.032
Nitrate (as N)	3.0	10	1.50	3	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Nitrite (as N)	0.060	1	0.031	0.060	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Total Kjeldahl Nitrogen			0.170										
Ortho Phosphate (as P)			0.002		0.0018	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	0.0013	0.0013	*<0.0010*
Phosphorus (P)-Total Diss.					*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	0.0021
Phosphorus (P)-Total	0.0040		0.0060	0.004	*<0.0020*	***~~0.0833~~***	*<0.0020*	0.0030	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*
Silicate (as SiO_2)			1.0		*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	*<0.50*	0.64	*<0.50*	0.51
Sulphate (SO_4)		500	64.71	128	2.59	1.61	1.64	3.30	3.30	3.29	2.88	2.84	2.83
Cyanides													
Total Cyanide					*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Free Cyanide					*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*
Organic / Inorganic Carbon (mg/L)													
Dissolved Organic Carbon			2.6		**~~2.8~~**	~~2.4~~	**~~2.8~~**	~~2.2~~	~~2.1~~	~~2.1~~	**~~2.6~~**	~~2.3~~	~~2.2~~
Total Organic Carbon			2.8		2.6	2.7	2.6	1.9	1.9	2.0	2.3	2.1	1.9
Plant Pigments (µg/L)													
Chlorophyll-*a*					0.29	0.38	0.55	0.25	0.27	0.25	0.34	0.36	0.34
Total Metals (mg/L)													
Aluminum[4]	***equation***		0.054	0.100	0.0120	0.0165	0.0155	0.0046	0.0055	0.0072	0.0157	0.0106	0.0095
Antimony		0.006	0.0101	0.020	0.00	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Arsenic	0.0050	0.01	0.00255	0.005	0.0003	0.0002	0.0002	0.0003	0.0003	0.0003	0.0005	0.0005	0.0004
Barium		1	0.50	1	0.0034	0.0030	0.0027	0.0037	0.0038	0.0038	0.0035	0.0035	0.0035
Beryllium			0.0027	0.0053	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Bismuth					*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Boron	1.5	5	0.76	1.5	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium[4]	***equation***	0.005	0.000025	0.000040	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Calcium			2.15		2.05	1.56	1.47	**2.29**	**2.28**	**2.35**	1.92	1.89	1.91
Chromium[5]	0.001	0.05	0.00056	0.001	0.0001	0.0001	0.0001	*<0.00010*	0.0002	0.0001	0.0002	0.0001	0.0001
Cobalt					*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Copper[3]	***equation***	1	0.00124	0.002	0.0006	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	0.0005	0.0006	*<0.00050*
Iron	0.3	0.3	0.155	0.3	0.033	0.037	0.032	*<0.010*	0.012	0.014	0.031	0.022	0.021
Lead[3]	***equation***	0.01	0.000525	0.001	***~~0.00686~~***	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	~~0.00007~~	*<0.000050*
Lithium			0.048	0.096	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Magnesium			0.83		0.79	0.72	0.68	**1.07**	**1.06**	**1.07**	0.78	0.73	0.74
Manganese[4]		0.05	0.3157	***equation***	0.0034	0.0016	0.0015	0.0020	0.0022	0.0023	0.0015	0.0014	0.0014
Mercury	0.000026	0.001	0.000018	0.000026	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000010*
Molybdenum	0.073		0.0365	0.073	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*
Nickel[4]	***equation***		0.0127	0.025	0.0007	*<0.00050*	*<0.00050*	*<0.00050*	0.0005	0.0005	0.0007	0.0005	0.0005
Phosphorus					*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Potassium			0.50		0.44	0.40	0.36	**0.58**	**0.57**	**0.58**	0.48	0.48	**0.53**
Selenium	0.001	0.01	0.00055	0.001	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*	*<0.00010*
Silicon					0.31	0.31	0.31	0.21	0.21	0.23	0.38	0.32	0.32

Table 2-1. Water chemistry data for the Lake stations, Whale Tail Pit Baseline, 2014.

Lake Station Area-Replicate ID Depth (m) Date	Aquatic Life Guidelines CCME[1]	Human Health Guidelines GCDWQ[2]	Trigger[3] Meadowbank	Threshold[3]	Whale Tail Lake IVR-WHALE-REP-1 3 5-Sep-14	 IVR-WHALE-REP-3 3 5-Sep-14	 IVR-WHALE-REP-5 3 4-Sep-14	Nemo Lake IVR-NEMO-REP-1 3 6-Sep-14	 IVR-NEMO-REP-3 3 6-Sep-14	 IVR-NEMO-REP-5 3 6-Sep-14	Mammoth Lake IVR-LAKE3-REP-1 3 4-Sep-14	 IVR-LAKE3-REP-3 3 4-Sep-14	 IVR-LAKE3-REP-5 3 4-Sep-14
Silver	0.0001				<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium		200	0.975		0.53	0.55	0.52	0.47	0.49	0.48	0.51	0.50	0.50
Strontium			0.0279	0.049	0.0090	0.0076	0.0071	0.0098	0.0098	0.0099	0.0081	0.0077	0.0078
Sulfur					0.91	0.61	0.56	1.15	1.14	1.12	0.95	0.94	0.96
Thallium	0.0008		0.00041	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin			0.0002		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium			1.00	2	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium	0.015	0.02	0.0075	0.015	0.000034	0.000039	0.000039	<0.000010	<0.000010	0.000010	0.000032	0.000026	0.000024
Vanadium			0.0035	0.006	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc[4]	0.030	0.5	0.0063	***equation***	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Dissolved Metals (mg/L)													
Aluminum[4]			0.0263	0.05	~~0.0079~~	~~0.0087~~	0.0106	~~0.0050~~	~~0.0033~~	~~0.0047~~	0.0101	~~0.0057~~	~~0.0060~~
Antimony			0.0101	0.020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic			0.0026	0.005	0.0003	0.0002	0.0002	0.0003	0.0003	0.0003	0.0005	0.0004	0.0004
Barium			0.5010	1	0.0033	0.0027	0.0027	0.0037	0.0037	0.0037	0.0035	0.0035	0.0035
Beryllium			0.0027	0.0053	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth					<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron			0.76	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium			0.000025	0.00004	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Calcium					1.99	1.52	1.50	2.14	2.26	2.27	1.96	1.96	1.94
Chromium			0.00055	0.001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt					<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper			0.00119	0.002	0.00040	0.00037	0.00039	0.00024	0.00024	0.00023	0.00050	0.00042	0.00039
Iron			0.155	0.3	0.02	0.02	0.02	<0.010	<0.010	<0.010	0.02	0.01	0.01
Lead			0.000525	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium			0.048	0.096	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium					0.78	0.69	0.68	0.97	1.05	1.06	0.79	0.76	0.76
Manganese[4]			0.315	***equation***	0.0027	0.0011	0.0011	0.0012	0.0011	0.0016	0.0011	0.0010	0.0010
Mercury			0.000018	0.000026	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum			0.037	0.073	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel			0.013	0.025	0.0006	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0006	<0.00050	<0.00050
Phosphorus					<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium					0.44	0.36	0.36	0.50	0.55	0.60	0.49	0.51	0.53
Selenium			0.00055	0.001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silicon					0.30	0.31	0.31	0.19	0.22	0.21	0.37	0.33	0.33
Silver					<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium					0.52	0.53	0.53	0.48	0.47	0.47	0.52	0.50	0.50
Strontium			0.028	0.049	0.0086	0.0070	0.0070	0.0095	0.0095	0.0095	0.0079	0.0076	0.0075
Sulfur					0.91	0.58	0.57	1.18	1.12	1.09	0.97	1.02	0.93
Thallium			0.00041	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin			0.0002		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium			1.01	2	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium			0.0075	0.015	0.00003	0.00004	0.00003	0.00001	<0.000010	<0.000010	0.00003	0.00002	0.00002
Vanadium			0.0035	0.006	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc[4]			0.0053	***equation***	<0.0010	<0.0010	<0.0010	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

Notes:

Data presented here were adapted from Portt and Associates (2015a).

1 CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2015.

2 Guidelines for Canadian Drinking Water Quality (Federal-Provincial-Territorial Committee on Health and the Environment). Standards for the following parameters are aesthetic and meant to protect against taste and odour: chloride, sulphate, copper, iron, manganese, sodium, zinc.

3 Trigger and threshold values are presented in "CREMP 2015 Plan Update" (Azimuth 2015a).

A number of thresholds were derived from methods (or sources) other than CCME guidelines - see Azimuth (2015a) for details.

4 "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum (t & d) guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.

5 Chromium CCME guideline is for Cr VI.

123	Shaded concentrations exceed the CCME aquatic life guidelines.
123	Bordered concentrations exceed the GCDWQ.
123	Bolded concentrations exceed the trigger value.
123	Bold, italicized concentrations exceed the threshold value.

Italicized numbers are below detection limits.

"-" not collected.

~~strikethrough~~ = results flagged as unreliable in the QC assessement (see Section 2.2.1. for more details).

Table 2-2. Water chemistry data for the Lake stations, Whale Tail Pit Baseline, 2015.

Lake					Whale Tail Lake											
Station	Aquatic Life Guidelines	Human Health Guidelines	Trigger[3]	Threshold[3]	North Basin (WTN)						South Basin (WTS)					
Area-Replicate ID					WTN-01-S	WTN-02-S	WTN-03-S	WTN-04-S	WTN-05-S	WTN-06-S	WTS-01-S	WTS-02-S	WTS-03-S	WTS-04-S	WTS-05-S	WTS-06-S
Depth (m)					3	3	3	3	3	3	3	3	3	3	3	3
Date	CCME[1]	GCDWQ[2]	Meadowbank		17-Jul-15	17-Jul-15	20-Aug-15	20-Aug-15	18-Sep-15	18-Sep-15	17-Jul-15	17-Jul-15	21-Aug-15	21-Aug-15	18-Sep-15	18-Sep-15
Field Measurements (Surface)																
Temperature (°C)					10.1	9.2	11.4	11.3	4.8	4.9	9.1	7.7	10.8	10.8	4.9	4.9
Specific Conductivity (µS/cm)					19.2	15.8	17.1	18.2	23.5	20.4	15.3	15.2	17	17.1	19.8	19.8
Dissolved Oxygen (mg/L)					11.3	11.4	10.5	10.1	12.2	11.2	11.4	11.7	10.3	10.3	13.1	12.1
pH	6.5 - 9.0		6.5 - 7.94	6.5 - 9.0	6.81	6.85	7.03	6.99	6.81	6.82	6.85	6.79	6.77	6.84	6.59	6.76
Physical Tests (mg/L)																
Conductivity (µS/cm)			23.5		20	17	19	20	**25**	22	16	16	19	19	20	21
Hardness			8.5		7.3	6.2	6.7	7.2	**8.6**	7.8	5.9	5.8	6.7	6.7	7.3	7.3
pH (Laboratory)	6.5 - 9.0		6.50 - 7.94	6.5 - 9.0	6.83	6.81	6.83	6.82	6.81	6.75	6.78	6.78	6.66	6.74	6.75	6.76
Total Suspended Solids			3.0	5.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Total Dissolved Solids			18.0		16	13	14	13	18	18	13	14	12	15	16	16
Turbidity (NTU)					0.42	0.39	0.23	0.28	0.32	0.35	0.43	0.35	0.26	0.23	0.34	0.35
Anions and Nutrients (mg/L)																
Alkalinity - Bicarbonate			8.6		4.5	4.2	4.9	3.9	5.3	4.6	4.2	4.2	4.5	3.8	4.4	4.3
Alkalinity - Carbonate			4		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide					*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total			8.5		4.5	4.2	4.9	3.9	5.3	4.6	4.2	4.2	4.5	3.8	4.4	4.3
Ammonia (as N)[4]	***equation***		0.065	0.126	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*
Bromide					*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*
Chloride	120	250	60.28	120	1.94	1.22	1.57	1.84	2.99	2.38	1.06	1.06	1.57	1.58	2.11	2.10
Fluoride	0.120	1.5			0.022	0.025	0.025	0.025	0.026	0.026	0.023	0.025	0.024	0.024	0.026	0.026
Nitrate (as N)	3.0	10	1.50	3	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*
Nitrite (as N)	0.060	1	0.031	0.060	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Total Kjeldahl Nitrogen			0.170		**0.173**	0.137	0.109	0.107	0.116	0.118	0.140	0.143	0.128	0.111	0.120	0.129
Ortho Phosphate (as P)			0.002		*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Phosphorus (P)-Total Diss.					*<0.002*	*<0.002*	0.0025	0.0028	*<0.002*	*<0.002*	*<0.002*	0.0020	0.0024	0.0022	*<0.002*	*<0.002*
Phosphorus (P)-Total	0.0040		0.0060	0.004	0.0020	0.0028	*<0.002*	0.0023	*<0.002*	0.0031	0.0025	0.0024	*<0.002*	0.0028	0.0023	*<0.002*
Silicate (as SiO_2)			1.0		0.56	0.57	0.56	0.57	0.69	0.67	0.54	0.54	0.59	0.60	0.68	0.65
Sulphate (SO_4)		500	64.71	128	1.39	1.24	1.31	1.37	1.49	1.37	1.20	1.22	1.30	1.31	1.32	1.32
Cyanides																
Total Cyanide					*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Free Cyanide					*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Organic / Inorganic Carbon (mg/L)																
Dissolved Organic Carbon			2.6		2.2	2.1	1.7	2.1	1.8	1.7	2.0	2.0	1.9	1.9	1.7	1.8
Total Organic Carbon			2.8		2.3	2.1	1.7	1.8	1.7	1.8	2.2	2.0	1.7	1.7	1.8	1.7
Plant Pigments (µg/L)																
Chlorophyll-*a*					0.32	0.25	0.65	0.70	0.77	0.93	0.28	0.28	0.67	0.64	0.82	0.88
Total Metals (mg/L)																
Aluminum[4]	***equation***		0.054	0.100	0.0215	0.0176	~~0.0083~~	~~0.0099~~	0.0116	0.0120	0.0172	0.0170	~~0.0094~~	~~0.0077~~	0.0107	0.0111
Antimony		0.006	0.0101	0.020	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Arsenic	0.0050	0.01	0.00255	0.005	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
Barium		1	0.50	1	0.0044	0.0034	0.0033	0.0035	0.0041	0.0037	0.0034	0.0033	0.0032	0.0033	0.0035	0.0035
Beryllium			0.0027	0.0053	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*
Bismuth					*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*
Boron	1.5	5	0.76	1.5	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*

Table 2-2. Water chemistry data for the Lake stations, Whale Tail Pit Baseline, 2015.

Lake	Aquatic Life Guidelines	Human Health Guidelines	Trigger[3]	Threshold[3]	Whale Tail Lake											
Station					North Basin (WTN)						South Basin (WTS)					
Area-Replicate ID					WTN-01-S	WTN-02-S	WTN-03-S	WTN-04-S	WTN-05-S	WTN-06-S	WTS-01-S	WTS-02-S	WTS-03-S	WTS-04-S	WTS-05-S	WTS-06-S
Depth (m)	CCME[1]	GCDWQ[2]	Meadowbank		3	3	3	3	3	3	3	3	3	3	3	3
Date					17-Jul-15	17-Jul-15	20-Aug-15	20-Aug-15	18-Sep-15	18-Sep-15	17-Jul-15	17-Jul-15	21-Aug-15	21-Aug-15	18-Sep-15	18-Sep-15
Cadmium[4]	***equation***	0.005	0.000025	0.000040	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Calcium			2.15		1.87	1.44	1.64	1.77	**2.15**	1.95	1.39	1.37	1.62	1.63	1.77	1.78
Chromium[5]	0.001	0.05	0.00056	0.001	0.0001	0.0001	<0.0001	0.0001	0.0001	0.0001	0.0001	<0.0001	<0.0001	0.0001	0.0001	0.0001
Cobalt					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper[3]	***equation***	1	0.00124	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Iron	0.3	0.3	0.155	0.3	0.036	0.037	0.016	0.019	0.021	0.024	0.037	0.037	0.020	0.017	0.024	0.022
Lead[3]	***equation***	0.01	0.000525	0.001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Lithium			0.048	0.096	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium			0.83		0.63	0.59	0.64	0.65	0.71	0.70	0.57	0.56	0.62	0.62	0.66	0.66
Manganese[4]		0.05	0.3157	***equation***	0.0064	0.0049	0.0020	0.0026	0.0037	0.0029	0.0049	0.0052	0.0021	0.0020	0.0026	0.0025
Mercury	0.000026	0.001	0.000018	0.000026	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum	0.073		0.0365	0.073	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Nickel[4]	***equation***		0.0127	0.025	0.0009	0.0007	0.0006	0.0006	0.0006	0.0006	0.0007	0.0007	0.0005	0.0005	0.0005	0.0005
Phosphorus					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium			0.50		0.38	0.32	0.39	0.37	0.39	0.38	0.33	0.33	0.37	0.36	0.37	0.36
Selenium	0.001	0.01	0.00055	0.001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Silicon					0.31	0.31	0.25	0.27	0.25	0.26	0.30	0.31	0.26	0.26	0.26	0.26
Silver	0.0001				<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sodium		200	0.975		0.51	0.47	0.50	0.49	0.53	0.55	0.49	0.47	0.52	0.51	0.53	0.54
Strontium			0.0279	0.049	0.0131	0.0087	0.0099	0.0111	0.0145	0.0128	0.0080	0.0078	0.0099	0.0102	0.0113	0.0115
Sulfur					0.50	<0.5	0.50	<0.5	0.54	0.53	<0.5	<0.5	0.52	0.50	<0.5	0.50
Thallium	0.0008		0.00041	0.0008	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Tin			0.0002		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium			1.00	2	0.00038	0.00030	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Uranium	0.015	0.02	0.0075	0.015	0.000045	0.000045	0.000037	0.000035	0.000032	0.000035	0.000047	0.000043	0.000037	0.000036	0.000035	0.000035
Vanadium			0.0035	0.006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc[4]	0.030	0.5	0.0063	***equation***	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Zirconium					<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Dissolved Metals (mg/L)																
Aluminum[4]			0.0263	0.05	0.0081	0.0085	0.0045	0.0048	0.0035	0.0038	0.0110	0.0120	0.0061	0.0053	0.0033	0.0033
Antimony			0.0101	0.020	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic			0.0026	0.005	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0001	0.0001
Barium			0.5010	1	0.0042	0.0034	0.0032	0.0035	0.0042	0.0037	0.0033	0.0033	0.0032	0.0033	0.0034	0.0034
Beryllium			0.0027	0.0053	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00	<0.00002	<0.00002	<0.00002	<0.00002
Bismuth					<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Boron			0.76	1.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium			0.000025	0.00004	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Calcium					1.89	1.48	1.65	1.80	2.24	1.96	1.42	1.39	1.62	1.63	1.82	1.82
Chromium			0.00055	0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper			0.00119	0.002	**0.00170**	0.00035	0.00037	0.00037	0.00034	0.0003	0.00031	0.00034	0.00036	0.00034	0.00033	0.00031
Iron			0.155	0.3	<0.01	0.10	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.01	0.01	<0.01	<0.01
Lead			0.000525	0.001	~~0.00010~~	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	~~0.00008~~	<0.00005	<0.00005	~~0.00005~~	<0.00005
Lithium			0.048	0.096	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium					0.64	0.60	0.63	0.66	0.74	0.70	0.57	0.56	0.63	0.63	0.67	0.67
Manganese[4]			0.315	***equation***	0.0045	0.0043	0.0006	0.0013	0.0014	0.0008	0.0038	0.0042	0.0012	0.0014	0.0006	0.0007
Mercury			0.000018	0.000026	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum			0.037	0.073	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005

Table 2-2. Water chemistry data for the Lake stations, Whale Tail Pit Baseline, 2015.

Lake	Aquatic Life Guidelines	Human Health Guidelines	Trigger[3]	Threshold[3]	Whale Tail Lake											
Station					North Basin (WTN)						South Basin (WTS)					
Area-Replicate ID					WTN-01-S	WTN-02-S	WTN-03-S	WTN-04-S	WTN-05-S	WTN-06-S	WTS-01-S	WTS-02-S	WTS-03-S	WTS-04-S	WTS-05-S	WTS-06-S
Depth (m)					3	3	3	3	3	3	3	3	3	3	3	3
Date	CCME[1]	GCDWQ[2]	Meadowbank		17-Jul-15	17-Jul-15	20-Aug-15	20-Aug-15	18-Sep-15	18-Sep-15	17-Jul-15	17-Jul-15	21-Aug-15	21-Aug-15	18-Sep-15	18-Sep-15
Nickel			0.013	0.025	0.0008	0.0007	*<0.0005*	0.0005	0.0006	0.0005	0.0007	0.0007	*<0.0005*	0.0005	*<0.0005*	*<0.0005*
Phosphorus					*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*
Potassium					0.38	0.34	0.38	0.37	0.41	0.39	0.35	0.31	0.37	0.36	0.36	0.37
Selenium			0.00055	0.001	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*
Silicon					0.29	0.29	0.25	0.26	0.25	0.25	0.30	0.30	0.25	0.25	0.24	0.24
Silver					*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*
Sodium					0.49	0.48	0.50	0.50	0.53	0.53	0.47	0.46	0.51	0.50	0.52	0.52
Strontium			0.028	0.049	0.0128	0.0086	0.0097	0.0110	0.0150	0.0128	0.0078	0.0077	0.0096	0.0098	0.0116	0.0115
Sulfur					*<0.5*	*<0.5*	*<0.5*	*<0.5*	0.53	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*
Thallium			0.00041	0.0008	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*
Tin			0.0002		*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Titanium			1.01	2	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*
Uranium			0.0075	0.015	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003
Vanadium			0.0035	0.006	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*
Zinc[4]			0.0053	***equation***	0.002	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Zirconium					*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*

Notes:

1 CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2015.

2 Guidelines for Canadian Drinking Water Quality (Federal-Provincial-Territorial Committee on Health and the Environment). Standards for the following parameters are aesthetic and meant to protect against taste and odour: chloride, sulphate, copper, iron, manganese, sodium, zinc.

3 Trigger and threshold values are presented in "CREMP 2015 Plan Update" (Azimuth 2015a).
A number of thresholds were derived from methods (or sources) other than CCME guidelines - see Azimuth (2015a) for details.

4 "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum (t & d) guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.

5 Chromium CCME guideline is for Cr VI.

123	Shaded concentrations exceed the CCME aquatic life guidelines.
123	Bordered concentrations exceed the GCDWQ.
123	Bolded concentrations exceed the trigger value.
123	Bold, italicized concentrations exceed the threshold value.

Italicized numbers are below detection limits.

"-" not collected.

~~strikethrough~~ = results flagged as unreliable in the QC assessment (see Section 2.2.1. for more details).

Table 2-2. Water chemistry data for the Lake stations, Whale Tail Pit Baseline, 2015.

Lake Station Area-Replicate ID Depth (m) Date	Aquatic Life Guidelines CCME[1]	Human Health Guidelines GCDWQ[2]	Trigger[3] Meadowbank	Threshold[3]	Nemo Lake (NEM) NEM-01-S 3 18-Jul-15	NEM-02-S 3 18-Jul-15	NEM-03-S 3 23-Aug-15	NEM-04-S 3 23-Aug-15	NEM-05-S 3 19-Sep-15	NEM-06-S 3 19-Sep-15	Mammoth Lake (MAM) MAM-01-S 3 18-Jul-15	MAM-02-S 3 18-Jul-15	MAM-03-S 3 24-Aug-05	MAM-04-S 3 24-Aug-05	MAM-05-S 3 19-Sep-15	MAM-06-S 3 19-Sep-15
Field Measurements (Surface)																
Temperature (°C)					6.2	6.4	11.3	11.1	5.5	5.8	10.6	10.2	11.0	11.0	4.5	4.5
Specific Conductivity (µS/cm)					24.1	24.1	21.7	21.7	23.4	23.4	22.1	22.1	21.3	21.3	24	23.8
Dissolved Oxygen (mg/L)					14.8	15.3	11.7	12.9	14.1	14.3	12.5	12.5	11.1	12.6	14.5	15.2
pH	6.5 - 9.0		6.5 - 7.94	6.5 - 9.0	7.06	7.01	7.25	7.08	7.17	7.20	7.09	7.09	6.96	7.11	7.04	6.97
Physical Tests (mg/L)																
Conductivity (µS/cm)			23.5		**25**	**25**	**26**	**25**	**25**	**25**	23	23	**25**	**24**	**26**	**26**
Hardness			8.5		**9.8**	**9.8**	**9.8**	**10.0**	**9.6**	**9.6**	**8.5**	8.4	**9.1**	**9.1**	**9.2**	**9.2**
pH (Laboratory)	6.5 - 9.0		6.50 - 7.94	6.5 - 9.0	7.03	7.04	7.06	7.05	7.05	7.04	6.86	6.86	6.85	6.83	6.86	6.83
Total Suspended Solids			3.0	5.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Total Dissolved Solids			18.0		17	18	16	16	17	17	17	16	15	15	18	**18**
Turbidity (NTU)					0.24	0.23	0.19	0.21	0.21	0.20	0.36	0.37	0.24	0.27	0.26	0.30
Anions and Nutrients (mg/L)																
Alkalinity - Bicarbonate			8.6		7.1	7.0	6.8	6.7	7.5	7.2	4.8	5.0	4.8	4.5	5.2	5.1
Alkalinity - Carbonate			4		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide					*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total			8.5		7.1	7.0	6.8	6.7	7.5	7.2	4.8	5.0	4.8	4.5	5.2	5.1
Ammonia (as N)[4]	***equation***		0.065	0.126	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*
Bromide					*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*
Chloride	120	250	60.28	120	0.53	0.53	0.54	0.54	0.53	0.54	1.98	1.98	2.33	2.32	2.59	2.58
Fluoride	0.120	1.5			0.023	0.021	0.022	0.022	0.023	0.023	0.023	0.024	0.026	0.025	0.025	0.025
Nitrate (as N)	3.0	10	1.50	3	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*
Nitrite (as N)	0.060	1	0.031	0.060	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Total Kjeldahl Nitrogen			0.170		**0.171**	**0.171**	0.084	0.107	0.123	0.115	0.139	0.137	0.095	0.129	0.135	0.131
Ortho Phosphate (as P)			0.002		*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Phosphorus (P)-Total Diss.					*<0.002*	*<0.002*	0.0022	0.0023	*<0.002*	*<0.002*	*<0.002*	*<0.002*	0.0038	0.0023	*<0.002*	*<0.002*
Phosphorus (P)-Total	0.0040		0.0060	0.004	*<0.002*	0.0035	*<0.002*	*<0.002*	*<0.002*	*<0.002*	0.0031	0.0033	*<0.002*	*<0.002*	*<0.002*	0.0031
Silicate (as SiO_2)			1.0		*<0.5*	*<0.5*	*<0.5*	*<0.5*	0.62	0.60	0.55	0.58	0.63	0.67	0.79	0.76
Sulphate (SO_4)		500	64.71	128	3.19	3.19	3.24	3.24	3.22	3.19	2.10	2.11	2.23	2.23	2.24	2.24
Cyanides																
Total Cyanide					*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Free Cyanide					*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Organic / Inorganic Carbon (mg/L)																
Dissolved Organic Carbon			2.6		1.5	1.4	1.4	1.6	1.4	1.2	1.8	1.9	1.6	1.6	1.5	1.5
Total Organic Carbon			2.8		1.5	2.0	1.3	1.4	1.3	1.6	1.9	1.9	1.9	1.6	1.6	1.6
Plant Pigments (µg/L)																
Chlorophyll-*a*					0.15	0.13	0.32	0.39	0.53	0.50	0.24	0.23	0.39	0.47	0.80	0.70
Total Metals (mg/L)																
Aluminum[4]	***equation***		0.054	0.100	0.0043	**0.0981**	~~0.0043~~	~~0.0050~~	0.0032	0.0043	0.0152	0.0142	~~0.0050~~	~~0.0058~~	0.0062	0.0080
Antimony		0.006	0.0101	0.020	*<0.0001*	*<0.0001*	0.00	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Arsenic	0.0050	0.01	0.00255	0.005	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	0.0004
Barium		1	0.50	1	0.0043	0.0042	0.0041	0.0041	0.0038	0.0039	0.0049	0.0048	0.0044	0.0044	0.0046	0.0046
Beryllium			0.0027	0.0053	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*
Bismuth					*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*
Boron	1.5	5	0.76	1.5	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*

Table 2-2. Water chemistry data for the Lake stations, Whale Tail Pit Baseline, 2015.

Lake / Station / Area-Replicate ID / Depth (m) / Date	Aquatic Life Guidelines CCME[1]	Human Health Guidelines GCDWQ[2]	Trigger[3] Meadowbank	Threshold[3]	Nemo Lake (NEM)						Mammoth Lake (MAM)					
Area-Replicate ID					NEM-01-S	NEM-02-S	NEM-03-S	NEM-04-S	NEM-05-S	NEM-06-S	MAM-01-S	MAM-02-S	MAM-03-S	MAM-04-S	MAM-05-S	MAM-06-S
Depth (m)					3	3	3	3	3	3	3	3	3	3	3	3
Date					18-Jul-15	18-Jul-15	23-Aug-15	23-Aug-15	19-Sep-15	19-Sep-15	18-Jul-15	18-Jul-15	24-Aug-05	24-Aug-05	19-Sep-15	19-Sep-15
Cadmium[4]	***equation***	0.005	0.000025	0.000040	<0.000005	<0.000005	~~0.000012~~	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000006
Calcium			2.15		**2.20**	**2.24**	**2.23**	**2.22**	2.14	2.14	**2.16**	2.14	**2.32**	**2.29**	**2.33**	**2.41**
Chromium[5]	0.001	0.05	0.00056	0.001	<0.0001	0.0001	<0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	<0.0001	<0.0001	0.0001	0.0001
Cobalt					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper[3]	***equation***	1	0.00124	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Iron	0.3	0.3	0.155	0.3	0.018	0.021	0.013	0.011	0.011	0.010	0.024	0.024	0.014	0.014	0.016	0.019
Lead[3]	***equation***	0.01	0.000525	0.001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	~~0.00009~~
Lithium			0.048	0.096	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium			0.83		**1.00**	**1.02**	**1.01**	**1.01**	**0.98**	**0.97**	0.74	0.73	0.77	0.77	0.77	0.79
Manganese[4]		0.05	0.3157	***equation***	0.0104	0.0097	0.0036	0.0034	0.0025	0.0027	0.0043	0.0040	0.0017	0.0017	0.0022	0.0025
Mercury	0.000026	0.001	0.000018	0.000026	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum	0.073		0.0365	0.073	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Nickel[4]	***equation***		0.0127	0.025	0.0008	0.0007	0.0006	0.0006	0.0005	0.0005	0.0009	0.0009	0.0006	0.0006	0.0006	0.0006
Phosphorus					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium			0.50		**0.59**	**0.59**	**0.58**	**0.56**	**0.56**	**0.53**	0.49	0.49	**0.53**	**0.52**	0.48	0.49
Selenium	0.001	0.01	0.00055	0.001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Silicon					0.21	0.21	0.22	0.21	0.21	0.21	0.31	0.31	0.29	0.30	0.29	0.30
Silver	0.0001				<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sodium		200	0.975		0.48	0.48	0.49	0.48	0.49	0.49	0.51	0.50	0.53	0.52	0.54	0.55
Strontium			0.0279	0.049	0.0091	0.0092	0.0095	0.0096	0.0095	0.0095	0.0119	0.0119	0.0126	0.0126	0.0133	0.0134
Sulfur					1.07	1.07	1.15	1.16	1.12	1.11	0.73	0.73	0.83	0.81	0.79	0.86
Thallium	0.0008		0.00041	0.0008	<0.00001	<0.00001	0.00	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Tin			0.0002		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium			1.00	2	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.00032	<0.0003	<0.0003	<0.0003	<0.0003
Uranium	0.015	0.02	0.0075	0.015	<0.00001	<0.00001	0.000014	<0.00001	<0.00001	<0.00001	0.000031	0.000034	0.000025	0.000024	0.000022	0.000024
Vanadium			0.0035	0.006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc[4]	0.030	0.5	0.0063	***equation***	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Zirconium					<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Dissolved Metals (mg/L)																
Aluminum[4]			0.0263	0.05	~~0.0023~~	~~0.0017~~	0.0016	0.0012	0.0024	0.0017	0.0064	0.0066	0.0022	0.0024	0.0025	0.0033
Antimony			0.0101	0.020	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic			0.0026	0.005	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0003	0.0004
Barium			0.5010	1	0.0041	0.0042	0.0039	0.0039	0.0040	0.0039	0.0047	0.0046	0.0043	0.0043	0.0043	0.0044
Beryllium			0.0027	0.0053	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Bismuth					<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Boron			0.76	1.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium			0.000025	0.00004	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Calcium					2.28	2.26	2.25	2.29	2.19	2.19	2.20	2.19	2.34	2.35	2.38	2.40
Chromium			0.00055	0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper			0.00119	0.002	<0.0002	0.00021	0.00023	0.00024	0.00026	0.00021	0.00036	0.00037	0.00036	0.00042	0.00037	0.00054
Iron			0.155	0.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lead			0.000525	0.001	<0.00005	<0.00005	<0.00005	<0.00005	**~~0.00056~~**	~~0.00010~~	<0.00005	<0.00005	<0.00005	<0.00005	~~0.00027~~	<0.00005
Lithium			0.048	0.096	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium					1.01	1.00	1.02	1.04	1.01	1.01	0.72	0.72	0.79	0.79	0.78	0.78
Manganese[4]			0.315	***equation***	0.0077	0.0075	0.0006	0.0005	0.0006	0.0005	0.0032	0.0031	0.0003	0.0003	0.0007	0.0007
Mercury			0.000018	0.000026	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.00	0.00
Molybdenum			0.037	0.073	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005

Table 2-2. Water chemistry data for the Lake stations, Whale Tail Pit Baseline, 2015.

Lake	Aquatic Life Guidelines	Human Health Guidelines	Trigger[3]	Threshold[3]	Nemo Lake (NEM)						Mammoth Lake (MAM)					
Station Area-Replicate ID					NEM-01-S	NEM-02-S	NEM-03-S	NEM-04-S	NEM-05-S	NEM-06-S	MAM-01-S	MAM-02-S	MAM-03-S	MAM-04-S	MAM-05-S	MAM-06-S
Depth (m)					3	3	3	3	3	3	3	3	3	3	3	3
Date	CCME[1]	GCDWQ[2]	Meadowbank		18-Jul-15	18-Jul-15	23-Aug-15	23-Aug-15	19-Sep-15	19-Sep-15	18-Jul-15	18-Jul-15	24-Aug-05	24-Aug-05	19-Sep-15	19-Sep-15
Nickel			0.013	0.025	0.0007	0.0007	0.0005	0.0005	*<0.0005*	*<0.0005*	0.0009	0.0009	0.0005	0.0005	0.0005	0.0006
Phosphorus					*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*
Potassium					0.57	0.55	0.59	0.60	0.56	0.56	0.46	0.46	0.53	0.52	0.49	0.49
Selenium			0.00055	0.001	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*
Silicon					0.21	0.21	0.20	0.21	0.21	0.21	0.30	0.30	0.29	0.29	0.28	0.28
Silver					*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*
Sodium					0.47	0.47	0.48	0.47	0.48	0.48	0.50	0.50	0.52	0.52	0.53	0.52
Strontium			0.028	0.049	0.0089	0.0090	0.0094	0.0094	0.0094	0.0094	0.0116	0.0116	0.0125	0.0123	0.0130	0.0130
Sulfur					1.05	1.07	1.14	1.12	1.08	1.08	0.71	0.71	0.81	0.79	0.78	0.79
Thallium			0.00041	0.0008	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*
Tin			0.0002		*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Titanium			1.01	2	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*
Uranium			0.0075	0.015	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002
Vanadium			0.0035	0.006	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*
Zinc[4]			0.0053	***equation***	*<0.001*	*<0.001*	*<0.001*	*<0.001*	0.001	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Zirconium					*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*

Notes:

1 CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2015.

2 Guidelines for Canadian Drinking Water Quality (Federal-Provincial-Territorial Committee on Health and the Environment). Standards for the following parameters are aesthetic and meant to protect against taste and odour: chloride, sulphate, copper, iron, manganese, sodium, zinc.

3 Trigger and threshold values are presented in "CREMP 2015 Plan Update" (Azimuth 2015a).
A number of thresholds were derived from methods (or sources) other than CCME guidelines - see Azimuth (2015a) for details.

4 "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum (t & d) guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.

5 Chromium CCME guideline is for Cr VI.

123	Shaded concentrations exceed the CCME aquatic life guidelines.
123	Bordered concentrations exceed the GCDWQ.
123	Bolded concentrations exceed the trigger value.
123	Bold, italicized concentrations exceed the threshold value.

Italicized numbers are below detection limits.

"-" not collected.

~~strikethrough~~ = results flagged as unreliable in the QC assessment (see Section 2.2.1. for more details).

Table 2-2. Water chemistry data for the Lake stations, Whale Tail Pit Baseline, 2015.

Lake	Aquatic Life Guidelines	Human Health Guidelines	Trigger[3]	Threshold[3]	Inuggugayualik Lake (INUG)						Pipedream Lake (PDL)				
Station															
Area-Replicate ID					INUG-70-S	INUG-71-S	INUG-72-S	INUG-73-S	INUG-74-S	INUG-75-S	PDL-37-S	PDL-38-S	PDL-39-S	PDL-40-S	PDL-41-S
Depth (m)					3	3	3	3	3	3	3	3	3	3	3
Date	CCME[1]	GCDWQ[2]	Meadowbank		27-Jul-15	27-Jul-15	27-Aug-15	27-Aug-15	1-Oct-15	1-Oct-15	28-Jul-15	28-Jul-15	26-Aug-15	26-Aug-15	4-Oct-15
Field Measurements (Surface)															
Temperature (°C)					10.7	10.7	11.5	11.5	2.5	2.4	7.9	6.3	10.6	10.6	3.0
Specific Conductivity (µS/cm)					12	12	13.3	13.2	157	43	15	18	18.7	18.7	37
Dissolved Oxygen (mg/L)					10.0	10.0	10.0	10.1	10.4	10.3	11.6	10.7	12.2	13.0	10.6
pH	6.5 - 9.0		6.5 - 7.94	6.5 - 9.0	7.04	7.12	7.31	6.94	6.74	7	6.55	6.5	7.16	7.27	6.43
Physical Tests (mg/L)															
Conductivity (µS/cm)			23.5		15.2	15.3	16.1	15.7	15.9	16.7	22.3	21.9	21.9	22	23
Hardness			8.5		5.76	5.87	5.7	5.69	5.75	5.88	**8.83**	**8.68**	**8.92**	**8.78**	**8.91**
pH (Laboratory)	6.5 - 9.0		6.50 - 7.94	6.5 - 9.0	6.89	6.9	6.84	6.82	6.73	6.75	7	6.97	7.05	7.04	7.07
Total Suspended Solids			3.0	5.0	*<1.0*	*<1.0*	*<1.0*	*<1.0*	1	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Total Dissolved Solids			18.0		16.4	16.7	16.1	15.2	13	11.9	12.4	12.5	17.3	17.4	17.8
Turbidity (NTU)					0.31	0.29	0.29	0.28	0.38	0.37	0.2	0.22	0.22	0.19	0.23
Anions and Nutrients (mg/L)															
Alkalinity - Bicarbonate			8.6		4.8	5	4.9	4.9	5.7	5.3	8.1	7.5	7.6	6.9	8.2
Alkalinity - Carbonate			4		*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide					*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total			8.5		4.8	5	4.9	4.9	5.7	5.3	8.1	7.5	7.6	6.9	8.2
Ammonia (as N)[4]	***equation***		0.065	0.126	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*
Bromide					*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*
Chloride	120	250	60.28	120	0.73	0.73	0.77	0.76	0.75	0.75	0.59	0.59	0.62	0.62	0.6
Fluoride	0.120	1.5			0.056	0.056	0.059	0.058	0.058	0.059	0.035	0.036	0.036	0.035	0.035
Nitrate (as N)	3.0	10	1.50	3	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*
Nitrite (as N)	0.060	1	0.031	0.060	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Total Kjeldahl Nitrogen			0.170		0.09	0.093	0.12	0.115	0.145	0.135	0.077	0.081	0.112	0.106	**0.172**
Ortho Phosphate (as P)			0.002		*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Phosphorus (P)-Total Diss.					*<0.002*	*<0.002*	0.0021	*<0.002*	0.002	*<0.002*	*<0.002*	*<0.002*	*<0.002*	*<0.002*	*<0.002*
Phosphorus (P)-Total	0.0040		0.0060	0.004	*<0.002*	***0.0058***	0.0028	*<0.002*	*<0.002*	0.0025	0.0023	*<0.002*	*<0.002*	*<0.002*	*<0.002*
Silicate (as SiO_2)			1.0		*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*
Sulphate (SO_4)		500	64.71	128	0.88	0.88	0.9	0.9	0.87	0.87	1.59	1.6	1.67	1.68	1.63
Cyanides															
Total Cyanide					*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Free Cyanide					*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Organic / Inorganic Carbon (mg/L)															
Dissolved Organic Carbon			2.6		1.9	1.9	1.8	1.5	1.6	1.6	1.8	1.9	1.3	1.3	1.5
Total Organic Carbon			2.8		1.9	2.0	1.6	1.6	1.9	1.8	1.8	1.8	1.3	1.5	1.6
Plant Pigments (µg/L)															
Chlorophyll-*a*					0.30	0.27	0.39	0.44	0.32	0.37	0.30	0.33	0.38	0.39	0.35
Total Metals (mg/L)															
Aluminum[4]	***equation***		0.054	0.100	0.0104	0.0099	~~0.0079~~	~~0.0085~~	0.0124	0.0109	0.005	0.0046	~~0.0048~~	~~0.0047~~	0.0059
Antimony		0.006	0.0101	0.020	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Arsenic	0.0050	0.01	0.00255	0.005	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	0.00016	0.00014	0.00013	0.00013	0.00016
Barium		1	0.50	1	0.0021	0.00192	0.00186	0.0019	0.00169	0.00179	0.00206	0.002	0.00199	0.00204	0.00202
Beryllium			0.0027	0.0053	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*
Bismuth					*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*
Boron	1.5	5	0.76	1.5	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*

Table 2-2. Water chemistry data for the Lake stations, Whale Tail Pit Baseline, 2015.

Lake	Aquatic Life Guidelines	Human Health Guidelines	Trigger[3]	Threshold[3]	Inuggugayualik Lake (INUG)						Pipedream Lake (PDL)				
Station / Area-Replicate ID					INUG-70-S	INUG-71-S	INUG-72-S	INUG-73-S	INUG-74-S	INUG-75-S	PDL-37-S	PDL-38-S	PDL-39-S	PDL-40-S	PDL-41-S
Depth (m)					3	3	3	3	3	3	3	3	3	3	3
Date	CCME[1]	GCDWQ[2]	Meadowbank		27-Jul-15	27-Jul-15	27-Aug-15	27-Aug-15	1-Oct-15	1-Oct-15	28-Jul-15	28-Jul-15	26-Aug-15	26-Aug-15	4-Oct-15
Cadmium[4]	***equation***	0.005	0.000025	0.000040	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Calcium			2.15		1.18	1.13	1.16	1.14	1.12	1.17	**2.33**	**2.28**	**2.18**	**2.2**	**2.24**
Chromium[5]	0.001	0.05	0.00056	0.001	0.0002	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper[3]	***equation***	1	0.00124	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00052	0.0005	<0.0005	<0.0005	<0.0005
Iron	0.3	0.3	0.155	0.3	0.02	0.019	0.02	0.015	0.022	0.023	<0.01	<0.01	0.017	<0.01	0.012
Lead[3]	***equation***	0.01	0.000525	0.001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	~~0.000489~~	<0.00005	<0.00005
Lithium			0.048	0.096	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium			0.83		0.71	0.69	0.69	0.69	0.68	0.72	0.79	0.78	0.76	0.77	0.8
Manganese[4]		0.05	0.3157	***equation***	0.00496	0.00495	0.00232	0.00243	0.00225	0.00224	0.00175	0.00164	0.00125	0.00125	0.00147
Mercury	0.000026	0.001	0.000018	0.000026	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum	0.073		0.0365	0.073	0.000075	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000051	<0.00005	0.000055	<0.00005	<0.00005
Nickel[4]	***equation***		0.0127	0.025	0.00051	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00074	0.00062	0.00059	0.0006	0.00055
Phosphorus					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium			0.50		0.38	0.4	0.4	0.4	0.36	0.39	0.36	0.34	0.37	0.35	0.35
Selenium	0.001	0.01	0.00055	0.001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Silicon					0.153	0.149	0.122	0.123	0.122	0.129	0.143	0.14	0.121	0.123	0.118
Silver	0.0001				<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sodium		200	0.975		0.563	0.54	0.565	0.563	0.577	0.56	0.502	0.497	0.478	0.502	0.508
Strontium			0.0279	0.049	0.00637	0.0061	0.00683	0.00663	0.00641	0.00659	0.00914	0.00908	0.00932	0.00937	0.00947
Sulfur					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.59	0.56	0.58	0.58	0.64
Thallium	0.0008		0.00041	0.0008	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Tin			0.0002		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium			1.00	2	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Uranium	0.015	0.02	0.0075	0.015	0.000054	0.000048	0.000048	0.000048	0.000043	0.000044	0.000021	0.000021	0.000023	0.000024	0.000021
Vanadium			0.0035	0.006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc[4]	0.030	0.5	0.0063	***equation***	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Zirconium					<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Dissolved Metals (mg/L)															
Aluminum[4]			0.0263	0.05	0.004	0.0052	0.003	0.0036	0.0018	0.0024	0.0025	0.0018	0.0024	0.0019	0.0036
Antimony			0.0101	0.020	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic			0.0026	0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00014	0.00013	0.00014	0.00014	0.00014
Barium			0.5010	1	0.00187	0.00195	0.00183	0.00188	0.00166	0.00164	0.00198	0.002	0.00196	0.00199	0.00194
Beryllium			0.0027	0.0053	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Bismuth					<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Boron			0.76	1.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium			0.000025	0.00004	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Calcium					1.15	1.17	1.15	1.14	1.15	1.18	2.27	2.23	2.27	2.23	2.26
Chromium			0.00055	0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper			0.00119	0.002	0.00032	0.0003	0.00032	0.00033	0.00029	0.0003	0.00046	0.0004	0.0004	0.00038	0.00048
Iron			0.155	0.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lead			0.000525	0.001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Lithium			0.048	0.096	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium					0.7	0.71	0.69	0.69	0.7	0.72	0.77	0.76	0.79	0.78	0.79
Manganese[4]			0.315	***equation***	0.0031	0.00331	0.00032	0.00034	0.00051	0.0005	0.00106	0.001	0.00056	0.00051	0.00043
Mercury			0.000018	0.000026	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum			0.037	0.073	<0.00005	<0.00005	<0.00005	0.000202	<0.00005	<0.00005	0.000051	<0.00005	<0.00005	<0.00005	<0.00005

Table 2-2. Water chemistry data for the Lake stations, Whale Tail Pit Baseline, 2015.

Lake Station Area-Replicate ID Depth (m) Date	Aquatic Life Guidelines CCME[1]	Human Health Guidelines GCDWQ[2]	Trigger[3] Meadowbank	Threshold[3]	Inuggugayualik Lake (INUG) INUG-70-S 3 27-Jul-15	INUG-71-S 3 27-Jul-15	INUG-72-S 3 27-Aug-15	INUG-73-S 3 27-Aug-15	INUG-74-S 3 1-Oct-15	INUG-75-S 3 1-Oct-15	Pipedream Lake (PDL) PDL-37-S 3 28-Jul-15	PDL-38-S 3 28-Jul-15	PDL-39-S 3 26-Aug-15	PDL-40-S 3 26-Aug-15	PDL-41-S 3 4-Oct-15
Nickel			0.013	0.025	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	0.00071	0.00062	0.00057	0.00054	*<0.0005*
Phosphorus					*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*
Potassium					0.4	0.41	0.35	0.37	0.38	0.39	0.35	0.31	0.34	0.33	0.32
Selenium			0.00055	0.001	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*
Silicon					0.141	0.137	0.111	0.108	0.1	0.108	0.135	0.128	0.119	0.117	0.107
Silver					*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*
Sodium					0.527	0.538	0.534	0.559	0.552	0.565	0.483	0.474	0.489	0.479	0.503
Strontium			0.028	0.049	0.00603	0.00606	0.00658	0.00649	0.00644	0.00641	0.00873	0.0086	0.0095	0.00939	0.00904
Sulfur					*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0.55	0.55	0.57	0.58	0.59
Thallium			0.00041	0.0008	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*
Tin			0.0002		*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Titanium			1.01	2	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*
Uranium			0.0075	0.015	0.000041	0.000043	0.000042	0.000041	0.000033	0.000034	0.000016	0.00002	0.000021	0.000021	0.000018
Vanadium			0.0035	0.006	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*
Zinc[4]			0.0053	***equation***	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	0.0012	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Zirconium					*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*

Notes:

[1] CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2015.

[2] Guidelines for Canadian Drinking Water Quality (Federal-Provincial-Territorial Committee on Health and the Environment). Standards for the following parameters are aesthetic and meant to protect against taste and odour: chloride, sulphate, copper, iron, manganese, sodium, zinc.

[3] Trigger and threshold values are presented in "CREMP 2015 Plan Update" (Azimuth 2015a).

A number of thresholds were derived from methods (or sources) other than CCME guidelines - see Azimuth (2015a) for details.

[4] "***equation***" means that CCME guidelines (or thresholds) are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum (t & d) guidelines vary with pH; the cadmium, copper, lead, manganese, nickel and zinc guidelines vary with hardness.

[5] Chromium CCME guideline is for Cr VI.

123	Shaded concentrations exceed the CCME aquatic life guidelines.
123	Bordered concentrations exceed the GCDWQ.
123	Bolded concentrations exceed the trigger value.
123	Bold, italicized concentrations exceed the threshold value.

Italicized numbers are below detection limits.

"-" not collected.

~~strikethrough~~ = results flagged as unreliable in the QC assessment (see **Section 2.2.1.** for more details).

Table 2-3. Water chemistry data for the Sentinel stations, Whale Tail Pit Baseline, 2015.

Lake			Sentinel Stations														
Station	Aquatic Life	Human Health	C2			C14			C17			C20			C41		
Area-Replicate ID	Guidelines	Guidelines	C2-JUL	C2-AUG	C2-SEP	C14-JUL	C14-AUG	C14-SEPT	C17-JUL	C17-AUG	C17-SEPT	C20-JUL	C20-AUG	C20-SEPT	C41-JUL	C41-AUG	C41-SEPT
Depth (m)	CCME[1]	GCDWQ[2]	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Date			19-Jul-15	25-Aug-15	20-Sep-15	19-Jul-15	25-Aug-15	20-Sep-15	19-Jul-15	25-Aug-15	20-Sep-15	19-Jul-15	25-Aug-15	20-Sep-15	19-Jul-15	25-Aug-15	20-Sep-15
Field Measurements (Surface)																	
Temperature (°C)			10.3	9.6	2.7	9.4	10.9	4.0	10.0	10.1	3.2	8.2	10.6	3.6	10.7	9.6	2.5
Specific Conductivity (µS/cm)			22.7	16.9	22.6	24.8	20.4	22.7	23.4	14.1	21.3	23.4	18.6	20.3	17.2	16.9	23.3
Dissolved Oxygen (mg/L)			11.98	11.34	13.71	13.03	10.97	13.26	12.5	11.19	13.54	13.75	10.68	13.62	11.72	11.34	15
pH	6.5 - 9.0		-	7.22	7.02	7.03	7.36	6.98	7.03	6.78	6.98	7.05	7.36	6.92	7.10	7.22	6.90
Physical Tests (mg/L)																	
Conductivity (µS/cm)			22	23	24	25	24	24	23	23	23	23	22	22	17	20	25
Hardness			8.7	8.8	9.2	10.4	10.0	10.3	9.6	9.4	9.4	9.6	8.7	8.8	6.8	7.9	9.9
pH (Laboratory)	6.5 - 9.0		6.92	6.83	6.87	7.13	7.08	7.08	7.07	7.01	7.00	7.12	7.08	7.04	6.91	6.96	6.93
Total Suspended Solids			<1.0	<1.0	<1.0	<1.0	<1.0	2	<1.0	1	<1.0	<1.0	<1.0	<1.0	1	<1.0	9
Total Dissolved Solids			15	16	17	18	17	19	18	18	19	15	16	14	13	15	20
Turbidity (NTU)			0.33	0.24	0.31	0.32	0.35	0.72	0.38	0.82	0.50	0.21	0.24	0.45	0.83	0.33	1.53
Anions and Nutrients (mg/L)																	
Alkalinity - Bicarbonate			5.7	5.2	5.7	8.7	7.7	8.9	7.7	7.9	7.7	7.8	7.1	7.5	5.1	5.8	6.7
Alkalinity - Carbonate			<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	<1.0	<1.0
Alkalinity - Hydroxide			<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	<1.0	<1.0
Alkalinity - Total			5.7	5.2	5.7	8.7	7.7	8.9	7.7	7.9	7.7	7.8	7.1	7.5	5.1	5.8	6.7
Ammonia (as N)[3]	**equation**		<0.005	0.0052	<0.005	<0.005	<0.005	<0.005	<0.005	0.0053	<0.005	<0.005	<0.005	0.0051	<0.005	<0.005	<0.005
Bromide			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride	120	250	0.47	0.51	0.51	0.55	0.56	0.55	0.57	0.59	0.58	0.67	0.64	0.63	0.50	0.58	0.62
Fluoride	0.120	1.5	0.063	0.072	0.073	0.034	0.034	0.034	0.046	0.049	0.048	0.039	0.037	0.037	0.043	0.055	0.054
Nitrate (as N)	3.0	10	<0.005	0.0243	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0055	0.0097	0.0148
Nitrite (as N)	0.060	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Kjeldahl Nitrogen			0.154	0.085	0.125	0.265	0.162	0.188	0.184	0.144	0.160	0.124	0.090	0.234	0.129	0.100	0.203
Ortho Phosphate (as P)			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus (P)-Total Diss.			0.0020	0.0021	<0.002	0.0028	0.0027	<0.002	0.0022	0.0031	0.0022	<0.002	0.0021	<0.002	0.0022	0.0028	0.0022
Phosphorus (P)-Total	0.0040		<0.002	<0.002	<0.002	0.0022	<0.002	0.0042	0.0022	0.0032	0.0026	<0.002	<0.002	0.0072	0.0030	<0.002	0.007
Silicate (as SiO_2)			0.64	0.88	1.14	0.59	0.58	0.74	0.76	0.63	0.97	<0.5	<0.5	<0.5	0.52	0.86	1.39
Sulphate (SO_4)		500	3.45	3.67	3.97	1.52	1.54	1.55	1.48	1.43	1.52	1.71	1.63	1.63	1.73	2.05	3.26
Cyanides																	
Total Cyanide			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Free Cyanide			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Organic / Inorganic Carbon (mg/L)																	
Dissolved Organic Carbon			1.6	1.3	1.5	2.5	2.3	2.3	2.8	2.7	2.7	1.5	1.4	1.4	1.6	1.9	1.9
Total Organic Carbon			1.6	1.4	1.5	2.5	2.4	2.4	2.7	2.7	2.7	1.5	1.4	2.1	2.0	1.4	1.9
Plant Pigments (µg/L)																	
Chlorophyll-*a*			0.34	0.58	0.61	0.37	0.63	1.50	0.36	0.84	0.79	0.21	0.39	0.56	0.36	0.46	2.30
Total Metals (mg/L)																	
Aluminum[3]	**equation**		0.0126	~~0.0044~~	0.0091	0.0086	~~0.0064~~	0.0338	0.0148	0.0211	0.0156	0.0050	~~0.0042~~	0.0099	0.0210	~~0.0081~~	0.0647
Antimony		0.006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	0.0050	0.01	0.0002	0.0002	0.0002	0.0002	0.0003	0.0004	0.0002	0.0004	0.0003	0.0001	0.0002	0.0002	0.0001	0.0002	0.0003
Barium		1	0.0035	0.0032	0.0034	0.0036	0.0030	0.0037	0.0027	0.0027	0.0024	0.0021	0.0018	0.0019	0.0043	0.0039	0.0059
Beryllium			<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Bismuth			<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Boron	1.5	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium[3]	**equation**	0.005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000006	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000009	<0.000005	<0.000005	0.000008
Calcium			2.15	2.10	2.26	2.82	2.71	2.84	2.49	2.44	2.43	2.27	2.26	2.17	1.42	1.64	2.18
Chromium[4]	0.001	0.05	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0001	0.0003	0.0002	<0.0001	<0.0001	0.0001	0.0004	0.0002	0.0008
Cobalt			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00
Copper[3]	**equation**	1	0.0010	0.0008	0.0008	0.0006	0.0007	0.0007	0.0007	0.0008	0.0007	<0.0005	<0.0005	<0.0005	0.0007	0.0007	0.0011
Iron	0.3	0.3	0.032	0.028	0.039	0.028	0.023	0.108	0.044	0.164	0.078	0.012	0.014	0.021	0.070	0.059	~~0.34~~
Lead[3]	**equation**	0.01	~~0.00006~~	<0.00005	<0.00005	<0.00005	<0.00005	~~0.00011~~	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	~~0.00037~~	<0.00005	~~0.00008~~	~~0.00032~~
Lithium			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium			0.80	0.78	0.84	0.74	0.70	0.75	0.82	0.79	0.79	0.81	0.77	0.75	0.76	0.87	1.20
Manganese[3]		0.05	0.0016	0.0003	0.0011	0.0024	0.0029	0.0091	0.0039	0.0169	0.0076	0.0013	0.0010	0.0013	0.0016	0.0017	0.0059
Mercury	0.000026	0.001	<0.000005	<0.000005	0.00	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum	0.073		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0001	<0.00005	<0.00005	<0.00005	<0.00005	0.0001	0.0001	0.0001
Nickel[3]	**equation**		0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	0.0007	0.0005	0.0006	<0.0005	<0.0005	0.0032	0.0023	0.0046
Phosphorus			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium			0.32	0.32	0.30	0.37	0.35	0.35	0.40	0.38	0.35	0.36	0.34	0.30	0.29	0.29	0.33
Selenium	0.001	0.01	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Silicon			0.36	0.38	0.46	0.31	0.27	0.35	0.43	0.30	0.40	0.15	0.14	0.16	0.31	0.37	0.72
Silver	0.0001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sodium		200	0.49	0.52	0.54	0.51	0.51	0.53	0.56	0.56	0.56	0.51	0.49	0.49	0.42	0.48	0.56

Table 2-3. Water chemistry data for the Sentinel stations, Whale Tail Pit Baseline, 2015.

Lake			Sentinel Stations														
Station	**Aquatic Life**	**Human Health**	**C2**			**C14**			**C17**			**C20**			**C41**		
Area-Replicate ID	**Guidelines**	**Guidelines**	C2-JUL	C2-AUG	C2-SEP	C14-JUL	C14-AUG	C14-SEPT	C17-JUL	C17-AUG	C17-SEPT	C20-JUL	C20-AUG	C20-SEPT	C41-JUL	C41-AUG	C41-SEPT
Depth (m)	**CCME[1]**	**GCDWQ[2]**	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Date			19-Jul-15	25-Aug-15	20-Sep-15	19-Jul-15	25-Aug-15	20-Sep-15	19-Jul-15	25-Aug-15	20-Sep-15	19-Jul-15	25-Aug-15	20-Sep-15	19-Jul-15	25-Aug-15	20-Sep-15
Strontium			0.0115	0.0113	0.0119	0.0143	0.0142	0.0150	0.0129	0.0127	0.0128	0.0091	0.0088	0.0091	0.0072	0.0082	0.0107
Sulfur			1.17	1.28	1.39	0.55	0.60	0.61	0.54	0.57	0.58	0.60	0.61	0.58	0.60	0.75	1.18
Thallium	0.0008		*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*
Tin			*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	0.0003	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Titanium			*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	0.00096	*<0.0003*	0.00036	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	0.00034	*<0.0003*	0.00134
Uranium	0.015	0.02	0.000060	0.000029	0.000036	0.000033	0.000028	0.000040	0.000043	0.000041	0.000041	0.000022	0.000020	0.000022	0.000038	0.000022	0.000060
Vanadium			*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*
Zinc	0.030	0.5	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.003*
Zirconium			*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*
Dissolved Metals (mg/L)																	
Aluminum			~~0.0038~~	0.0013	0.0033	0.0053	0.0027	0.0053	0.0065	0.0038	0.0049	~~0.0021~~	0.0018	0.0086	0.0062	0.0026	0.0053
Antimony			*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Arsenic			0.0001	0.0001	0.0001	0.0002	0.0003	0.0003	0.0002	0.0003	0.0003	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001
Barium			0.0033	0.0032	0.0031	0.0035	0.0029	0.0034	0.0026	0.0024	0.0023	0.0020	0.0017	0.0020	0.0040	0.0038	0.0048
Beryllium			*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*
Bismuth			*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*
Boron			*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Cadmium			*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	0.00001	*<0.000005*	*<0.000005*	*<0.000005*
Calcium			2.18	2.18	2.29	2.90	2.79	2.89	2.52	2.47	2.45	2.44	2.24	2.25	1.47	1.69	2.10
Chromium			*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	0.00	*<0.0001*	0.00
Cobalt			*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	0.00	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Copper			0.00080	0.00069	0.00070	0.00061	0.00061	0.00060	0.00062	0.00067	0.00064	0.00037	0.00041	0.00041	0.00053	0.00054	0.00068
Iron			0.01	*<0.01*	0.01	0.01	*<0.01*	0.02	0.02	0.07	0.04	0.01	*<0.01*	0.01	0.03	0.03	0.03
Lead			*<0.00005*	*<0.00005*	*<0.00005*	~~0.00005~~	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	~~0.00010~~	*<0.00005*	*<0.00005*	*<0.00005*
Lithium			*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Magnesium			0.80	0.81	0.85	0.76	0.74	0.76	0.80	0.78	0.80	0.85	0.76	0.78	0.75	0.89	1.13
Manganese			0.0012	*<0.0001*	0.0008	0.0014	0.0012	0.0036	0.0030	0.0146	0.0063	0.0010	0.0005	0.0008	0.0010	0.0011	0.0017
Mercury			*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	0.00	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*
Molybdenum			*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	0.0001	0.0001
Nickel			0.0006	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	0.0005	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	0.0029	0.0023	0.0033
Phosphorus			*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*
Potassium			0.32	0.33	0.31	0.37	0.37	0.34	0.38	0.37	0.36	0.36	0.33	0.35	0.26	0.30	0.33
Selenium			*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*
Silicon			0.34	0.39	0.46	0.31	0.26	0.29	0.40	0.27	0.38	0.16	0.14	0.16	0.29	0.37	0.61
Silver			*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*
Sodium			0.48	0.52	0.53	0.51	0.50	0.52	0.54	0.54	0.55	0.51	0.48	0.48	0.40	0.48	0.57
Strontium			0.0112	0.0114	0.0121	0.0143	0.0139	0.0147	0.0124	0.0123	0.0124	0.0092	0.0087	0.0092	0.0070	0.0080	0.0102
Sulfur			1.13	1.27	1.36	0.54	0.57	0.57	0.52	0.52	0.56	0.61	0.57	0.58	0.60	0.72	1.11
Thallium			*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*	*<0.00001*
Tin			*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Titanium			*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	0.00	*<0.0003*	*<0.0003*	*<0.0003*
Uranium			0.00005	0.00002	0.00003	0.00003	0.00002	0.00003	0.00004	0.00003	0.00004	0.00002	0.00002	0.00002	0.00004	0.00002	0.00003
Vanadium			*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*
Zinc			*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Zirconium			*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*	*<0.0003*

Notes:

1 CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2015.

2 Guidelines for Canadian Drinking Water Quality (Federal-Provincial-Territorial Committee on Health and the Environment). Standards for the following parameters are aesthetic and meant to protect against taste and odour: chloride, sulphate, copper, iron, manganese, sodium, zinc.

3 "***equation***" means that CCME guidelines are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, and nickel guidelines vary with hardness.

4 Chromium CCME guideline is for Cr VI.

123	Shaded concentrations exceed the CCME aquatic life guidelines.
123	Bordered concentrations exceed the GCDWQ.
123	Bolded concentrations exceed the trigger value.
123	Bold, italicized concentrations exceed the threshold value.

Italicized numbers are below detection limits.

"-" not collected.

~~strikethrough~~ = results flagged as unreliable in the QC assessment (see Section 2.2.1. for more details).

Table 2-4. Water chemistry data for the Tributary stations, Whale Tail Pit Baseline, 2015.

Sampling Event	Aquatic Life Guidelines	Human Health Guidelines	August											September					
Station ID (maps)			A21-A20	A76-A75	DS1	A81-A80	C8-C7	A55-A17	A69-DS1	A14-A13	A18-A17	C38-C12	A5-A4	A55-A17	A17-A16	C38-C12	A69-DS1	A18-A17	A15-A14
Lab Report ID			A20-A19	A8-A7	D1	A101-A100	C8-C7	A34-A16	A1-DS1	A12-A11	A17-A16	C58 OUTLET	B5-B4	A34-A16	A16-A14	C58 OUTLET	A1-DS1	A17-A16	A13-A12
Depth (m)	CCME[1]	GCDWQ[2]	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Date			6-Aug-15	5-Aug-15	5-Aug-15	8-Aug-15	8-Aug-15	7-Aug-15	4-Aug-15	4-Aug-15	4-Aug-15	4-Aug-15	6-Aug-15	17-Sep-15	17-Sep-15	19-Sep-15	19-Sep-15	19-Sep-15	21-Sep-15
Field Measurements (Surface)																			
Temperature (°C)			17	13	14	15	13	17	15	14	17	16	16	-	-	5.5	4.2	4.7	1.8
Specific Conductivity (µS/cm)			13	22	21	12	25	15	17	24	15	24	21	-	18	16	13	11	18
Dissolved Oxygen (mg/L)			9.6	9.6	11	9.5	11	10	10	10	10	10	10	13	13	12	13	13	13
pH	6.5 - 9.0		6.8	6.9	7.0	6.5	6.9	6.5	6.6	6.5	6.7	6.7	6.2	7.3	7.2	7.1	7.3	7.1	7.1
Physical Tests (mg/L)																			
Conductivity (µS/cm)			14	23	22	13	26	15	16	24	15	24	22	19	34	28	21	17	28
Hardness			4.5	8.2	8.4	4.2	11	5.2	5.8	9.0	5.3	9.7	7.8	6.2	13	9.6	7.3	5.9	10
pH (Laboratory)	6.5 - 9.0		6.8	7.0	7.0	6.7	7.2	6.8	6.8	6.8	6.8	7.0	6.9	6.7	6.7	7.0	6.9	6.8	6.8
Total Suspended Solids			*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	1.7	*<1.0*	*<1.0*	*<1.0*	*<1.0*	1.8	11	3.2	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Total Dissolved Solids			16	19	20	14	22	16	13	18	14	19	18	15	24	16	14	10	15
Turbidity (NTU)			0.35	0.24	0.37	0.31	0.22	0.57	0.29	0.24	0.26	0.23	0.30	15	0.31	0.25	0.81	0.22	0.36
Anions and Nutrients (mg/L)																			
Alkalinity - Bicarbonate			4.8	6.4	7.1	3.9	9.4	6.3	5.0	5.8	5.0	7.2	5.8	5.4	4.3	6.6	6.3	5.7	5.9
Alkalinity - Carbonate			*<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*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Hydroxide			*<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*	*<1.0*	*<1.0*	*<1.0*	*<1.0*
Alkalinity - Total			4.8	6.4	7.1	3.9	9.4	6.3	5.0	5.8	5.0	7.2	5.8	5.4	4.3	6.6	6.3	5.7	5.9
Ammonia (as N)[3]	***equation***		*<0.005*	*<0.005*	0.0057	*<0.005*	*<0.005*	*<0.005*	0.0050	0.0073	*<0.005*	*<0.005*	*<0.005*	0.0064	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*
Bromide			*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	0.063	*<0.05*	*<0.05*	*<0.05*	*<0.05*
Chloride	120	250	0.59	0.94	0.95	0.65	0.49	0.94	0.74	1.7	0.68	0.51	1.1	0.64	5.7	0.53	0.95	0.73	2.1
Fluoride	0.120	1.5	0.029	0.025	0.038	0.027	0.033	0.025	0.028	0.025	0.031	0.023	0.028	0.032	0.026	0.024	0.028	0.032	0.025
Nitrate (as N)	3.0	10	0.012	*<0.005*	*<0.005*	0.0055	*<0.005*	*<0.005*	*<0.005*	0.0065	*<0.005*	*<0.005*	*<0.005*	0.014	*<0.005*	*<0.005*	0.011	0.0068	0.014
Nitrite (as N)	0.060	1	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Total Kjeldahl Nitrogen			0.14	0.15	0.16	0.12	0.095	0.19	0.14	0.14	0.15	0.12	0.14	0.17	0.15	0.13	0.18	0.29	0.13
Ortho Phosphate (as P)			*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	0.0014	0.0012	0.0011	0.0014	0.0012
Phosphorus (P)-Total Diss.			0.0043	*<0.002*	*<0.002*	*<0.002*	*<0.002*	*<0.002*	*<0.002*	*<0.002*	*<0.002*	*<0.002*	*<0.002*	0.0026	*<0.002*	*<0.002*	0.0026	*<0.002*	*<0.002*
Phosphorus (P)-Total	0.0040		0.0026	*<0.002*	0.0028	0.0026	*<0.02*	0.0038	0.0026	*<0.002*	0.0023	*<0.002*	*<0.002*	-	-	-	-	-	-
Silicate (as SiO_2)			1.3	0.87	*<0.5*	0.92	1.4	0.88	*<0.5*	0.58	0.81	*<0.5*	0.76	1.4	0.65	*<0.5*	1.0	1.2	0.99
Sulphate (SO_4)		500	0.73	2.6	1.2	0.71	2.3	2.6	1.3	2.6	0.85	3.0	2.4	1.4	1.7	3.2	2.0	1.1	3.3
Cyanides																			
Total Cyanide			*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Free Cyanide			*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	0.0010	*<0.001*	*<0.001*	*<0.001*	0.0010	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Organic / Inorganic Carbon (mg/L)																			
Dissolved Organic Carbon			2.0	1.7	2.2	1.8	1.4	2.3	1.9	1.8	1.9	1.6	1.6	2.8	13	1.8	1.9	1.8	3.5
Total Organic Carbon			2.1	1.6	2.3	1.9	1.4	2.4	1.9	1.7	1.6	1.5	1.6	2.8	2.5	1.7	1.8	3.0	1.6
Plant Pigments (µg/L)																			
Chlorophyll-*a*			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals (mg/L)																			
Aluminum[3]	***equation***		0.017	0.0064	0.014	0.010	0.0051	0.021	0.0090	0.0084	0.0085	0.0049	0.0088	~~0.49~~	0.0087	0.0039	0.030	0.0053	0.0086
Antimony		0.006	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Arsenic	0.0050	0.01	*<0.0001*	0.00023	0.00014	*<0.0001*	0.00036	0.00018	0.00010	0.00035	0.00011	0.00030	0.00020	0.00035	0.00027	0.00026	0.00011	*<0.0001*	0.00030
Barium		1	0.0036	0.0047	0.0028	0.0017	0.0099	0.0022	0.0030	0.0047	0.0037	0.0039	0.0046	0.0061	0.0051	0.0036	0.0038	0.0034	0.0049
Beryllium			*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	0.00004	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*	*<0.00002*
Bismuth			*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	0.00005	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*
Boron	1.5	5	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Cadmium[3]	***equation***	0.005	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	0.00001
Calcium			1.2	2.1	2.0	1.2	2.5	0.91	1.5	2.3	1.3	2.3	1.9	1.0	3.1	2.2	1.9	1.4	2.5
Chromium[4]	0.001	0.05	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	0.00015	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	0.00010	~~0.0020~~	0.00014	*<0.0001*	0.00014	*<0.0001*	0.00015
Cobalt			*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	0.00028	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Copper[3]	***equation***	1	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	0.00072	*<0.0005*	0.00050	*<0.0005*	*<0.0005*	*<0.0005*	0.0016	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	0.00063
Iron	0.3	0.3	0.038	0.017	0.028	0.031	*<0.01*	0.16	0.051	0.017	0.057	0.015	0.035	~~0.79~~	0.020	*<0.01*	0.070	0.030	0.022
Lead[3]	***equation***	0.01	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	0.00054	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	0.00026
Lithium			*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Magnesium			0.41	0.72	0.85	0.29	1.1	0.69	0.46	0.79	0.50	1.0	0.71	0.97	0.92	0.99	0.59	0.52	0.86
Manganese[3]		0.05	0.00077	0.0023	0.0024	0.0024	0.0027	0.0026	0.0016	0.00075	0.00080	0.0039	0.00097	0.0094	0.0031	0.0026	0.0015	0.00039	0.00081
Mercury	0.000026	0.001	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*	*<0.000005*
Molybdenum	0.073		*<0.00005*	*<0.00005*	*<0.00005*	0.00006	0.00097	0.00008	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	0.00007	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*
Nickel[3]	***equation***		*<0.0005*	0.00054	*<0.0005*	*<0.0005*	0.00056	0.00076	*<0.0005*	0.00066	*<0.0005*	0.00052	*<0.0005*	0.0020	0.0010	0.0048	*<0.0005*	*<0.0005*	0.00072
Phosphorus			*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*	*<0.05*
Potassium			0.38	0.53	0.34	0.27	0.50	0.37	0.37	0.57	0.41	0.63	0.59	0.49	0.40	0.56	0.45	0.34	0.57
Selenium	0.001	0.01	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*	*<0.00005*
Silicon			0.57	0.37	0.20	0.41	0.63	0.34	0.27	0.35	0.46	0.22	0.34	1.4	0.27	0.21	0.49	0.52	0.43

Table 2-4. Water chemistry data for the Tributary stations, Whale Tail Pit Baseline, 2015.

Sampling Event			August											September					
Station ID (maps)	**Aquatic Life Guidelines**	**Human Health Guidelines**	A21-A20	A76-A75	DS1	A81-A80	C8-C7	A55-A17	A69-DS1	A14-A13	A18-A17	C38-C12	A5-A4	A55-A17	A17-A16	C38-C12	A69-DS1	A18-A17	A15-A14
Lab Report ID			A20-A19	A8-A7	D1	A101-A100	C8-C7	A34-A16	A1-DS1	A12-A11	A17-A16	C58 OUTLET	B5-B4	A34-A16	A16-A14	C58 OUTLET	A1-DS1	A17-A16	A13-A12
Depth (m)	**CCME**[1]	**GCDWQ**[2]	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Date			6-Aug-15	5-Aug-15	5-Aug-15	8-Aug-15	8-Aug-15	7-Aug-15	4-Aug-15	4-Aug-15	4-Aug-15	4-Aug-15	6-Aug-15	17-Sep-15	17-Sep-15	19-Sep-15	19-Sep-15	19-Sep-15	21-Sep-15
Silver	0.0001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sodium		200	0.63	0.54	0.73	0.58	0.63	0.61	0.62	0.58	0.66	0.51	0.54	0.61	0.57	0.49	0.61	0.64	0.58
Strontium			0.0070	0.0090	0.0061	0.0056	0.012	0.0052	0.0073	0.012	0.0071	0.0096	0.0083	0.0063	0.022	0.0093	0.0081	0.0070	0.011
Sulfur			<0.5	0.91	<0.5	<0.5	0.83	<0.5	0.56	0.94	<0.5	1.1	0.82	<0.5	0.61	1.1	0.67	<0.5	1.2
Thallium	0.0008		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Tin			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium			0.00033	<0.0003	<0.0003	<0.0003	<0.0003	0.00048	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.016	<0.0003	<0.0003	0.00081	<0.0003	0.00030
Uranium	0.015	0.02	0.00005	0.00002	0.00005	0.00005	0.00002	0.00007	0.00004	0.00003	0.00003	<0.00001	0.00003	0.00032	0.00003	<0.00001	0.00003	0.00002	0.00002
Vanadium			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00081	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc	0.030	0.5	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.0033	<0.003	<0.003	<0.003	<0.003	<0.003
Zirconium			<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.00039	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Dissolved Metals (mg/L)																			
Aluminum			0.0060	0.0027	0.0054	0.0034	0.0026	0.0073	0.0040	0.0022	0.0040	0.0018	0.0033	0.045	0.0039	0.0021	0.0072	0.0023	0.0032
Antimony			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic			<0.0001	0.00020	0.00015	<0.0001	0.00034	0.00015	<0.0001	0.00032	<0.0001	0.00029	0.00016	0.00019	0.00023	0.00026	0.00010	<0.0001	0.00024
Barium			0.0066	0.0075	0.0031	0.0026	0.012	0.0038	0.0035	0.0061	0.0048	0.0041	0.0074	0.0034	0.0073	0.0039	0.0058	0.0042	0.0055
Beryllium			<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Bismuth			<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Boron			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium			<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.00001	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Calcium			1.2	2.1	2.0	1.2	2.5	0.92	1.5	2.3	1.3	2.2	2.0	1.1	3.4	2.2	1.9	1.5	2.5
Chromium			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00040	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper			0.00069	0.00063	0.00064	0.00053	0.00047	0.00074	0.00032	0.00080	0.00032	0.00026	0.00082	0.00090	0.00043	0.00025	0.00056	0.00034	0.00055
Iron			0.014	<0.01	0.011	<0.01	<0.01	0.080	0.014	<0.01	0.025	<0.01	0.012	0.085	<0.01	<0.01	0.021	0.012	<0.01
Lead			<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00014	0.00014	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Lithium			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0010	<0.001	<0.001	<0.001	<0.001
Magnesium			0.38	0.72	0.85	0.28	1.1	0.70	0.47	0.79	0.49	1.0	0.71	0.84	1.0	0.99	0.62	0.54	0.89
Manganese			0.00046	0.00096	0.00068	0.00062	0.0011	0.0018	0.00065	0.00059	0.00041	0.00042	0.00055	0.0028	0.0018	0.00059	0.00083	0.00040	0.00043
Mercury			<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum			<0.00005	<0.00005	<0.00005	0.00005	0.00013	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Nickel			<0.0005	0.00052	<0.0005	<0.0005	<0.0005	0.00069	<0.0005	0.00061	<0.0005	<0.0005	<0.0005	0.0011	0.0010	<0.0005	<0.0005	<0.0005	0.00065
Phosphorus			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium			0.34	0.54	0.32	0.27	0.53	0.44	0.37	0.57	0.40	0.59	0.60	0.38	0.45	0.59	0.45	0.38	0.58
Selenium			<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Silicon			0.54	0.37	0.19	0.39	0.64	0.32	0.25	0.36	0.45	0.21	0.34	0.68	0.29	0.21	0.46	0.54	0.44
Silver			<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sodium			0.77	0.63	0.82	0.65	0.70	0.70	0.56	0.68	0.67	0.51	0.65	0.69	0.63	0.49	0.74	0.80	0.62
Strontium			0.0067	0.0087	0.0062	0.0053	0.012	0.0048	0.0066	0.011	0.0070	0.0093	0.0082	0.0059	0.023	0.0091	0.0080	0.0069	0.011
Sulfur			<0.5	0.89		<0.5	0.80	<0.5	<0.5	0.93	<0.5	1.1	0.83	<0.5	0.60	1.3	0.71	<0.5	1.1
Thallium			<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Tin			0.00016	0.00012	0.00013	0.00013	0.00011	<0.0001	<0.0001	0.00012	<0.0001	<0.0001	0.00027	<0.0001	0.00011	<0.0001	<0.0001	<0.0001	<0.0001
Titanium			<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Uranium			0.00004	0.00002	0.00004	0.00005	0.00002	0.00005	0.00003	0.00002	0.00002	<0.00001	0.00003	0.00014	0.00002	<0.00001	0.00002	0.00001	0.00001
Vanadium			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0015	<0.001	<0.001	0.0012	<0.001	0.0012
Zirconium			<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Notes:

[1] CCME (Canadian Council of Ministers of the Environment) Canadian Water Quality Guidelines for the Protection of Aquatic Life, 1999, updated up to 2014.

[2] Guidelines for Canadian Drinking Water Quality (Federal-Provincial-Territorial Committee on Health and the Environment). Standards for the following parameters are aesthetic and meant to protect against taste and odour: chloride, sulphate, copper, iron, manganese, sodium, zinc.

[3] "equation" means that CCME guidelines are calculated based on an equation which is either pH or hardness dependent. The ammonia and aluminum guidelines vary with pH; the cadmium, copper, lead, and nickel guidelines vary with hardness.

[4] Chromium CCME guideline is for Cr VI.

123 Shaded concentrations exceed the CCME aquatic life guidelines.

123 Bordered concentrations exceed the GCDWQ.

Italicized numbers are below detection limits.

"-" analysis/measurement not collected.

~~strikethrough~~ = results flagged as unreliable in the QC assessment (see Section 2.2.2 for more details).

3. SEDIMENT CHEMISTRY

3.1. Methods Overview

3.1.1. Sample Collection

Baseline sediment sampling was completed by Portt and Associates in 2014 and Azimuth in 2015 according to methods outlined in the Meadowbank CREMP SOP (Azimuth 2015b). The sampling locations for the 2014 baseline study were synoptic with the benthic invertebrate stations established broadly throughout each of the Lakes. Of the 5 benthic invertebrate locations in each lake, Locations 1, 3 and 5 were sampled for sediment (**Figure 1ï3** [Whale Tail], **Figure 1ï4** [Nemo], **Figure 1ï5** [Mammoth]). The 2015 baseline study established replicate sediment/benthic invertebrate sampling locations over a smaller spatial scale (~100 m diameter) in areas (basins) of each lake with the targeted sampling depth of 8 m ± 1.5 m. This approach to defining the sampling basins is consistent with the Meadowbank CREMP; allowing for long-term monitoring of sediment quality in the Whale Tail Pit Study Area Lakes.

Sediment and benthic invertebrate samples were collected from 5 basins during the August 2015 sampling event.

- North basin of Whale Tail Lake (WTN and WTN-Ex [shallow])
- South basin of Whale Tail Lake (WTS)
- Nemo Lake (NEM)
- Mammoth Lake (MAM)

The 5 stations (replicates) in each 2015 area were spaced a minimum of 20 m apart. WTN and WTN-Ex are located in the area of Whale Tail Lake where the open pit is planned (**Figure 1ï2**). These areas were sampled to characterize the habitat prior to anticipated development activities. The sampling locations were established in areas where the water depth was 8 m ± 1.5 m; the exception was WTN-Ex, which was located in a shallower area of the North Basin of Whale Tail Lake.

Sediment samples were collected after sampling the benthic invertebrates at each station according to the SOP (Azimuth 2015b). A Petite Ponar grab sampler was used to collect the sediment samples, and each sample was a composite of two grabs. Sediment was collected by lowering the grab to the within 1 m of the sediment, at which point the rate of decent was slowed to minimize disruption of the surficial layer of sediment. Upon retrieval, the grab was placed in a large stainless steel bowl and inspected according to the acceptability criteria outlined in the SOP, namely: the absence of large foreign objects, adequate penetration depth, the grab is not overfilled, the jaws closed completely (i.e., well-sealed), and the sediment surface in the grab is undisturbed. Grabs that failed the acceptability criteria were discarded into a 20-L bucket and retained until sampling was completed at the station. Grabs that met the acceptability criteria were sampled by scooping the top 3 to 5 cm of sediment from the grab into a stainless steel bowl using a stainless steel spoon. Sediment from the first grab was discarded into a 20-L bucket and the grab was rinsed with lake water before collecting the second grab sample. After collecting the second grab, the sediment was thoroughly homogenized and transferred into two 125 mL glass jars, one for metals, moisture and pH, and the other for particle size analysis and total organic carbon (TOC) content. A single scoop of sediment was placed in a separate stainless steel bowl used to composite sediment from each of the 5 replicate stations. This composite sample was submitted for analysis of mineral oil and grease, hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs).

3.1.2. Laboratory Methods

Sediment samples were shipped to ALS and analyzed for the following parameters:

- Moisture and pH
- Particle size and TOC
- Metals
- Mineral oil and grease
- Hydrocarbons (LEPHs and HEPHs)
- PAHs

A complete list of the sediment parameters, detection limits, data quality objectives, and method references is present in Table 1 of the SOP (Azimuth 2015b).

3.1.3. Data Handling and Analysis

Sediment chemistry results from the 2014 baseline study were provided to Azimuth by Portt and Associates. The data from 2014 and 2015 were tabulated in Microsoft Excel and screened against the interim sediment quality guidelines (ISQGs) and probable effect level (PEL) concentrations in CCME (2015b). The results were also qualitatively compared to the chemistry data from the reference lakes (INUG and PDL) for additional context and the triggers/thresholds developed for the Meadowbank CREMP lakes (Azimuth 2012b).

3.2. Quality Assurance / Quality Control

The QA/QC assessment is limited to the 2015 data collected by Azimuth. Refer to Portt and Associates (2015a) for information on laboratory and field duplicate QA/QC results from the 2014 baseline study.

3.2.1. QA/QC Methods

Laboratory QC

Laboratory duplicates were analyzed for sediment chemistry parameters similar to water chemistry parameters. The full list of laboratory DQOs for each parameter are presented in SOP (Azimuth 2015b). Analysis of method blanks and CRM are also included as part of ALS's QC program.

Field QA/QC

Field QA consisted of taking care between sampling areas, by rinsing and cleaning the sampling gear for sediment grabs (Petite Ponar grab, stainless steel compositing bowls and spoons) and sediment cores (corer and spatula) using site water and phosphate-free cleaning detergent, avoids the possibility of cross-contamination. Field QC measures included collection and analysis of the following:

- Field Duplicates – Field duplicate samples are collected in the immediate vicinity of original samples from randomly selected locations as a test of consistency in field methodology and to characterize heterogeneity of sediment chemistry within discrete areas. The number of field duplicates taken is approximately 10% of original samples. The DQO for field duplicate samples is based on an RPD of 50% for concentrations that are >10 x MDL. Failure of this DQO indicates high variability, which may be due to natural causes (e.g., heterogeneous mineralization) or to incomplete homogenization during mixing.

- Filter Swipes – Metals analysis is conducted on an ashless filter that is swiped over the pre-cleaned bowl and grab to assess the cleaning procedures; this is done on 10% of the samples. The significance of any metal detected on the filter is evaluated by factoring in the potential influence of those trace amounts to the entire sample. Where comparisons were required, the concentration of metals originating from any equipment was estimated by dividing the amount detected on the filter (weight) by the volume of two Petite Ponar grabs (assuming a thickness of 3 cm was collected from each), that was multiplied by the density of sediment (assumed to be 2 g/cm^3).

3.2.2. QA/QC Results

Detailed results of the sediment chemistry QA/QC assessment are provided in **Appendix A1** (**Section A1-2**) and summarized in the following sections.

Laboratory QC

Results of the laboratory duplicate samples analysis are presented in **Table A1ï8**. The DQOs were met for all of the laboratory duplicate samples that were analyzed as part of the 2015 baseline sediment sampling program. Method blank and CRM results were also within the laboratory DQOs in 2015. The original ALS data report for the sediment analysis is presented in **Appendix C**.

Field QA/QC

The DQOs were met for all metals analyses in the field duplicates submitted in 2015 with the exception of particle size in one set of duplicate samples (sand and clay in the duplicate from Mammoth Lake [**Table A1ï8**]). The observed difference in this field duplicate is like a result of small-scale spatial heterogeneity in the particle size distribution at this location.

There were a few parameters that were detected on at least one of the swipe samples: aluminum, barium, chromium, iron, magnesium, manganese, nickel, tin, titanium, and zinc (**Table A1ï8**). Mass balance estimates from the swipes corresponded to less than 0.1% of the total metals concentration in the sediment samples, indicating that any residual metals present on the equipment would not influence the overall sediment chemistry.

3.3. Results

Lake sediment chemistry results from the 2014 and 2015 baseline programs are presented in **Table 3ï1** (particle size, TOC, and metals) and **Table 3ï2** (mineral oil and grease, hydrocarbons, and PAHs). The original ALS data report for samples collected in 2015 is included in **Appendix C**.

The particle size distribution in the top 3-5 cm of sediment was predominantly silt/clay, characteristic of depositional areas in all the lakes sampled in this region (Azimuth 2015b). Average silt/clay content in Whale Tail Lake (WTN and WTS) and Mammoth Lake was greater than 95% in the samples collected in 2014 and 2015 with the exception of Location 1 in the North Basin of Whale Tail Lake in 2014 that had 12% sand (**Table 3ï1**). Nemo Lake had a slightly coarser particle size distribution despite similar station depths. Sediment collected from Locations 3 and 5 in 2014 were predominantly sand (68% and 50%, respectively; **Table 3ï1**). In 2015, samples collected from the NEM basin (**Figure 1ï4**) had approximately 30% sand (0.063 mm to 2 mm particle size range) compared to WTN, WTS and MAM, which all had average percent sand content of less than 5%. Sediment collected from the shallow zone of the North Basin of Whale Tail Lake (WTN-Ex [~ 5 m deep]) was also coarser (range) relative to deeper locations (range).

Arsenic, chromium, and to a lesser extent copper, exceeded the ISQG and PEL SQGs at most of the stations sampled in Whale Tail Pit Study Area Lakes in 2014 and 2015, as well as at the reference areas INUG and PDL. Meadowbank trigger values were also consistently exceeded for arsenic at WTN and chromium at WTN-Ex, MAM, and PDL (**Table 3ï1**), suggesting that development of triggers specific to the Whale Tail Pit Study Area Lakes for these metals would be appropriate. Within Whale Tail Lake, the 2014 and 2015 results are similar, with higher metals concentrations (particularly arsenic and chromium) in sediment from the North Basin (Location 1 in 2014 and WTN/ WTN-Ex in 2015) compared to the South Basin (Location 5 in 2014 and WTS in 2015). Nemo Lake (NEM) had the lowest overall metals concentrations in the samples collected in 2014 and 2015, consistent with courser overall particle size compared to the other areas that were sampled. With the exception of arsenic, the metals concentrations from the Whale Tail Pit Study Area Lakes were generally similar to the concentrations measured at INUG and PDL (**Table 3ï1**). Average arsenic concentrations in sediment from INUG and PDL were 69 mg/kg and 35 mg/kg, respectively. The highest arsenic concentrations, averaging over 1,000 mg/kg (dw) were measured in sediment from WTN in 2015. At WTN-Ex (and Location 1 in 2014), less than 100 m to the west of WTN, concentrations were an order of magnitude less, averaging approximately 100 mg/kg. High natural spatial heterogeneity in sediment metals concentrations is common in areas of natural mineralization and has previously been documented under baseline conditions for lakes monitored as part of the Meadowbank CREMP (Azimuth 2015b).

Table 3-1. Conventional sediment grab chemistry, particle size, and total metals concentrations, Whale Tail Pit Baseline, 2014 and 2015.

Baseline Year					Whale Tail Lake																	
Baseline Program	CCME (2002) Guideline[2]		Meadowbank Triggers and Thresholds		2014 Baseline[1]			2015 Baseline														
Basin Name & Code								North Basin - Shallow (WTN-Ex)					North Basin (WTN)					South Basin (WTS)				
Area-Replicate ID					REP-1	REP-3	REP-5	WTN-EX-1	WTN-EX-2	WTN-EX-3	WTN-EX-4	WTN-EX-5	WTN-1	WTN-2	WTN-3	WTN-4	WTN-5	WTS-1	WTS-2	WTS-3	WTS-4	WTS-5
Date	**ISQG**	**PEL**	**Trigger[3]**	**Threshold[3]**	5-Sep-14	5-Sep-14	5-Sep-14	22-Aug-15	22-Aug-15	22-Aug-15	22-Aug-15	22-Aug-15	22-Aug-15	22-Aug-15	22-Aug-15	22-Aug-15	22-Aug-15	21-Aug-15	21-Aug-15	21-Aug-15	21-Aug-15	21-Aug-15
Physical & Organic Parameters																						
Moisture (%)					88	86	87	86	87	88	87	89	85	87	81	87	87	86	85	87	87	84
pH					6.2	5.1	6.0	6.0	5.8	6.4	6.0	6.2	6.3	6.2	5.7	5.7	5.8	5.5	5.5	5.5	5.8	5.9
Total Organic Carbon (% dw)					7.0	4.7	5.8	6.7	7.1	7.8	7.4	8.7	4.9	5.2	4.7	5.7	5.2	5.3	5.5	6.2	6.4	4.6
Particle Size																						
% Gravel (>2mm)					*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	0.15	*<0.10*	*<0.10*	0.41	*<0.10*	*<0.10*	0.12	*<0.10*	*<0.10*	*<0.10*	*<0.10*	0.82
% Sand (2.00mm - 0.063mm)					12	1.5	0.85	24	9.2	22	22	9.4	4.1	4.1	4.7	3.2	4.8	5.4	3.1	2.8	2.8	4.5
% Silt (0.063mm - 4µm)					75	80	80	66	79	71	70	83	87	86	83	85	84	82	82	82	85	82
% Clay (<4µm)					13	19	20	9.9	12	7.2	8.0	8.1	9.0	9.5	13	12	12	13	15	15	13	13
Total Metals (mg/kg dw)																						
Aluminum					18800	19200	19900	14700	18400	13500	15200	16000	13900	12700	14800	14200	13400	14700	16800	17100	16200	16400
Antimony					0.31	0.23	0.22	0.27	0.29	0.29	0.29	0.35	0.25	0.27	0.25	0.34	0.27	0.23	0.26	0.22	0.23	0.22
Arsenic*	5.9	17	120.0		***51***	***151***	***8.6***	***69***	***147***	***80***	***82***	***139***	***897***	***1000***	***568***	***1760***	***809***	***102***	***152***	***80***	***112***	***118***
Barium					116	134	134	98	129	102	107	106	212	586	97	180	179	113	120	122	133	104
Beryllium					1.3	1.5	1.5	1.1	1.5	1.1	1.1	1.3	1.2	1.2	1.3	1.3	1.2	1.4	1.7	1.5	1.4	1.3
Bismuth					0.39	0.59	0.54	0.33	0.47	0.33	0.34	0.40	0.45	0.42	0.47	0.49	0.46	0.52	0.58	0.55	0.56	0.53
Cadmium*	0.6	3.5	1.10		0.41	0.35	0.47	0.30	0.48	0.30	0.33	0.38	0.32	0.48	0.15	0.36	0.41	0.41	0.18	0.18	0.30	0.22
Calcium					3040	1850	2780	3310	2950	3220	3340	3710	1950	2150	2050	2260	1660	2300	2340	2630	2530	2030
Chromium*	37.3	90	114.3		***210***	***80***	***79***	***162***	***197***	***169***	***176***	***176***	***84***	***81***	***95***	***95***	***88***	***63***	***70***	***71***	***69***	***66***
Cobalt					15	13	8.7	14	17	15	16	15	24	20	21	25	24	16	16	10	13	24
Copper*	35.7	197	126.0		***49***	***49***	***53***	33	***51***	34	35	***41***	***37***	***38***	36	***42***	***39***	***38***	***45***	***41***	***42***	***39***
Iron					33600	90000	22700	35200	51700	38600	39000	50900	151000	146000	127000	179000	139000	69000	94100	54800	77400	89500
Lead	35	91.3	32.5	35	11	13	14	10	13	9.9	10	11	11	11	12	13	12	14	14	13	14	13
Lithium					18	16	19	16	18	15	17	15	13	12	14	13	13	13	14	15	14	13
Magnesium					10400	6850	7440	8770	9750	8870	9440	9030	5800	5410	6300	6110	5880	5690	5720	6250	5900	5750
Manganese					436	622	267	916	816	1170	1230	744	6660	23500	2200	5430	3900	2010	1890	1040	2180	2760
Mercury	0.17	0.486	0.104	0.17	0.053	0.050	0.038	0.060	0.076	0.068	0.067	0.079	0.074	0.083	0.061	0.094	0.080	0.076	0.079	0.075	0.095	0.066
Molybdenum					2.6	3.3	2.0	2.3	4.6	2.4	2.3	3.8	6.3	6.9	5.3	8.6	5.8	3.3	5.6	3.9	4.0	4.1
Nickel					109	81	76	91	117	92	99	96	92	126	60	93	108	74	64	54	67	60
Phosphorus					675	2270	756	662	794	716	795	864	1830	2250	1770	2750	2020	1680	1380	1050	1330	1070
Potassium					2040	2410	2420	1940	2340	1760	2030	2150	2040	2060	2150	2110	1840	2170	2420	2580	2450	2340
Selenium					0.72	1.0	0.71	0.40	0.70	0.47	0.48	0.59	0.78	0.78	0.75	0.96	0.76	0.67	0.78	0.68	0.82	0.75
Silver					0.29	0.32	0.37	0.21	0.31	0.21	0.23	0.27	0.26	0.28	0.23	0.32	0.25	0.26	0.29	0.33	0.34	0.24
Sodium					160	180	160	293	339	327	390	506	292	302	257	355	328	282	276	344	409	330
Strontium					23	22	25	24	23	22	26	25	22	30	22	25	19	22	23	25	25	21
Thallium					0.19	0.21	0.15	0.13	0.19	0.13	0.14	0.16	0.22	0.24	0.15	0.21	0.24	0.20	0.18	0.17	0.19	0.20
Tin					*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*
Titanium					529	497	458	485	537	393	507	500	379	370	413	393	308	407	437	456	425	447
Uranium					9.9	12	13	8.1	12	7.7	8.3	10	8.8	8.5	9.2	9.6	9.2	9.5	12	11	11	10
Vanadium					37	29	27	31	38	29	32	34	24	22	26	25	24	24	27	27	26	26
Zinc*	123	315	121.3		105	112	99	85	112	86	90	107	88	99	79	96	93	87	99	88	90	84

Notes:

[1] 2014 data presented here was adapted from Portt and Associates (2015a).

[2] CCME (Canadian Council of Ministers of the Environment) Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, 1999, updated in 2002. ISQG = Interim freshwater Sediment Quality Guideline. ISQG = Interim sediment quality guideline; PEL = probable effect level.

[3] Trigger and threshold values are described in (Azimuth, 2015b). Thresholds are set equal to CCME ISQG guidelines, where available.

* CCME guideline not used as threshold value because threshold value is lower than trigger value.

123 Bold italicized concentrations exceed the ISQG guideline.

123 Bordered concentrations exceed the PEL guideline.

123 Bolded and shaded concentrations also exceed the trigger value.

Italicized numbers are below detection limits.

Table 3-1. Conventional sediment grab chemistry, particle size, and total metals concentrations, Whale Tail Pit Baseline, 2014 and 2015.

Baseline Year	CCME (2002) Guideline[2]		Meadowbank Triggers and Thresholds		Mammoth Lake (MAM)								Nemo Lake (NEM)							
Baseline Program Basin Name & Code					2014 Baseline[1]			2015 Baseline					2014 Baseline[1]			2015 Baseline				
Area-Replicate ID					REP-1	REP-3	REP-5	MAM-1	MAM-2	MAM-3	MAM-4	MAM-5	REP-1	REP-3	REP-5	NEM-1	NEM-2	NEM-3	NEM-4	NEM-5
Date	**ISQG**	**PEL**	**Trigger[3]**	**Threshold[3]**	4-Sep-14	4-Sep-14	4-Sep-14	24-Aug-15	24-Aug-15	24-Aug-15	24-Aug-15	24-Aug-15	6-Sep-14	6-Sep-14	6-Sep-14	23-Aug-15	23-Aug-15	23-Aug-15	23-Aug-15	23-Aug-15
Physical & Organic Parameters																				
Moisture (%)					91	89	91	90	91	91	90	90	89	31	80	92	86	91	91	87
pH					5.7	5.9	6.0	5.9	6.0	5.7	5.5	5.4	5.5	6.3	5.9	6.2	6.5	6.3	6.5	6.5
Total Organic Carbon (% dw)					9.6	7.0	9.3	11	12	11	12	11	6.6	0.26	3.3	8.2	6.0	11	11	5.5
Particle Size																				
% Gravel (>2mm)					*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	6.3	0.94	*<0.10*	0.26	*<0.10*	*<0.10*	*<0.10*
% Sand (2.00mm - 0.063mm)					0.11	0.20	0.15	0.92	2.5	0.72	0.85	1.1	19	68	50	13	50	19	19	44
% Silt (0.063mm - 4µm)					84	84	84	94	92	94	93	92	76	25	46	78	47	76	77	53
% Clay (<4µm)					16	16	15	5.2	5.1	5.3	6.1	6.6	5.7	0.58	3.2	9.6	2.4	4.4	3.6	2.6
Total Metals (mg/kg dw)																				
Aluminum					21500	28500	20000	19100	18600	19500	17000	18400	11600	6390	9850	10800	9250	10800	9990	9610
Antimony					0.37	0.38	0.41	0.29	0.32	0.37	0.25	0.26	0.37	*<0.10*	0.44	0.40	0.22	0.35	0.36	0.20
Arsenic*	5.9	17	120.0		***71***	***158***	***55***	***76***	***143***	***277***	***69***	***70***	***25***	***11***	***17***	***52***	***13***	***46***	***80***	***26***
Barium					142	213	155	142	142	153	125	136	64	23	64	99	63	91	99	64
Beryllium					1.4	1.9	1.5	1.3	1.3	1.6	1.1	1.2	0.68	0.27	0.58	0.64	0.46	0.59	0.55	0.47
Bismuth					0.52	0.76	0.59	0.47	0.45	0.53	0.39	0.43	0.22	*<0.20*	0.21	0.23	*<0.20*	0.21	0.22	*<0.20*
Cadmium*	0.6	3.5	1.10		0.42	***0.61***	0.54	0.27	0.26	0.30	0.27	0.30	0.22	*<0.050*	0.38	0.25	0.18	0.22	0.20	0.14
Calcium					2530	2610	2980	3620	3370	3310	2770	2780	2690	1430	1940	3490	3030	3690	3160	2280
Chromium*	37.3	90	114.3		***174***	***211***	***163***	***161***	***162***	***168***	***141***	***158***	***112***	***66***	***87***	***113***	***97***	***110***	***104***	***106***
Cobalt					12	16	12	11	12	14	12	13	7.6	7.2	6.0	8.6	6.9	8.0	10	6.8
Copper*	35.7	197	126.0		***76***	***117***	***88***	***63***	***64***	***76***	***57***	***61***	***39***	7.1	***38***	***40***	22	***36***	33	28
Iron					35100	53100	32200	34100	43400	61200	30200	33000	19400	15800	16000	25800	14600	23800	32500	18000
Lead	35	91.3	32.5	35	17	24	19	17	17	19	16	17	7.4	3.3	6.8	9.3	6.4	8.4	8.6	7.2
Lithium					17	22	19	18	17	16	15	15	13	7.9	11	9.8	9.9	10	8.5	8.5
Magnesium					9980	12000	9310	9260	9010	8660	8380	8900	7170	5250	5640	6450	6640	6590	6130	6480
Manganese					307	583	309	349	414	468	357	408	210	408	194	407	236	302	861	301
Mercury	0.17	0.486	0.104	0.17	0.059	0.052	0.049	0.099	0.099	0.097	0.096	0.096	0.011	*<0.0050*	0.009	0.030	0.018	0.029	0.032	0.021
Molybdenum					4.3	5.1	4.1	3.2	3.7	6.0	2.8	2.9	2.6	*<0.50*	2.1	3.8	1.4	2.5	3.2	3.0
Nickel					123	194	127	105	102	109	99	107	79	37	84	88	64	78	86	66
Phosphorus					632	1220	871	868	911	951	764	796	504	345	375	697	518	664	736	498
Potassium					2860	3840	2900	3090	2950	2990	2710	2990	1310	650	1090	1470	1210	1460	1380	1230
Selenium					0.90	1.4	0.95	0.63	0.63	0.84	0.61	0.67	0.54	*<0.20*	0.50	0.56	0.34	0.51	0.56	0.36
Silver					0.46	0.55	0.54	0.42	0.42	0.48	0.43	0.44	0.13	*<0.10*	0.15	0.18	*<0.10*	0.16	0.13	0.11
Sodium					160	210	150	424	442	520	304	338	*<100*	*<100*	*<100*	430	390	555	522	297
Strontium					18	21	21	25	24	24	20	21	26	17	20	26	26	27	24	20
Thallium					0.30	0.38	0.33	0.25	0.22	0.25	0.22	0.25	0.091	*<0.050*	0.088	0.093	0.060	0.079	0.081	0.064
Tin					*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*
Titanium					509	744	556	528	510	565	451	481	325	245	237	269	333	258	241	261
Uranium					13	18	15	12	12	14	11	11	4.4	1.6	4.2	4.1	2.5	3.6	3.5	3.0
Vanadium					42	56	42	40	40	43	36	38	24	14	19	24	19	23	22	21
Zinc*	123	315	121.3		***141***	***154***	***147***	110	109	***129***	99	110	63	25	54	60	44	54	55	45

Notes:

[1] 2014 data presented here was adapted from Portt and Associates (2015a).

[2] CCME (Canadian Council of Ministers of the Environment) Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, 1999, updated in 2002. ISQG = Interim freshwater Sediment Quality Guideline. ISQG = Interim sediment quality guideline; PEL = probable effect level.

[3] Trigger and threshold values are described in (Azimuth, 2015b). Thresholds are set equal to CCME ISQG guidelines, where available.

* CCME guideline not used as threshold value because threshold value is lower than trigger v

123 Bold italicized concentrations exceed the ISQG guideline.

123 Bordered concentrations exceed the PEL guideline.

123 Bolded and shaded concentrations also exceed the trigger value.

Italicized numbers are below detection limits.

Table 3-1. Conventional sediment grab chemistry, particle size, and total metals concentrations, Whale Tail Pit Baseline, 2014 and 2015.

Baseline Year	CCME (2002) Guideline[2]		Meadowbank Triggers and Thresholds		Inuggugayualik Lake (INUG)					Pipedream Lake (PDL)				
Baseline Program Basin Name & Code					2015 Baseline					2015 Baseline				
Area-Replicate ID					INUG-1	INUG-2	INUG-3	INUG-4	INUG-5	PDL-1	PDL-2	PDL-3	PDL-4	PDL-5
Date	**ISQG**	**PEL**	**Trigger[3]**	**Threshold[3]**	27-Aug-15	27-Aug-15	27-Aug-15	27-Aug-15	27-Aug-15	26-Aug-15	26-Aug-15	26-Aug-15	26-Aug-15	26-Aug-15
Physical & Organic Parameters														
Moisture (%)					82	85	85	86	84	86	79	79	81	78
pH					6.0	6.1	5.8	5.7	5.7	5.9	6.3	6.2	6.2	5.9
Total Organic Carbon (% dw)					3.8	4.4	4.9	4.9	3.8	5.1	2.5	2.4	2.7	2.5
Particle Size														
% Gravel (>2mm)					*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*
% Sand (2.00mm - 0.063mm)					5.6	6.3	3.5	2.7	3.1	10.0	15	5.7	5.8	14
% Silt (0.063mm - 4µm)					85	80	82	83	80	78	75	75	77	79
% Clay (<4µm)					9.8	14	15	14	17	12	9.9	19	17	7.6
Total Metals (mg/kg dw)														
Aluminum					19300	20900	20400	20100	18300	17400	19200	23600	22000	16700
Antimony					0.19	0.18	0.20	0.23	0.18	0.26	0.23	0.29	0.30	0.26
Arsenic*	5.9	17	120.0		***121***	***11***	***17***	***62***	***135***	***12***	***13***	***53***	***39***	***60***
Barium					109	126	128	132	109	99	96	109	99	82
Beryllium					1.3	1.4	1.4	1.4	1.2	0.94	1.0	1.2	1.2	0.83
Bismuth					1.1	1.2	1.3	1.2	1.1	0.77	0.89	1.2	1.1	0.73
Cadmium*	0.6	3.5	1.10		0.15	0.23	0.29	0.30	0.16	0.28	0.13	0.22	0.13	0.19
Calcium					1900	2280	2150	2110	1730	2660	2470	2320	2390	2390
Chromium*	37.3	90	114.3		***99***	***110***	***107***	***105***	***95***	***121***	***131***	***160***	***149***	***117***
Cobalt					12	11	11	13	14	10	12	21	18	15
Copper*	35.7	197	126.0		***43***	***46***	***48***	***48***	***42***	***45***	***43***	***63***	***54***	***37***
Iron					91900	37500	44900	70900	129000	26200	29900	50700	44300	50300
Lead	35	91.3	32.5	35	13	14	16	16	12	14	14	17	17	13
Lithium					26	29	28	28	25	27	29	35	33	25
Magnesium					8660	9450	9070	9120	8190	9700	10500	12200	11600	9590
Manganese					1060	712	660	1060	1440	265	338	2100	1160	675
Mercury	0.17	0.486	0.104	0.17	0.028	0.032	0.040	0.043	0.027	0.021	0.014	0.013	0.016	0.018
Molybdenum					6.8	3.3	3.9	4.9	13	1.8	2.2	4.3	3.3	5.0
Nickel					68	78	79	85	72	80	78	114	90	78
Phosphorus					2650	810	1080	1820	2010	517	508	582	519	598
Potassium					3340	3600	3450	3360	3050	2670	2970	3560	3350	2550
Selenium					0.59	0.54	0.64	0.74	0.63	0.42	0.38	0.24	0.35	0.40
Silver					0.15	0.18	0.22	0.23	0.15	0.25	0.18	*<0.10*	*<0.10*	0.15
Sodium					231	314	343	320	225	282	192	216	223	197
Strontium					24	26	25	24	21	23	25	26	26	23
Thallium					0.19	0.21	0.21	0.21	0.19	0.17	0.18	0.23	0.21	0.17
Tin					*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*	*<2.0*
Titanium					544	601	550	517	474	530	617	617	597	584
Uranium					14	16	17	17	14	7.5	7.8	12	11	6.4
Vanadium					34	37	37	35	32	33	38	45	42	34
Zinc*	123	315	121.3		82	86	91	91	82	77	77	96	87	71

Notes:

[1] 2014 data presented here was adapted from Portt and Associates (2015a).

[2] CCME (Canadian Council of Ministers of the Environment) Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, 1999, updated in 2002. ISQG = Interim freshwater Sediment Quality Guideline. ISQG = Interim sediment quality guideline; PEL = probable effect level.

[3] Trigger and threshold values are described in (Azimuth, 2015b). Thresholds are set equal to CCME ISQG guidelines, where available.

* CCME guideline not used as threshold value because threshold value is lower than trigger v

123 Bold italicized concentrations exceed the ISQG guideline.

123 Bordered concentrations exceed the PEL guideline.

123 Bolded and shaded concentrations also exceed the trigger value.

Italicized numbers are below detection limits.

Table 3-2. Hydrocarbon and PAH concentrations in composite sediment grab samples, Whale Tail Pit Baseline, 2014 and 2015.

Baseline Year	CCME (2002) Guidelines[2]		2014 Baseline[1]			2015 Baseline			
Lake			Whale Tail Lake	Mammoth Lake	Nemo Lake	Whale tail Lake		Mammoth Lake	Nemo Lake
Area ID						WTN	WTS	MAM	NEM
Date	ISQG	PEL	5-Sep-14	4-Sep-14	6-Sep-14	22-Aug-15	21-Aug-15	24-Aug-15	23-Aug-15
Physical Parameters									
Moisture (%)			84.8	89.3	77.2	88.1	85.9	90.9	90.0
Aggregate Organics (mg/kg)									
Mineral Oil and Grease			1150	1690	720	*<525*	1690	1960	2990
Hydrocarbons (mg/kg)									
EPH10-19			*<540*	*<800*	*<380*	*<820*	*<680*	*<1100*	*<880*
EPH19-32			*<540*	*<800*	*<380*	*<820*	*<680*	*<1100*	*<880*
LEPH			*<540*	*<800*	*<380*	*<820*	*<680*	*<1100*	*<880*
HEPH			*<540*	*<800*	*<380*	*<820*	*<680*	*<1100*	*<880*
Polycyclic Aromatic Hydrocarbons (mg/kg)									
Acenaphthene	0.00671	0.0889	*<0.0050*	*<0.0050*	*<0.0050*	*<0.010*	*<0.0050*	*<0.015*	*<0.010*
Acenaphthylene	0.00587	0.128	*<0.0050*	*<0.0050*	*<0.0050*	*<0.010*	*<0.0050*	*<0.015*	*<0.010*
Anthracene	0.0469	0.245	*<0.0040*	*<0.0040*	*<0.0040*	*<0.0080*	*<0.0040*	*<0.012*	*<0.0080*
Benzo(a)anthracene	0.0317	0.385	*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
Benzo(a)pyrene	0.0319	0.782	*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
Benzo(b)fluoranthene			*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
Benzo(b+j+k)fluoranthene			*<0.015*	*<0.015*	*<0.015*	*<0.028*	*<0.015*	*<0.042*	*<0.028*
Benzo(g,h,i)perylene			*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
Benzo(k)fluoranthene			*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
Chrysene	0.0571	0.862	*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
Dibenz(a,h)anthracene	0.00622	0.135	*<0.0050*	*<0.0050*	*<0.0050*	*<0.010*	*<0.0050*	*<0.015*	*<0.010*
Fluoranthene	0.111	2.355	*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
Fluorene	0.0212	0.144	*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
Indeno(1,2,3-c,d)pyrene			*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
2-Methylnaphthalene	0.0202	0.201	*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
Naphthalene	0.0346	0.391	*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
Phenanthrene	0.0419	0.515	*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
Pyrene	0.053	0.875	*<0.010*	*<0.010*	*<0.010*	*<0.020*	*<0.010*	*<0.030*	*<0.020*
d10-Acenaphthene (%)			88.8	95.0	87.6	95.2	97.0	87.7	94.4
d12-Chrysene (%)			083.8	099.3	106.9	113.5	121.5	115.7	122.1
d8-Naphthalene (%)			84.6	91.6	86.5	90.2	92.2	78.1	85.3
d10-Phenanthrene (%)			83.8	94.4	97.6	108.6	114.2	108.1	115.2
B(a)P Total Potency Equivalent			*<0.020*	*<0.020*	*<0.020*	*<0.020*	*<0.020*	*<0.029*	*<0.020*
IACR (CCME)			*<0.15*	*<0.15*	*<0.15*	*<0.21*	*<0.15*	*<0.32*	*<0.21*

Notes:

[1] 2014 data presented here was adapted from Portt and Associates (2015a).

[2] CCME (Canadian Council of Ministers of the Environment) Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, 1999, updated in 2002.

ISQG = Interim freshwater Sediment Quality Guideline

PEL = Probable effect level

123 Bold italicized concentrations exceed the ISQG guideline.

123 (bordered) Bordered concentrations exceed the PEL guideline.

Italicized numbers are below detection limits.

4. PHYTOPLANKTON

4.1. Methods Overview

4.1.1. Sample Collection

Baseline Lake phytoplankton sampling was completed by Portt and Associates in 2014 and Azimuth in 2015 according to the Meadowbank CREMP SOP (Azimuth 2015b). Unfiltered water samples were collected for phytoplankton taxonomy from the Lake stations[7] concurrent with water samples collected for analysis of chlorophyll-*a* and other parameters discussed in **Section 2**. Baseline sampling for 2014 study was completed in early September. Sampling for the 2015 baseline program was completed monthly during the open water season (July, August, and September). Water samples were collected from 3 m using the pump and tubing system described above (**Section 2.1.1**) and preserved using Lugol's iodine solution.

4.1.2. Laboratory Methods

Phytoplankton samples were submitted to Plankton-R-Us Inc. (Winnipeg, MB) for taxonomy and biomass measurements for the 2014 and 2015 baseline studies. For the analysis, 10-mL aliquots of preserved sample were gravity settled for 24 hours. Counts were performed on an inverted microscope at magnifications of 125X, 400X, and 1200X with phase contrast illumination. Cell counts were performed using the Ütermohl technique as modified by Nauwerck (1963). Cell counts were converted to wet weight biomass (mg/m^3) by estimating cell volume. Estimates of cell volume for each species were obtained by measurements of up to 50 cells of an individual species and applying the geometric formula best fitted to the shape of the cell (Vollenweider, 1968; Rott, 1981). A specific gravity of 1 was assumed for cellular mass. All biomass (mg/m^3) and density (cells/L) estimates are summed by major taxa, per area.

4.1.3. Data Handling and Analysis

Phytoplankton taxonomy data from the 2014 baseline study were provided to Azimuth by Portt and Associates. Density and biomass results from 2014 and 2015 were tabulated in Microsoft Excel and plotted using R software. Chlorophyll-*a* data were tabulated and presented with other water quality data in **Section 2.3.1**. Density (mg/L) and biomass (mg/m^3) were discussed at the major taxa group level of identification, specifically, cyanophytes (blue green algae), chlorophytes (green algae), chrysophytes (golden-brown algae), diatoms, cryptophytes and dinoflagellates. Taxonomy, biomass, and chlorophyll-*a* results from the Whale Tail Pit Study Area Lakes were qualitatively compared against the results from the reference areas PDL and INUG.

4.2. Quality Assurance / Quality Control

4.2.1. QA/QC Methods

Field duplicates were collected for phytoplankton during each sampling event in coordination with water sample duplicates. The duplicates were taken to assess sampling variability and sample homogeneity. A RPD of 50% for total density and total biomass concentrations is considered acceptable.

As a measure of laboratory QA/QC on the enumeration method, replicate counts are performed on 10% of the samples. Replicate samples are chosen at random and processed at different times from the

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[7] Phytoplankton samples were not collected at the Sentinel or Tributary stations.

original analysis to reduce biases. The laboratory replicate is a new aliquot (10 mL) from the sample jar and is counted from the start in the same manner as the original aliquot (10 mL) taken from the jar. A RPD of 25% for total density and total biomass concentrations is considered acceptable for laboratory duplicates.

4.2.2. QA/QC Results

Results of the QA/QC assessment for the 2014 and 2015 phytoplankton data are presented in **Appendix A2**. The laboratory duplicate results and field duplicate results are presented in **Table A2ï1** and **Table A2ï2**, respectively. Field and laboratory duplicates RPDs for total density and total biomass mostly met the DQOs (i.e., < 25% for laboratory and < 50% for field) with the exception of total density in the August 2015 field duplicate that slightly exceeded the DQO by approximately 2% (i.e., RPD value of 51.9%).

4.3. Results

Phytoplankton data from September 2014 samples collected by Portt and Associates (2015a) are presented in **Table 4ï1** (biomass) and **Table 4ï2** (density and richness). Results from the 2015 baseline program completed by Azimuth in July, August, and September 2015 are shown in **Table 4ï3** (biomass) and **Table 4ï4** (density and richness).

Six major taxonomic groups of phytoplankton are present in the study lakes, namely blue green algae (*Cyanophyta*), green algae (*Chlorophyta*), golden-brown algae (*Chrysophyta*), diatoms, *Cryptophyta* and *Dinoflagellata*. Richness (at the lowest practical level [LPL] of taxonomy) was somewhat variable between sampling events, but the number of taxa present was generally between 30 and 40 in the 2014 (**Table 4ï2**) and 2015 (**Table 4ï4**) baseline surveys, similar to the number of taxa reported at the reference stations in 2015. Furthermore, species richness at the Whale Tail Pit Study Area Lakes is similar to the long-term observation of between 35 and 40 taxa at PDL and INUG during the open water sampling events dating back to 2006 (Azimuth 2015b).

Phytoplankton density exceeded 1.5 million individuals per litre with total biomass ranging between approximately 100 mg/m^3 and 440 mg/m^3 during the open water season (July to September). These results are consistent with results from other lakes in the area sampled as part of the Meadowbank CREMP (Azimuth 2015b). Phytoplankton density in the summer is typically greater than 1 million individuals per liter, with average total biomass of approximately 200 mg/m^3 (Azimuth 2015b). Within the Whale Tail Pit Study Area, density and biomass were lowest in Nemo Lake and highest in Whale Tail Lake and Mammoth Lake in the 2014 (**Figure 4ï1**) and 2015 (**Figure 4ï3**) baseline studies. Lower primary productivity in Nemo Lake relative to Whale Tail Lake and Mammoth Lake is also evidenced by ultra-oligotrophic concentrations of chlorophyll-*a* (<0.5 µg/L; Villeneuve et al. 2001) during the open water period (**Table 2ï1** [2014],**Table 2ï2** [2015]). The ultra-oligotrophic status of Nemo Lake is similar to the long-term dataset for INUG and PDL where chlorophyll-*a* concentrations during the summer months range between 1 µg/L and 5 µg/L and have been relatively consistent dating back to 2006 (Azimuth 2015b).

Temporally, the highest phytoplankton density and biomass was observed during the July (2015) sampling event (**Figure 4ï3**). Chrysophytes (golden-brown algae) were the dominant major taxa group in terms of density and biomass in the 2014 and 2015 baseline studies (**Figure 4ï1** [2014] and **Figure 4ï3** [2015]). These results are consistent with observations of the phytoplankton community composition in lakes sampled as part of the Meadowbank CREMP (Azimuth 2015b). Chrysophyte density and biomass were greatest in July for all of the sampling areas, mirroring the pattern of higher total density and total biomass reported in this sampling event. Lower relative chrysophyte density and biomass in August and September coincided with a greater proportion of the phytoplankton community comprised of other major taxa groups, particularly chlorophytes (**Figure 4ï4** [2015]). It's important to note that seasonal production of phytoplankton can vary widely depending upon water temperature, nutrient concentration, time of year, water clarity and amount of sunlight, and predation by zooplankton.

Table 4-1. Phytoplankton biomass (mg/m^3) by major taxa group, Whale Tail Pit Baseline, 2014.

Lake	Sample	date	Biomass in mg/m^3 (percent of total in parentheses)						
			Cyanophyte	Chlorophyte	Chrysophyte	Diatoms	Cryptophytes	Dinoflagellates	Total Biomass
Whale Tail Lake	WHAL - 1	5/Sep/14	1 (0.6)	9.7 (5.3)	152 (83)	6.8 (3.7)	2.2 (1.2)	11 (5.9)	183
	WHAL - 3	5/Sep/14	19 (9)	5.1 (2.4)	156 (72)	9.9 (4.6)	10 (4.8)	15 (6.9)	215
	WHAL - 5	5/Sep/14	15 (5.5)	9.1 (3.4)	213 (80)	11 (4.3)	14 (5.3)	5.1 (1.9)	267
Mammoth Lake	LAK3 - 1	4/Sep/14	0 (0)	5.7 (2.1)	176 (66)	21 (7.9)	11.6 (4.3)	53 (20)	268
	LAK3 - 3	4/Sep/14	0.1 (0.1)	4.2 (1.6)	211 (81)	12 (4.5)	7.1 (2.7)	25 (10)	259
	LAK3 - 5	4/Sep/14	0.1 (0.05)	6 (2.1)	204 (71)	13 (4.5)	5 (1.8)	57 (20)	286
Nemo Lake	NEMO - 1	6/Sep/14	0.3 (0.2)	4.6 (3)	107 (70)	29 (19)	5.9 (4)	6.4 (4.2)	154
	NEMO - 3	6/Sep/14	0 (0)	3.3 (2)	121 (72)	26 (16)	7.8 (4.7)	10 (6)	168
	NEMO - 5	6/Sep/14	15 (11)	10 (7.9)	70 (54)	22.4 (17)	1.7 (1.3)	11 (8.7)	130

Notes:

Data presented here was adapted from Portt and Associates (2015a).

Biomass (wet weight) shown by major taxa group.

Table 4-2. Phytoplankton density (cells/L) and richness by major taxa group, Whale Tail Pit Baseline, 2014.

Lake	Sample	date	Richness (# of species)	Density in cells/L (percent of total in parentheses) Cyanophyte	Chlorophyte	Chrysophyte	Diatoms	Cryptophytes	Dinoflagellates	Total Density
Whale Tail Lake	WHAL - 1	5/Sep/14	35	14768 (1)	417272 (17)	1840104 (73)	215920 (8.6)	15768 (0.6)	15168 (0.6)	2,519,000
	WHAL - 3	5/Sep/14	38	57472 (2)	352016 (13)	1883208 (69)	356016 (13)	68856 (3)	16568 (0.6)	2,734,136
	WHAL - 5	5/Sep/14	38	50488 (2)	337848 (11)	2357352 (74)	324680 (10)	98792 (3)	800 (0.03)	3,169,960
Mammoth Lake	LAK3 - 1	4/Sep/14	35	0 (0)	302128 (8)	2474296 (67)	820176 (22)	74440 (2)	3600 (0.1)	3,674,640
	LAK3 - 3	4/Sep/14	34	400 (0.01)	466960 (14)	2245608 (66)	654344 (19)	38320 (1)	8984 (0.3)	3,414,616
	LAK3 - 5	4/Sep/14	35	600 (0.02)	524632 (14)	2554920 (69)	619624 (17)	23752 (1)	4800 (0.1)	3,728,328
Nemo Lake	NEMO - 1	6/Sep/14	35	1200 (0.05)	182000 (7)	1710792 (67)	605056 (24)	36920 (1)	600 (0.02)	2,536,568
	NEMO - 3	6/Sep/14	35	200 (0.01)	216920 (9)	1596248 (68)	476744 (20)	44904 (2)	7984 (0.3)	2,343,000
	NEMO - 5	6/Sep/14	34	50488 (3)	396320 (22)	898600 (50)	453992 (25)	14568 (1)	800 (0.04)	1,814,768

Notes:

Data presented here was adapted from Portt and Associates (2015a).

Species richness calculated at the lowest practical level (LPL) of identification.

Density shown by major taxa group.

Table 4-3. Phytoplankton biomass (mg/m^3) by major taxa group, Whale Tail Pit Baseline, 2015.

Station	Sample	date	Biomass in mg/m^3 (percent of total in parentheses)						
			Cyanophyte	Chlorophyte	Chrysophyte	Diatoms	Cryptophytes	Dinoflagellates	Total Biomass
WTN	WTN1-S	17/Jul/15	0 (0)	1.2 (0.3)	344 (95)	2.2 (0.6)	6.7 (1.8)	9.8 (2.7)	364
	WTN2-S	17/Jul/15	0 (0)	1 (0.4)	234 (86)	3.6 (1.3)	6.8 (2.5)	25 (9)	270
	WTN3-S	20/Aug/15	0.1 (0.1)	4.5 (2.5)	140 (76)	7.3 (4)	7.8 (4.2)	24 (13)	184
	WTN4-S	20/Aug/15	0 (0)	3.7 (2.4)	104 (68)	11 (7.2)	4.7 (3)	30 (20)	154
	WTN5-S	18/Sep/15	0.2 (0.1)	6 (2.5)	191 (79)	25 (10.4)	4.3 (1.8)	15.3 (6.3)	242
	WTN6-S	18/Sep/15	0.3 (0.1)	1.9 (0.8)	189 (83)	15 (6.6)	4.4 (1.9)	16.3 (7.2)	226
WTS	WTS1-S	17/Jul/15	0 (0)	1 (0.3)	284 (83)	6 (1.7)	20 (5.8)	30 (8.8)	340
	WTS2-S	17/Jul/15	0 (0)	1.3 (0.5)	211 (80)	5.4 (2)	12.8 (4.8)	35 (13)	265
	WTS3-S	21/Aug/15	3.5 (2)	11.1 (6.4)	122 (71)	8.4 (4.9)	2.9 (1.7)	24 (14)	173
	WTS4-S	21/Aug/15	2.7 (2)	5.9 (4.4)	112 (84)	5 (3.7)	2.1 (1.5)	6.3 (4.7)	134
	WTS5-S	18/Sep/15	0.9 (0.5)	1.6 (0.8)	158 (81)	20 (10)	4.5 (2.3)	10.1 (5.2)	195
	WTS6-S	18/Sep/15	0.1 (0)	13.6 (4.6)	248 (85)	17 (6)	8.8 (3)	4.5 (1.5)	293
MAM	MAM1-S	18/Jul/15	0 (0)	1.2 (0.4)	236 (85)	17.4 (6.3)	11 (4)	11.6 (4.2)	277
	MAM2-S	18/Jul/15	0 (0)	0.9 (0.5)	179 (92)	5.8 (3)	3.7 (1.9)	4.5 (2.3)	194
	MAM3-S	24/Aug/15	0.2 (0.1)	10.3 (6.5)	113 (71)	11.4 (7.2)	4.8 (3.1)	18.6 (11.8)	158
	MAM4-S	24/Aug/15	0 (0)	6.5 (4.8)	108 (79)	7.1 (5.2)	4.8 (3.5)	10.1 (7.4)	137
	MAM5-S	19/Sep/15	0.1 (0)	2.7 (1.2)	198 (87)	11.4 (5)	5.2 (2.3)	11.2 (4.9)	228
	MAM6-S	19/Sep/15	3.1 (1.5)	5.3 (2.5)	173 (81)	13.3 (6.2)	5.6 (2.6)	13.4 (6.2)	214
NEM	NEM1-S	18/Jul/15	0 (0)	1.8 (1.1)	121 (73)	13.4 (8.1)	12.3 (7.4)	17.1 (10.4)	165
	NEM2-S	18/Jul/15	0 (0)	3.3 (1.3)	205 (80)	13.9 (5.4)	12.9 (5)	21.6 (8.4)	257
	NEM3-S	23/Aug/15	0 (0)	20.9 (18.8)	59 (53)	23 (21)	2.1 (1.9)	6.3 (5.7)	111
	NEM4-S	23/Aug/15	0 (0)	15.7 (14.7)	70 (65)	19.1 (18)	0.3 (0.3)	1.8 (1.7)	107
	NEM5-S	19/Sep/15	0.7 (0.5)	6.7 (4.5)	115 (78)	17.9 (12)	0.6 (0.4)	6.5 (4.4)	147
	NEM6-S	19/Sep/15	0.6 (0.4)	5.2 (3.4)	133 (87)	7.9 (5.2)	1.9 (1.2)	4.1 (2.7)	152
INUG	INUG-70S	27/Jul/15	0 (0)	2.4 (0.6)	369 (89)	13.1 (3.2)	15 (3.6)	13.6 (3.3)	413
	INUG-71S	27/Jul/15	0 (0)	2.1 (0.5)	399 (91)	6.3 (1.4)	12.2 (2.8)	20.8 (4.7)	440
	INUG72S	27/Aug/15	0.1 (0.1)	5.8 (3.2)	157 (87)	13.3 (7.4)	1 (0.6)	2.3 (1.3)	179
	INUG73S	27/Aug/15	0.6 (0.3)	6.4 (3.2)	167 (83)	11.6 (5.8)	5.8 (2.9)	10 (5)	202
	INUG74S	1/Oct/15	3.4 (1.7)	6 (3)	156 (77)	21 (10)	9.7 (4.7)	8.1 (4)	204
	INUG75S	1/Oct/15	2 (1)	8.3 (4.3)	148 (77)	18 (9.4)	7 (3.7)	7.9 (4.2)	191
PDL	PDL37S	28/Jul/15	0 (0)	0.6 (0.3)	199 (87)	13.7 (6)	7.8 (3.4)	6.6 (2.9)	227
	PDL38S	28/Jul/15	0 (0)	0.1 (0)	230 (88)	10.2 (3.9)	6.3 (2.4)	15.1 (5.8)	262
	PDL39S	26/Aug/15	0.8 (0.5)	7.8 (5)	127 (81)	16.6 (10.6)	2.5 (1.6)	2.3 (1.5)	158
	PDL40S	26/Aug/15	0.9 (0.6)	5.3 (3.3)	135 (83)	16.3 (10.1)	2.2 (1.4)	2.1 (1.3)	162
	PDL41S	4/Oct/15	2.5 (1.8)	9 (6.5)	97 (71)	11.4 (8.3)	4 (2.9)	13.3 (9.7)	137

Notes:

Biomass (wet weight) shown by major taxa group.

Table 4-4. Phytoplankton density (cells/L) and richness by major taxa group, Whale Tail Pit Baseline, 2015.

Station	Sample	date	Richness (# of species)	Density in cells/L (percent of total in parentheses) Cyanophyte	Chlorophyte	Chrysophyte	Diatoms	Cryptophytes	Dinoflagellates	Total Density
WTN	WTN1-S	17/Jul/15	30	0 (0)	35920 (0.7)	4638096 (96)	65056 (1.3)	95592 (2)	1600 (0.03)	4,836,264
	WTN2-S	17/Jul/15	30	0 (0)	36120 (0.9)	3971584 (96)	67856 (1.6)	68656 (2)	10384 (0.2)	4,154,600
	WTN3-S	20/Aug/15	33	800 (0.04)	165432 (8)	1567312 (76)	131512 (6)	165232 (8)	23552 (1.1)	2,053,840
	WTN4-S	20/Aug/15	35	400 (0.02)	158248 (10)	1201128 (73)	146480 (9)	100576 (6)	44704 (2.7)	1,651,536
	WTN5-S	18/Sep/15	37	600 (0.02)	237472 (9)	2011736 (75)	362216 (13)	52088 (2)	22752 (0.8)	2,686,864
	WTN6-S	18/Sep/15	38	1800 (0.07)	143680 (6)	2094344 (83)	228520 (9)	65456 (3)	2200 (0.09)	2,536,000
WTS	WTS1-S	17/Jul/15	29	0 (0)	50288 (1.1)	3985568 (89)	97592 (2)	299144 (7)	23952 (0.5)	4,456,544
	WTS2-S	17/Jul/15	35	0 (0)	72040 (2.3)	2880616 (92)	54488 (2)	113360 (4)	4000 (0.1)	3,124,504
	WTS3-S	21/Aug/15	40	72840 (3)	366984 (15)	1703008 (72)	177016 (7)	50288 (2)	3600 (0.2)	2,373,736
	WTS4-S	21/Aug/15	35	57472 (3)	323880 (17)	1315472 (70)	133312 (7)	35920 (2)	8184 (0.4)	1,874,240
	WTS5-S	18/Sep/15	33	29936 (1)	122128 (5)	1851888 (77)	298960 (13)	72640 (3)	15768 (0.7)	2,391,320
	WTS6-S	18/Sep/15	37	600 (0.02)	173616 (5)	2737520 (81)	323512 (10)	144880 (4)	7584 (0.2)	3,387,712
MAM	MAM1-S	18/Jul/15	32	0 (0)	71840 (2)	3346560 (91)	157864 (4)	99392 (3)	13384 (0.4)	3,689,040
	MAM2-S	18/Jul/15	26	0 (0)	57472 (2)	2900952 (94)	87608 (3)	37720 (1)	1200 (0.04)	3,084,952
	MAM3-S	24/Aug/15	38	1000 (0.05)	424056 (21)	1323256 (65)	187200 (9)	72840 (4)	23752 (1.2)	2,032,104
	MAM4-S	24/Aug/15	37	400 (0.02)	359600 (16)	1604632 (73)	151080 (7)	73040 (3)	9184 (0.4)	2,197,936
	MAM5-S	19/Sep/15	36	600 (0.02)	316696 (11)	2149432 (78)	223368 (8)	79624 (3)	1200 (0.04)	2,770,920
	MAM6-S	19/Sep/15	37	57472 (2.1)	359400 (13)	2023120 (72)	265688 (10)	87008 (3)	1600 (0.1)	2,794,288
NEM	NEM1-S	18/Jul/15	28	0 (0)	36120 (2)	1975816 (85)	245488 (11)	69256 (3)	2000 (0.09)	2,328,680
	NEM2-S	18/Jul/15	31	0 (0)	65056 (2)	2694616 (86)	259272 (8)	104576 (3)	9384 (0.3)	3,132,904
	NEM3-S	23/Aug/15	30	0 (0)	424456 (27)	900400 (57)	218120 (14)	43104 (3)	7384 (0.5)	1,593,464
	NEM4-S	23/Aug/15	29	400 (0.03)	395720 (30)	636792 (49)	266408 (20)	7184 (1)	200 (0.02)	1,306,704
	NEM5-S	19/Sep/15	30	15368 (0.99)	266408 (17)	974256 (62)	288760 (19)	7384 (0)	7584 (0.5)	1,559,760
	NEM6-S	19/Sep/15	35	14968 (0.84)	208936 (12)	1320688 (74)	209136 (12)	29336 (2)	400 (0.02)	1,783,464
INUG	INUG-70S	27/Jul/15	30	0 (0)	172616 (6)	2061504 (77)	296744 (11)	140096 (5)	800 (0.03)	2,671,760
	INUG-71S	27/Jul/15	33	0 (0)	129712 (5)	2190616 (87)	117144 (5)	57688 (2)	8784 (0.35)	2,503,944
	INUG72S	27/Aug/15	35	400 (0.02)	196768 (11)	1419448 (77)	210336 (11)	14768 (1)	7184 (0.39)	1,848,904
	INUG73S	27/Aug/15	37	7584 (0.33)	211536 (9)	1671288 (73)	260424 (11)	114944 (5)	8384 (0.4)	2,274,160
	INUG74S	1/Oct/15	40	66056 (2.67)	274992 (11)	1734744 (70)	305544 (12)	72640 (3)	21752 (0.88)	2,475,728
	INUG75S	1/Oct/15	39	14968 (0.62)	209736 (9)	1734144 (72)	356232 (15)	79424 (3)	21552 (0.9)	2,416,056
PDL	PDL37S	28/Jul/15	28	0 (0)	36320 (2)	1790048 (85)	225112 (11)	59872 (3)	1400 (0.07)	2,112,752
	PDL38S	28/Jul/15	23	0 (0)	14368 (1)	1986416 (88)	207552 (9)	38920 (2)	10584 (0.5)	2,257,840
	PDL39S	26/Aug/15	32	9184 (0.49)	244456 (13)	1361176 (72)	219520 (12)	43504 (2)	600 (0.03)	1,878,440
	PDL40S	26/Aug/15	32	3800 (0.22)	123328 (7)	1370160 (79)	213536 (12)	22952 (1)	400 (0.02)	1,734,176
	PDL41S	4/Oct/15	30	7400 (0.47)	359200 (23)	939920 (60)	219520 (14)	22152 (1)	14968 (1)	1,563,160

Notes:

Species richness calculated at the lowest practical level (LPL) of identification.

Density shown by major taxa group.

Figure 4‑1. Phytoplankton density (cells/L) and biomass (mg/m^3) by major taxa group, Whale Tail Pit Baseline, 2014.

Notes: See text for information on the major taxa groups (MTG). Samples were collected in early September 2014.

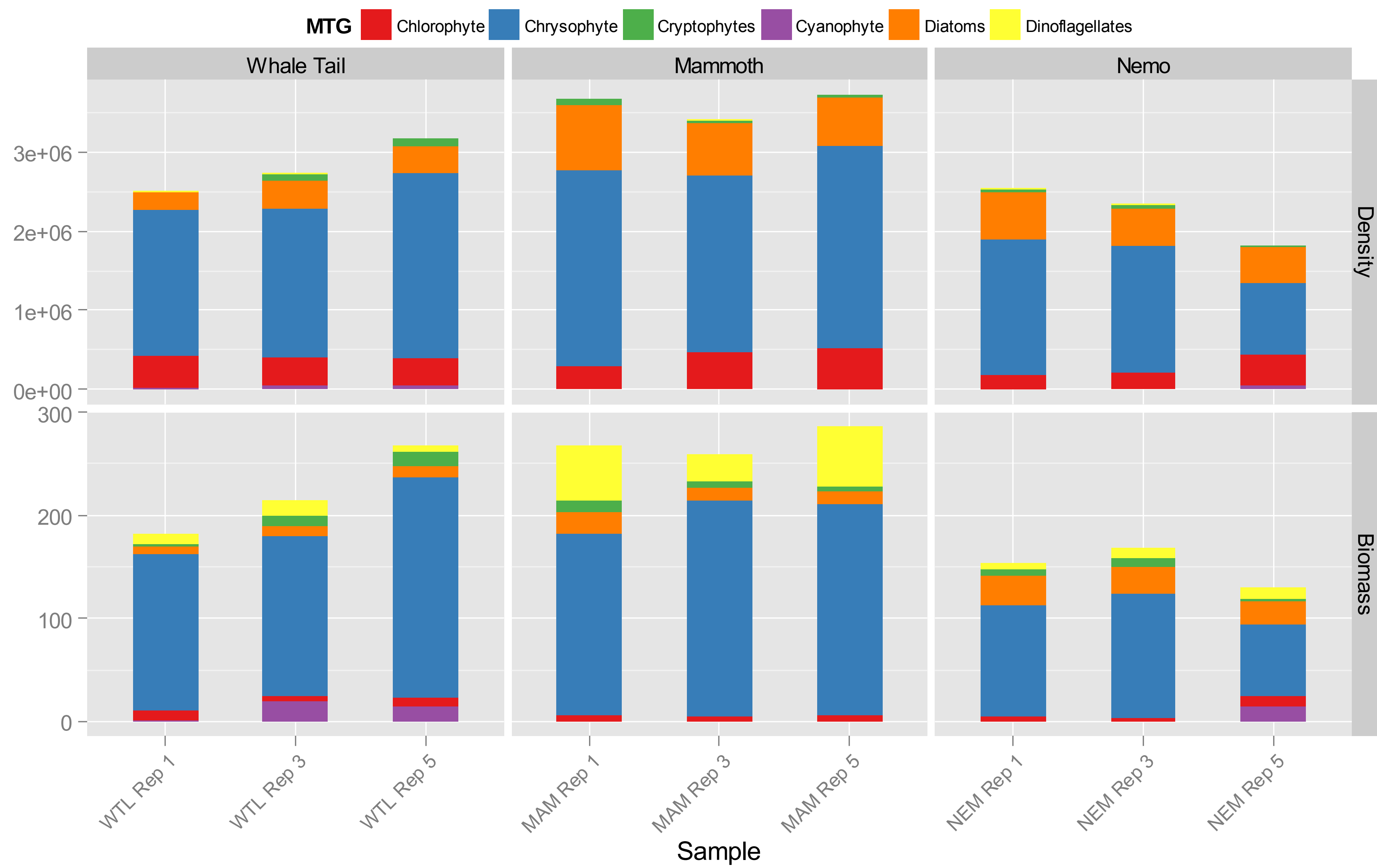


Figure 4ï2. Percent phytoplankton density and biomass by major taxa group, Whale Tail Pit Baseline, 2014.

Notes: See text for information on the major taxa groups (MTG). Samples were collected in early September 2014.

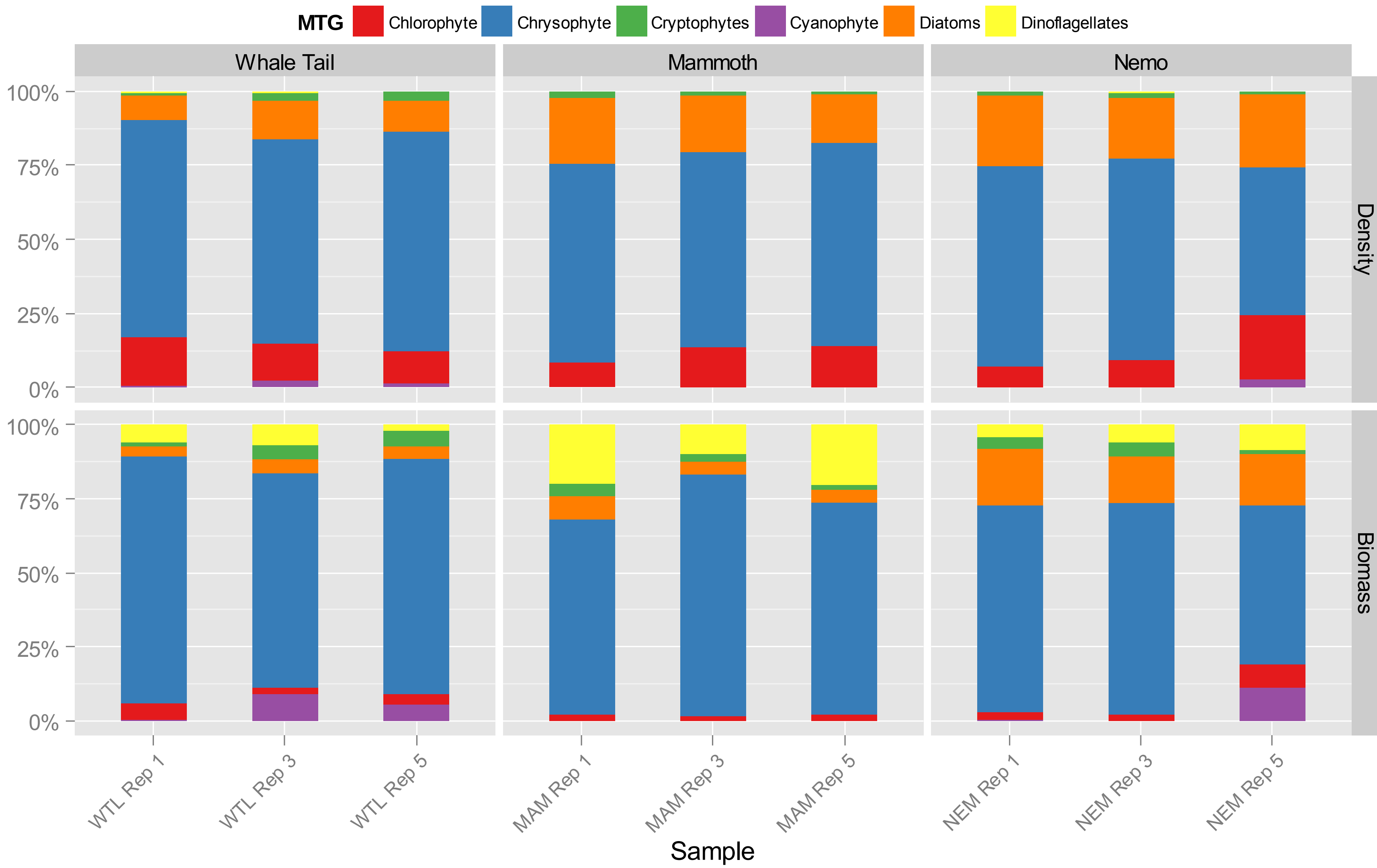


Figure 4ï3. Phytoplankton density (cells/L) and biomass (mg/m^3) by major taxa group, Whale Tail Pit Baseline, 2015.

Notes: See text for information on the major taxa groups (MTG). Vertical dashed lines separate the samples by sampling event (i.e., July, August, and September).

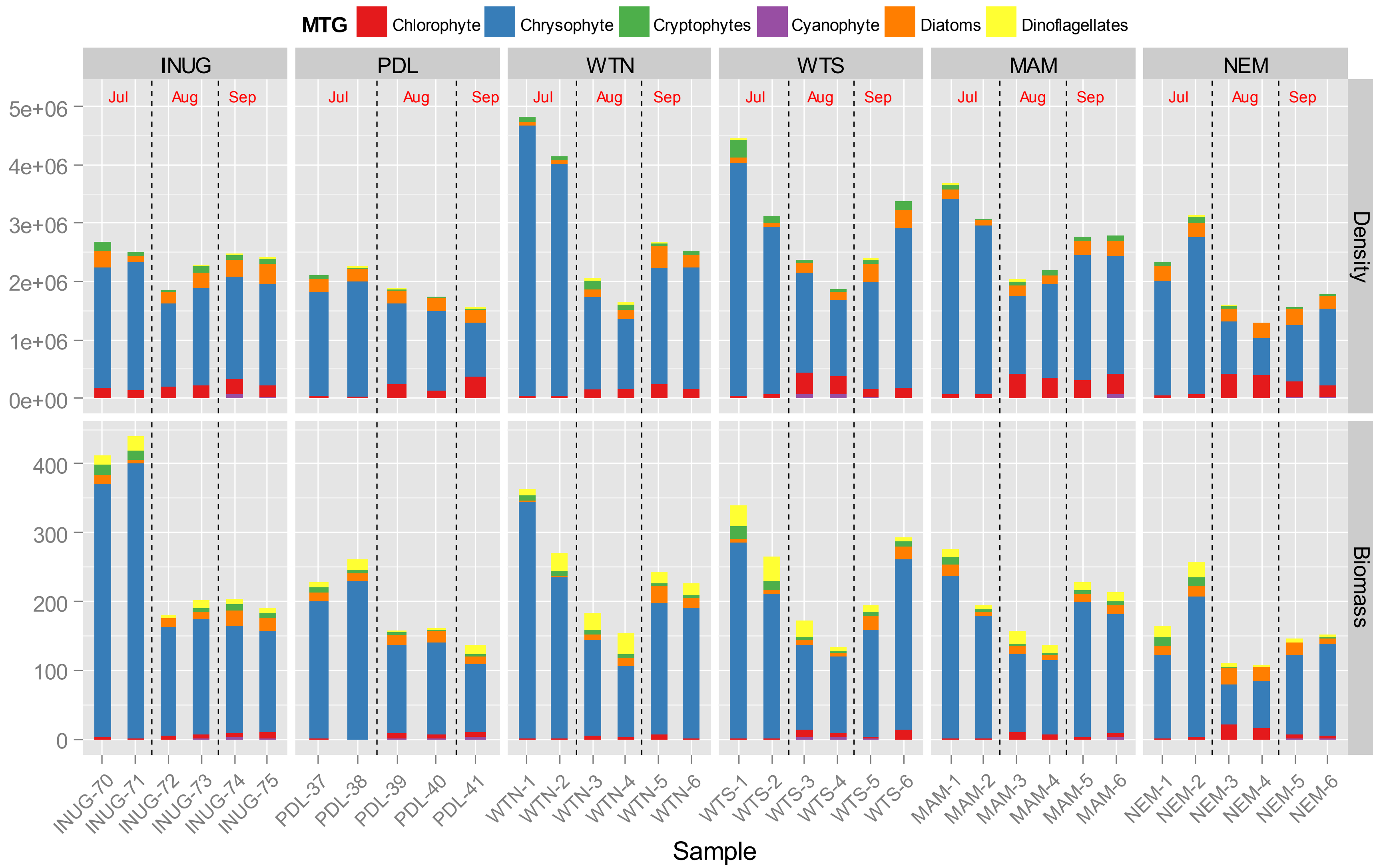
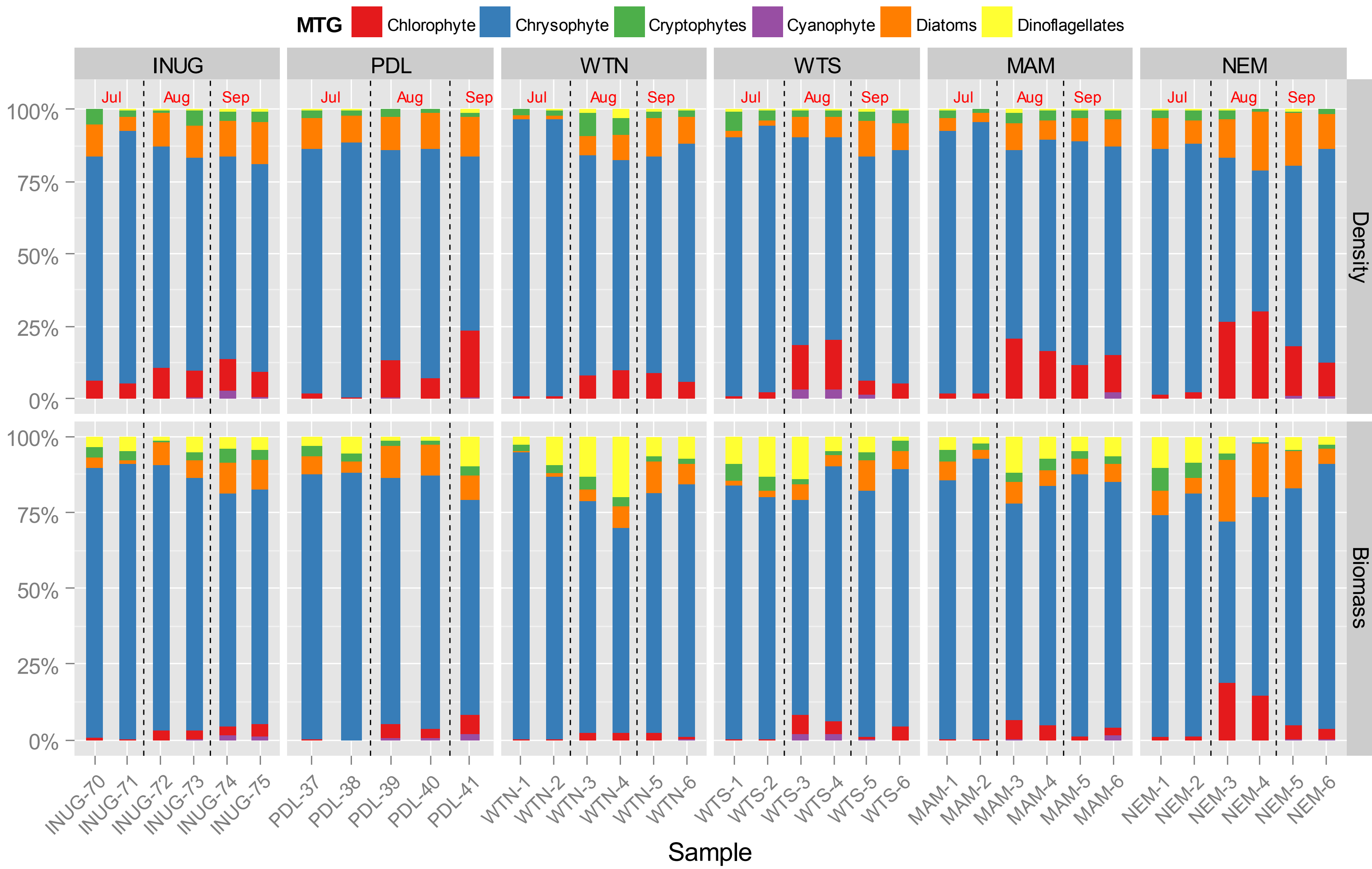


Figure 4ï4. Percent phytoplankton density and biomass by major taxa group, Whale Tail Pit Baseline, 2015.

Notes: See text for information on the major taxa groups (MTG). Vertical dashed lines separate the samples by sampling event (i.e., July, August, and September).



5. BENTHIC INVERTEBRATES

5.1. Methods Overview

5.1.1. Sample Collection

Benthic invertebrate samples were collected according to methods outlined in the Meadowbank CREMP SOP (Azimuth 2015b) for the 2014 and 2015 baseline programs. Samples were collected using a Petite Ponar grab (0.023 m^2) and a 500-µm sieve at the same time and locations as sediment chemistry samples. For the 2014 baseline program, five locations were established throughout each lake at the target depth to assess variability in the benthic invertebrate community at the spatial scale of the entire lake. The 2015 baseline program was designed according to the Meadowbank CREMP with five replicates established over a smaller spatial area (~ 100 m radius) to assess the spatial variability in the benthic invertebrate community at the level of the basin, consistent with the approach used in the Meadowbank CREMP. At each replicate station, two independent grabs were composited to form a single sample. Benthic invertebrate samples were preserved in the field using neutral buffered formalin to final concentration of approximately 10% formalin. Each sample had enough water and formalin to completely cover any debris in the sample. Lastly, an internal water-proof label was added to each replicate sample, and the lids were sealed with electrical tape.

5.1.2. Laboratory Methods

Different taxonomists were used for sample identification in 2014 and 2015, but the taxonomic identification methods were similar between years. Taxonomic analysis of the 2014 samples was completed William Morton and Dr. G.L. Mackie at the LPL of taxonomic resolution. A detailed description of the laboratory methods used in 2014 is presented in Portt and Associates (2015a).

Samples collected in 2015 were sent to Zaranko Environmental Assessment Services (ZEAS; Nobleton, ON), the same lab used for the Meadowbank CREMP, for taxonomic identification and analysis. Upon arrival at ZEAS, samples were logged and inspected upon arrival to ensure adequate preservation to a minimum concentration of 10% buffered formalin. Samples were sorted at a magnification of between 7 and 10-times with the use of a stereomicroscope. To expedite sorting prior to processing, all samples were stained with a protein dye that is absorbed by aquatic organisms but not by organic material, such as detritus and algae. Prior to sorting, samples were washed free of formalin in a 500-µm sieve. Benthic invertebrates were enumerated and sorted into major taxonomic groups, (i.e., order and family), placed in glass bottles and re-preserved in 80% ethanol for more detailed taxonomic analysis by senior staff. Each bottle was labeled internally with the survey name, date, area and replicate number.

Abundance of organisms/m^2 was determined from the total number of organisms enumerated. Nematods (phylum *Nemata*) and ostracods were not reported, nor were they included in abundance and richness calculations consistent with taxonomic methods outlined by Environment Canada (2012). Organisms at pupal stage of development were excluded from the species richness totals in each sample unless they were the only stage identified in the sample.

5.1.3. Data Handling and Analysis

The benthic invertebrate results (abundance and richness) were grouped by major taxa, specifically oligochaetes (phyla *Annelida*), insects (class *Insecta*), molluscs (phylum *Mollusca*), and other taxa (phylum *Arthropoda* and phylum *Platyhelminthes*). Data were tabulated in Microsoft Excel and plotted using R software.

5.2. Quality Assurance / Quality Control

5.2.1. QA/QC Methods

No information was provided on the QA/QC method used by William Morton and Dr. G.L. Mackie in their taxonomic identifications. ZEAS incorporates the following set of QA/QC procedures in all benthic projects undertaken by the company to ensure the generation of high quality and reliable data:

- Samples are logged upon arrival, inspected, and enumerated;
- Samples are checked for proper preservation;
- Samples are stained to facilitate sorting;
- Taxonomic identifications are based on the most updated and widely used keys;
- 10% of the samples are re-sorted, and re-counted, targeting >90% recovery;
- Precision and accuracy estimates are calculated;
- A voucher collection is compiled;
- Sorted sediments and debris are re-preserved in 10% formalin and are retained for up to three months. For samples subject to subsampling, sorted and unsorted fractions are re-preserved separately.

5.2.2. QA/QC Results

Results of the QA/QC assessment for the 2015 benthic invertebrate data are presented in **Appendix A2**. Samples were sorted in their entirety due to low overall abundance. Three samples were resorted, and the lowest percent recovery was 93%, with an average percent recovery of 95% (**Table A2ï3**).

5.3. Results

Abundance and richness of benthic invertebrates from the 2014 baseline program are presented in **Table 5ï1** and shown in **Figure 5ï1** (abundance and richness [per m^2]) and **Figure 5ï2** (percent abundance and richness). The tabulated data presented here were adapted from the original laboratory data presented in the 2014 baseline report (Portt and Associates 2015a).

Results of the 2015 baseline benthic invertebrate community assessment are presented in **Table 5ï2** and shown in **Figure 5ï3** (abundance and richness [per m^2]) and **Figure 5ï4** (percent abundance and richness). Raw benthic invertebrate data from ZEAS are included as **Appendix F**.

Overall abundance and richness was low at most locations sampled in 2014 and 2015, characteristic of depositional areas in northern lakes with low productivity and nutrient cycling. Insects, primarily chironomids in the subfamilies *Chironominae* and *Tanypodinae*, and fingernail clams (*Sphaeriidae*) were the dominant benthic invertebrate taxa in the Whale Tail Pit Study Area Lakes (2014 and 2015) and CREMP reference areas (2015). Abundance and richness in the reference areas was approximately 1,700 organisms/m^2 and 13 taxa at INUG and 1,200 organisms/m^2 and 9 taxa at PDL. Average taxa richness in the 2014 baseline study was 11 at Whale Tail Lake, 9 at Nemo Lake, and 12 at Mammoth Lake (**Table 5ï1**). The 2014 baseline study shows there is considerable within-lake variability in the benthic invertebrate community abundance despite similar water depths (**Figure 5ï1**). In 2015, taxa richness ranged between 11 (WTN) and 16 (WTN-Ex) (**Table 5ï2**). Overall, the abundance and richness at the reference areas in 2015 were within the historical range reported for these areas (Azimuth 2015b). With the exception of WTN, abundance was generally higher at the Lake stations in 2015 compared to the reference areas. The highest abundance (over 8,000 mg/m^2) was reported in a sample from Mammoth

Lake, which was also the area with the highest spatial variability in abundance of the lakes/basins sampled in 2015. On average, however, the highest abundance was observed at WTN-Ex (5,300 organisms/m^2). The higher abundance was due primarily to increased abundance of chironomids in the genus *Corynocera* and fingernail clams *Cyclocalyx / Neopisidium*. At WTN, the lower overall abundance was due primarily to a reduction in the number of chironomid larvae.

The abundance and species composition of benthic invertebrates are strongly affected by water depth, substrate size and organic carbon. Other physical factors, such as water temperature, influence larval development rates and ultimately timing of hatching for insect larvae.

Table 5-1. Benthic invertebrate abundance (#/m^2) and richness (# taxa) by major taxa group, Whale Tail Pit Baseline, 2014.

Lake & Replicate	Depth (m)	Abundance (#/m^2)				Total Abundance	Richness (# taxa)				Total Richness
		Oligochaetes	Insects	Molluscs	Other Taxa		Oligochaetes	Insects	Molluscs	Other Taxa	
Whale Tail Lake											
Rep 1	8.5	0	9217	870	0	10087	0	8	2	0	10
Rep 2	7.8	22	2130	261	65	2478	1	9	1	2	13
Rep 3	8.0	22	1435	217	0	1674	1	6	1	0	8
Rep 4	7.8	65	1261	174	0	1500	1	8	2	0	11
Rep 5	8.0	22	1783	326	0	2130	1	8	2	0	11
Lake Mean		***26***	***3165***	***370***	***13***	***3574***	***1***	***8***	***2***	***0***	***11***
Nemo Lake											
Rep 1	7.6	0	3043	261	0	3304	0	7	1	0	8
Rep 2	7.4	65	1435	348	0	1848	1	8	1	0	10
Rep 3	8.3	22	478	370	0	870	1	7	2	0	10
Rep 4	8.5	22	435	65	22	543	1	5	2	1	9
Rep 5	8.7	43	500	65	22	630	1	7	1	1	10
Area Mean		***30***	***1178***	***222***	***9***	***1439***	***1***	***7***	***1***	***0***	***9***
Mammoth Lake											
Rep 1	8.1	196	1391	283	22	1891	2	9	2	1	14
Rep 2	7.3	22	891	478	22	1413	1	9	1	1	12
Rep 3	8.3	22	1739	326	0	2087	1	9	1	0	11
Rep 4	7.4	43	5478	239	0	5761	1	8	2	0	11
Rep 5	7.3	22	4696	326	22	5065	1	7	2	1	11
Area Mean		***61***	***2839***	***330***	***13***	***3243***	***1***	***8***	***2***	***1***	***12***

Notes:

Data presented here were adapted from Portt and Associates (2015a).

[1] Other taxa: (Hygrobatidae, Lebertiidae, and Platyhelminthes).

Table 5-2. Benthic invertebrate abundance (#/m^2) and richness (# taxa) by major taxa group, Whale Tail Pit Baseline, 2015.

Area-Replicate	Depth (m)	Abundance (#/m^2)				Total Abundance	Richness (# taxa)				Total Richness
		Oligochaetes	Insects	Molluscs	Other Taxa		Oligochaetes	Insects	Molluscs	Other Taxa	
Inuggugayualik Lake											
INUG-1	7.0	22	565	348	0	935	1	7	2	0	10
INUG-2	6.5	43	1696	630	0	2370	1	13	3	0	17
INUG-3	7.4	130	1609	457	65	2261	1	10	3	2	16
INUG-4	8.5	22	1304	391	0	1717	1	9	2	0	12
INUG-5	8.5	43	935	435	0	1413	1	6	2	0	9
Area Mean		***52***	***1222***	***452***	***13***	***1739***	***1***	***9***	***2***	***0***	***13***
Pipedream Lake											
PDL-1	6.5	0	1239	196	0	1435	0	9	2	0	11
PDL-2	6.7	87	957	304	22	1370	2	7	1	1	11
PDL-3	8.5	0	891	435	43	1370	0	6	1	2	9
PDL-4	8.5	43	370	196	0	609	1	4	1	0	6
PDL-5	6.8	0	783	283	43	1109	0	6	1	1	8
Area Mean		***26***	***848***	***283***	***22***	***1178***	***1***	***6***	***1***	***1***	***9***
Whale Tail North Basin											
WTN-1	8.0	0	717	174	109	1000	0	6	2	2	10
WTN-2	8.4	0	565	22	22	609	0	4	1	1	6
WTN-3	7.9	0	413	457	87	957	0	8	3	3	14
WTN-4	9.1	87	435	348	65	935	2	5	2	2	11
WTN-5	7.5	43	1326	261	65	1696	1	8	2	2	13
Area Mean		***26***	***691***	***252***	***70***	***1039***	***1***	***6***	***2***	***2***	***11***
Whale Tail North Basin (shallow)											
WTN-Ex-1	5.0	22	4217	1543	130	5913	1	9	3	3	16
WTN-Ex-2	5.4	0	1152	913	152	2217	0	11	3	3	17
WTN-Ex-3	5.7	174	4891	1087	239	6391	2	9	3	3	17
WTN-Ex-4	6.1	109	4043	1326	217	5696	2	8	3	4	17
WTN-Ex-5	5.4	43	4891	1435	174	6543	2	9	2	2	15
Area Mean		***70***	***3839***	***1261***	***183***	***5352***	***1***	***9***	***3***	***3***	***16***
Whale Tail South Basin											
WTS-1	7.2	0	696	457	22	1174	0	9	3	1	13
WTS-2	7.1	0	717	457	65	1239	0	8	3	1	12
WTS-3	7.8	22	2304	674	152	3152	1	10	3	4	18
WTS-4	7.4	0	1957	522	109	2587	0	10	3	2	15
WTS-5	7.8	0	652	413	43	1109	0	9	3	2	14
Area Mean		***4***	***1265***	***504***	***78***	***1852***	***0***	***9***	***3***	***2***	***14***

Table 5-2. Benthic invertebrate abundance (#/m^2) and richness (# taxa) by major taxa group, Whale Tail Pit Baseline, 2015.

Area-Replicate	Depth (m)	Abundance (#/m^2)				Total Abundance	Richness (# taxa)				Total Richness
		Oligochaetes	Insects	Molluscs	Other Taxa		Oligochaetes	Insects	Molluscs	Other Taxa	
Nemo Lake											
NEM-1	8.0	43	1870	761	65	2739	1	5	2	2	10
NEM-2	9.0	43	2413	696	174	3326	1	6	3	4	14
NEM-3	8.9	0	2370	500	87	2957	0	6	2	3	11
NEM-4	8.0	43	1978	652	109	2783	1	7	2	2	12
NEM-5	8.5	65	2217	348	87	2717	1	7	2	1	11
Area Mean		***39***	***2170***	***591***	***104***	***2904***	***1***	***6***	***2***	***2***	***12***
Mammoth Lake											
MAM-1	8.0	109	2978	717	87	3891	2	8	2	2	14
MAM-2	8.1	174	1804	674	109	2761	2	8	3	2	15
MAM-3	7.5	43	1283	565	87	1978	1	8	2	2	13
MAM-4	8.1	22	7109	1065	109	8304	1	7	3	3	14
MAM-5	8.8	65	5130	370	43	5609	1	6	3	2	12
Area Mean		***83***	***3661***	***678***	***87***	***4509***	***1***	***7***	***3***	***2***	***14***

Notes:

[1] Other taxa: (Turbellaria, Acalyptonotidae, Hygrobatidae, Lebertiidae, Oxidae, and Notostraca).

Figure 5ï1. Benthic invertebrate abundance (organisms/m^2) and richness by major taxa group, Whale Tail Pit Baseline, 2014.

Notes: See text for information on the major taxa groups (MTG) and locations of the replicates in each lake.

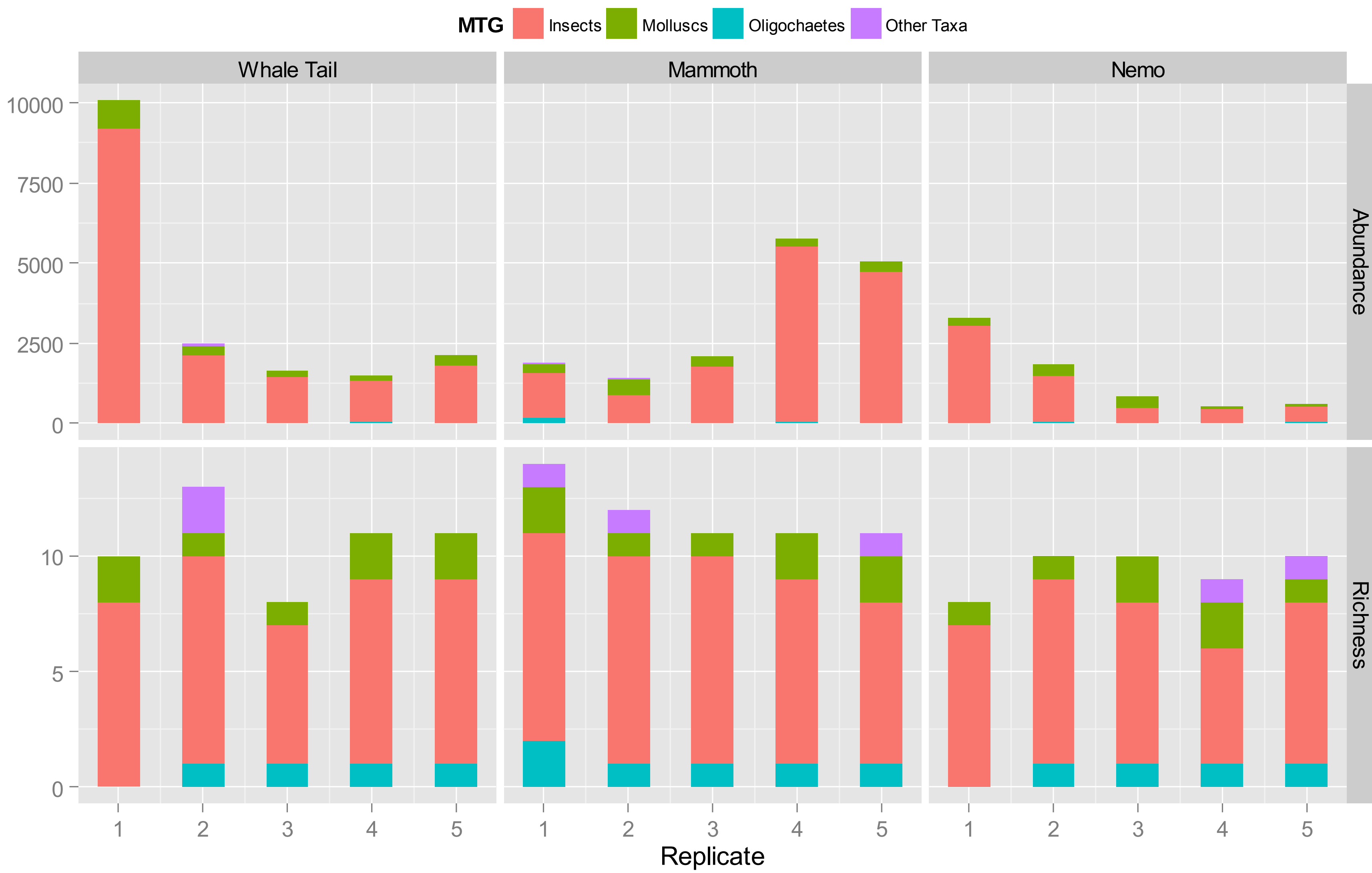


Figure 5ï2. Percent benthic invertebrate abundance and richness by major taxa group, Whale Tail Pit Baseline, 2014.

Notes: See text for information on the major taxa groups (MTG) and locations of the replicates in each lake.

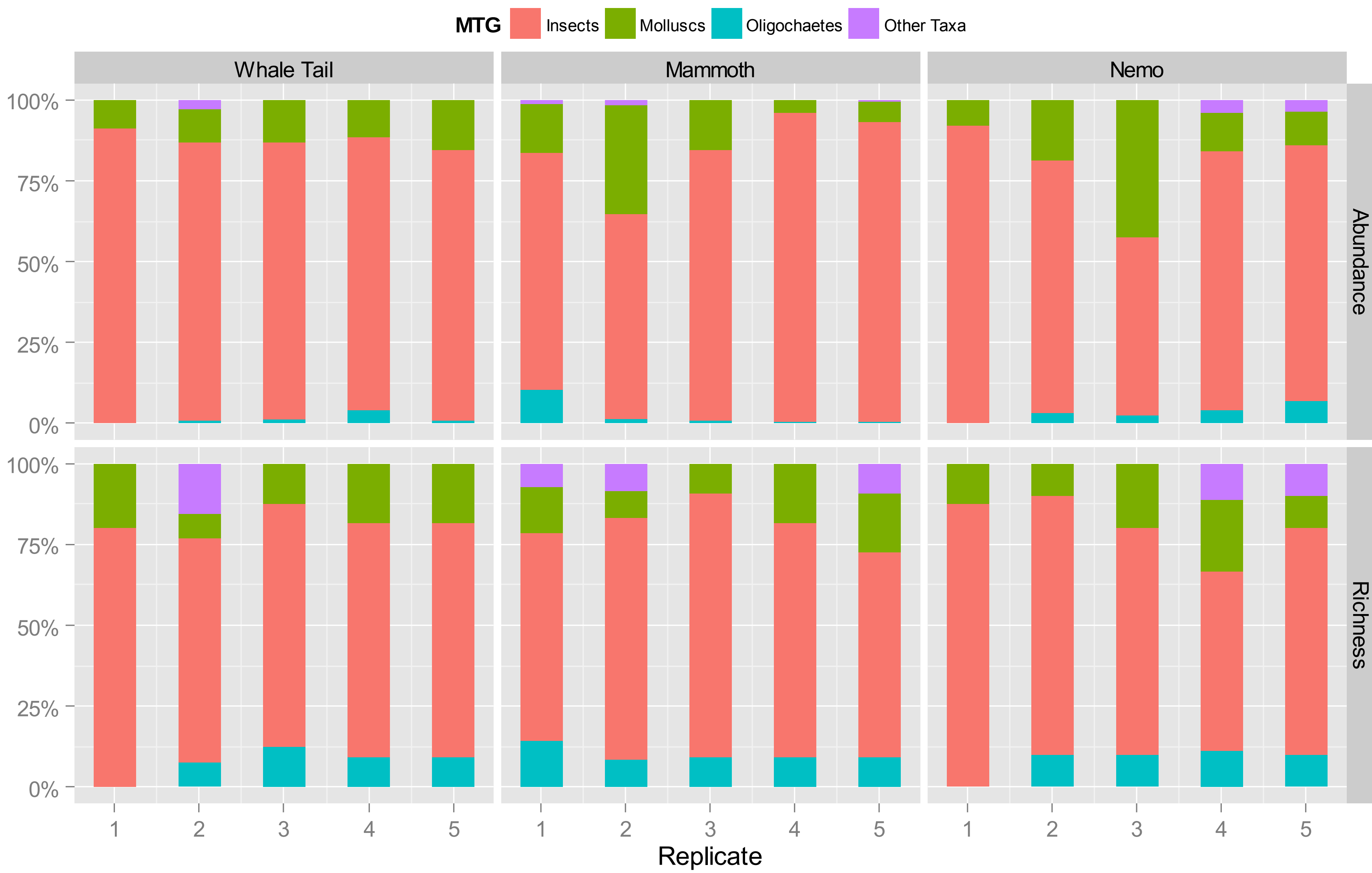


Figure 5ï3. Benthic invertebrate abundance (organisms/m²) and richness by major taxa group, Whale Tail Pit Baseline, 2015.

Notes: See text for information on the major taxa groups (MTG).

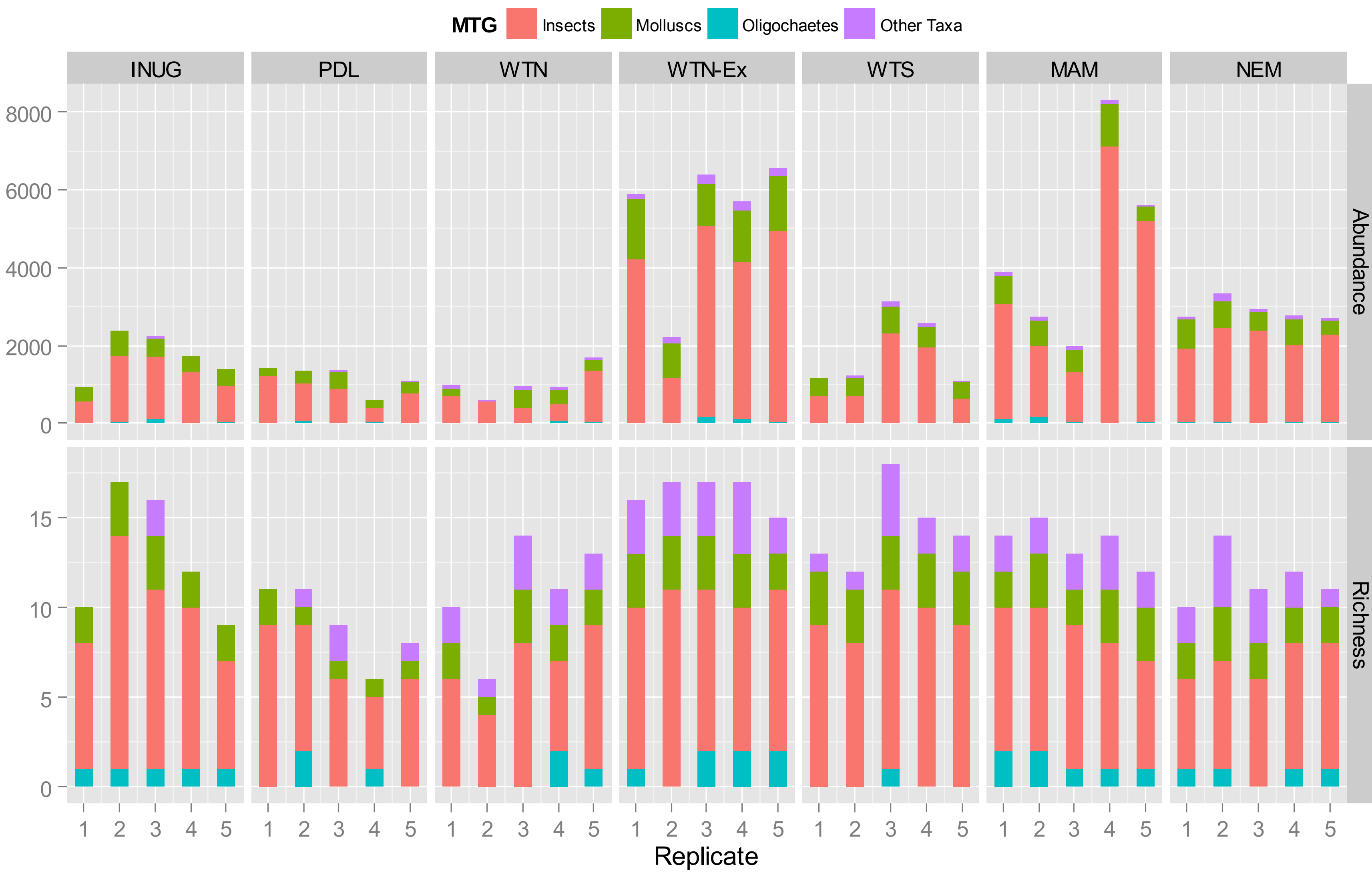
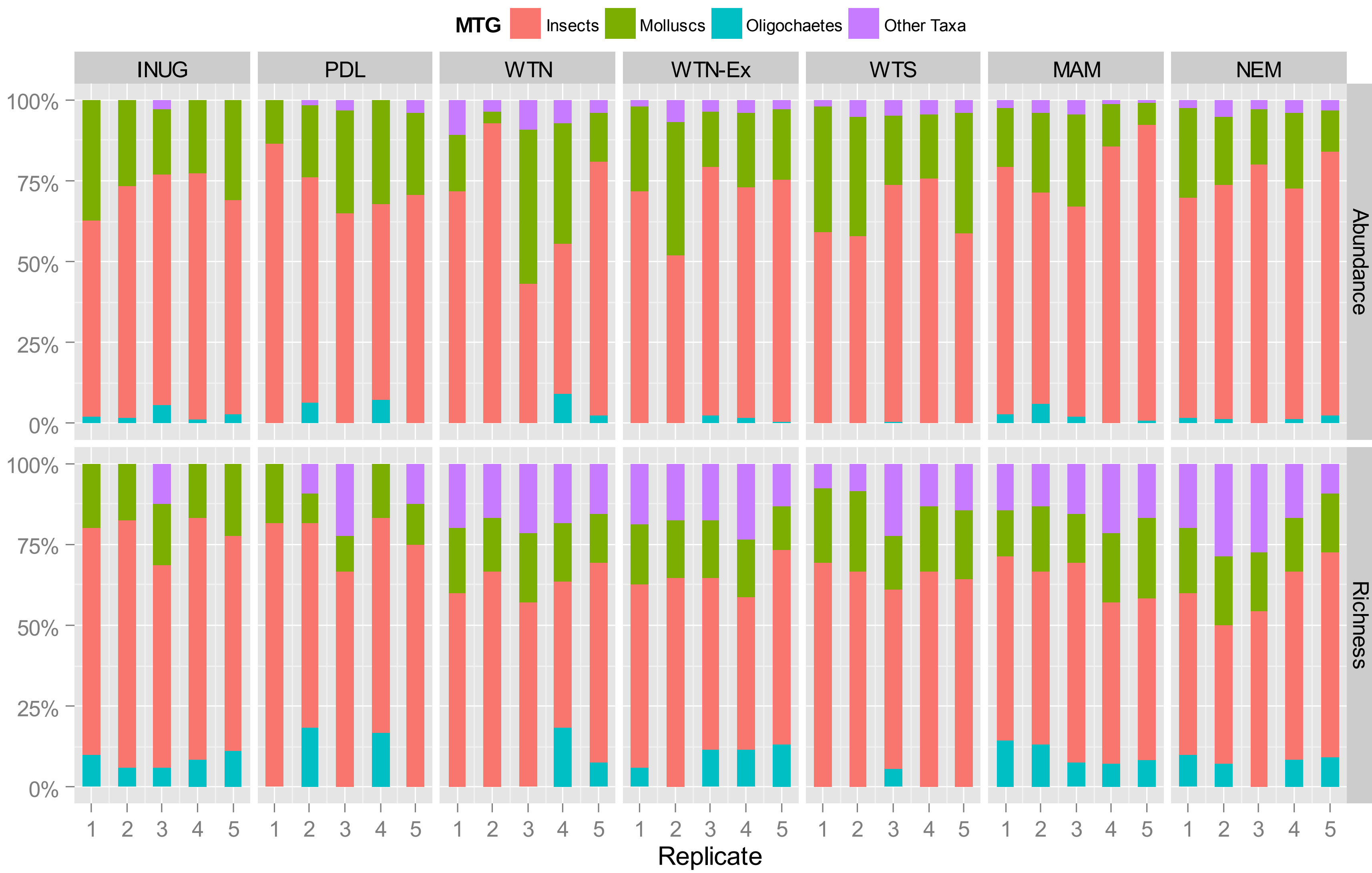


Figure 5ï4. Percent benthic invertebrate abundance and richness by major taxa group, Whale Tail Pit Baseline, 2015.

Notes: See text for information on the major taxa groups (MTG).



6. ZOOPLANKTON

6.1. Methods

6.1.1. Sample Collection

Zooplankton samples were collected synoptically from limnology/water chemistry sampling stations from the Whale Tail Pit Study Area Lakes during each 2015 event in support of the EIA. The samples were collected according to an SOP provided to Azimuth by Golder (pers. comm.). Zooplankton was not collected as part of the 2014 baseline program. Location information (UTM coordinates), station depth, haul depth (vertical length of water towed), and number or tows per sample were recorded for each station. The information is presented in **Table 6ї1**.

Samples were collected after taking the limnology measurement and collecting water samples for chemistry at each station. The boat was not anchored unless wind conditions necessitated. The zooplankton net measured 2.4 m in length, 30 cm in diameter (at the opening), and had a mesh size of 80 µm (74 µm mesh size on the cod end). To collect the sample, the net was lowered to depth where the cod end (bottom of the net) was within 1 m of the sediment surface. Station depth was determined using a portable depth sounder. A weight was also tied to the bottom of the net at 1 m below the cod end to confirm when the cod end was 1 m above the sediment. The net was deployed slowly and held at the appropriate depth for approximately 30 seconds. The net was retrieved at a rate of approximately 0.5 m/second. Once at the surface, the net was pulled into the boat while simultaneously rinsing the net with a squirt bottle by spraying the outside of the net. After checking the net for any adhered zooplankton, the contents of the cod end was rinsed into a 500 mL wide-mouth plastic jar. Samples were preserved by first adding half a tablet of Alka-Seltzer® to immobilize the zooplankton, followed by fixation with buffered formalin to a final concentration of approximately 5% (v/v). One field duplicate zooplankton sample was collected during each sampling event.

6.1.2. Laboratory Methods

Zooplankton samples were submitted to Biologica Environmental Services Ltd. (Victoria, BC) for abundance, biomass, and biovolume measurements. Zooplankton was subsampled using a Hensen-Stempel® pipette. Care was taken to mix the sample in a random fashion before pipetting to avoid bias due to sinking of heavier organisms. The contents of the smallest subsample were identified to the lowest taxon and life-stage possible (typically genus or species) and enumerated. The larger subsamples were then re-examined for species that occur in numbers less than 10 individuals. The largest and rarest organisms were counted in their entirety, whereas the numbers of the smallest and most common organisms were extrapolated from the subsample. Micro-zooplankton (i.e., rotifers) were identified at magnification between 20-times and 100-times, suitable to observe characteristic morphological features required for identification. Once identified, organisms were enumerated in a counting tray. Subsamples were processed until the targeted range of 200 to 400 organisms per sample (except for rotifers and copepod nauplii) was counted. A Sedgwick-Rafter® counting cell or Utermöl® counting chamber was used to enumerate rotifers and copepod nauplii using 100-times magnification. Copepod nauplii of calanoid and cyclopoid copepod species were enumerated separately from adults; juveniles of these species are enumerated together due to the lack of distinguishing characteristics.

Biovolume (based on length measurements) are taken for the first 20 individuals of each zooplankton species identified from each taxonomic group using a calibrated eyepiece reticule. An initial comparison of the lengths of dominant taxa between sampling regions will determine if there is any among-site variability in per-taxon size estimates that should be accounted for. Individual lengths are then used to calculate body mass for each zooplankton species measured using length-weight relationships developed for each species by McCauley (1984). Taxa-specific biomeasurements and conversions are presented in **Appendix G1**. Biomass (in mg [ww and dw]) was calculated by multiplying the number of individuals of a given species in a given sample by the average individual weight for that species.

6.1.3. Data Handling and Analysis

Taxa abundance and biomass results were tabulated in Microsoft Excel. Zooplankton abundance and biomass were converted to density measures by dividing the abundance and biomass by the volume of water filtered through the zooplankton net ($V = \pi r^2 h$). Three major groups of zooplankton typically dominate the plankton community in freshwater lakes. These are rotifers, and two subclasses of the *Crustacea*, *Cladocera* and *Copepoda* (within which there are two major orders, calanoid and cyclopoid copepods) (Wetzel, 1983). Rotifers are a large and diverse group that are predominantly sessile and associated with littoral substrates, although planktonic species can form a significant component of the zooplankton community. Copepod nauplii were grouped together as a major taxa group in the data analysis because of difficult distinguishing between the juvenile stages.

6.2. Quality Assurance / Quality Control

6.2.1. QA/QC Methods

Laboratory Duplicates

The laboratory QA/QC program for zooplankton is made up of two components:

- Subsampling accuracy – determined on approximately 10% of the samples (one per sampling event). Samples are chosen are randomly for evaluation of the precision of the subsampling procedure (i.e., consistency of duplicate processing). The difference between two sample fractions is used as an indicator of subsampling consistency and quantified using RPD. Guidance on precision between subsamples is lacking for zooplankton, so guidance from Environment Canada (2002) on subsampling precision for benthic invertebrates is applied. Estimates of organism abundance in each group of samples should be within 20% of each other. If the error between subsamples abundance exceeds 20%, the laboratory will be consulted to determine the potential cause of the error.
- Accuracy of taxonomic identification – comparing the number of disagreements in unique taxa (at the lowest practical level of identification) between two taxonomists.

Field Duplicates

A field duplicate was collected during each sampling event to assess sampling variability and sample homogeneity. Total biomass and abundance between the duplicate and original sample were compared, but no formal DQO was applied because zooplankton communities can be highly variable within the water column within a small spatial area.

6.2.2. QA/QC Results

Subsampling precision and taxonomic accuracy results are presented in **Table A2ï4**. The mean subsampling precision was 10.6% with a maximum subsampling error of 15.3%, well within the DQO of 20%. There were no disagreements between taxonomists in the identification of unique taxa in the three QA samples (**Table A2ï4**).

The RPD results of the field duplicate samples are presented in **Table A2ï5**. There was considerable variability in both biomass and abundance for individual major taxa groups as well as for total estimates of abundance and biomass. The differences are considered representative of the high degree of variability in the zooplankton community within the stations.

6.3. Results

Zooplankton density (organisms/m^3) and richness (number of taxa) are presented in **Table 6ï2**. Biomass results are presented in **Table 6ï3**. Density and biomass are shown in **Figure 6ï1** (per m^3) and **Figure 6ï2** (percent). The raw zooplankton data from Biolgoica are presented in **Appendix G1**. Historical zooplankton biomass and taxonomy results from Inuggugayualik Lake and Pipedream Lake are included in **Appendix G2** and **Appendix G3** for 2010 and 2011, respectively. The data are included for context purposes, but caution should be applied when comparing the historical data from Inuggugayualik Lake and Pipedream Lake to the 2015 baseline results from the Whale Tail Pit Study Area Lakes because of differences in field collection methods[8], different taxonomic methods[9], and the absence of paired reference data for 2015 to compare with the historical reference data. For more information on the historical zooplankton data, refer to Azimuth 2011 and 2012b Meadowbank CREMP reports.

Twenty different taxa (6 cladoceran, 3 calanoid copepods, 3 cyclopoid copepods, and 8 rotifers) were identified at the LPL from the samples submitted in 2015. Taxa richness ranged from a high of ten at WTN-1 in July to a low of three at NEM-3 in August (**Table 6ï2**). Overall, rotifers were the most abundant major taxa group, with more than 50% of the total zooplankton density comprised of rotifers (**Figure 6ï2**). Nemo Lake was the exception, where copepods (nauplii and adult cyclopods) were the most abundant zooplankton taxa during all three sampling events. The other major taxa group, the cladocerans, were a relatively small portion of the zooplankton community during the summer months (<1% to 7%). Cladocerans, primarily *Holopedium gibberum*, *Daphnia* sp., and *Bosmina* sp. occurred in their highest abundance in July, with fewer individuals observed during the August and September sampling events (**Figure 6ï2**). Zooplankton sampling for the Meadowbank CREMP noted similarly low overall abundance of cladocerans in 2010 and 2011 from all of the Meadowbank project lakes (Azimuth 2012a).

Some spatial variability in zooplankton density was observed at most locations during each month, but most notably seen in samples collected at Mammoth Lake during the July and August sampling events. The sample collected from MAM-2 in July had nearly 150,000 organisms/m^2 compared with MAM-1 where zooplankton density was less than 20,000 organisms/m^2 (**Figure 6ï1**, **Table 6ï2**). Sample abundance was comprised mainly of rotifers at 83%, the highest reported abundance of this major taxonomic group of all the samples collected in 2015. MAM-2 was located in a relatively shallow location in Mammoth Lake compared to MAM-1 (**Figure 1ï5**), which is important because rotifers are predominantly sessile and associated with littoral substrates.

Zooplankton biomass was generally between 50 mg/m^3 and 100 mg/m^3 with the exception of Mammoth Lake where highly variable biomass was reported for the replicate samples in the July and August sampling events (**Figure 6ï1**). The two July replicate samples collected from Mammoth Lake had total biomass measurements of 11 mg/m^3 and 183 mg/m^3. Similarly variable results were reported in the two August replicate samples: 304 mg/m^3 and 59 mg/m^3 (**Table 6ï3**). Despite the variability in total

[8] Zooplankton samples were collected in 2010 and 2011 from a depth of 8 m depth to surface. Each sample was a composite of 2 tows.

[9] Rotifers, which were prevalent in the 2015 samples, were not identified in the 2010 and 2011 samples.

biomass, the percent composition of taxa contributing to the total biomass was similar between replicates for each event (**Figure 6ï2**). Temporally, the July and September samples had higher proportions of the biomass comprised of Cyclopoid copepods, whereas the August samples had more of the total zooplankton biomass comprised of Calanoid copepods. Whale Tail Lake (WTN and WTS) had increased biomass from rotifers in August, coinciding with reduced biomass from the Cyclopoid copepods. This pattern was not observed in Mammoth Lake and Nemo Lake.

In summary, zooplankton abundance and biomass can vary considerably within lakes and between lakes depending on a range of environmental factors (nutrients, phytoplankton community and abundance, turbidity, wind speed, direction, water depth, etc.).

Table 6-1. Zooplankton station information, Whale Tail Pit Baseline, 2015.

Sampling Event	Sampling Area	Date	UTM Coordinates			Depth (m)	Haul Depth[1] (m)	DUP	Number of Tows	Number of Jars
			Zone	Easting	Northing					
July	WTN-1	17-Jul-15	14W	607207	7254975	7.4	6.0	No	1	1
	WTN-2	17-Jul-15	14W	607252	7254613	6.4	5.0	No	1	1
	WTS-1	17-Jul-15	14W	607450	7253884	9.5	8.0	No	1	1
	WTS-2	17-Jul-15	14W	607621	7254253	5.1	4.0	Yes	1	1
	NEM-1	18-Jul-15	14W	606604	7254415	10.5	9.0	No	1	1
	NEM-2	18-Jul-15	14W	606454	7257135	11.9	11.0	No	1	1
	MAM-1	18-Jul-15	14W	604145	7254415	7.8	7.5	No	1	1
	MAM-2	18-Jul-15	14W	604278	7254163	5.1	4.0	No	1	1
August	WTN-3	22-Aug-15	14W	607393	7254558	8.6	7.6	No	1	1
	WTN-4	22-Aug-15	14W	607221	7254988	6.4	5.4	No	1	1
	WTS-3	22-Aug-15	14W	607155	7253550	7.8	6.8	Yes	1	1
	WTS-4	21-Aug-15	14W	607571	7254138	7.5	6.5	No	1	1
	NEM-3	23-Aug-15	14W	606553	7257360	8	7.0	No	1	1
	NEM-4	23-Aug-15	14W	606370	7257235	10.2	9.2	No	1	1
	MAM-3	24-Aug-15	14W	604273	7254244	7.4	6.4	No	1	1
	MAM-4	24-Aug-15	14W	604239	7253860	7.8	6.8	No	1	1
September	WTN-5	18-Sep-15	14W	607244	7255025	6.7	5.7	No	1	1
	WTN-6	18-Sep-15	14W	607329	7254542	10.9	9.9	No	1	1
	WTS-5	18-Sep-15	14W	607612	7253907	6.5	5.5	Yes	1	1
	WTS-6	18-Sep-15	14W	607568	7254259	7.8	6.8	No	1	1
	NEM-5	19-Sep-15	14W	606289	7257418	10.5	10.0	No	1	1
	NEM-6	19-Sep-15	14W	606611	7257938	15.2	10.0	No	1	1
	MAM-5	19-Sep-15	14W	604357	7254348	8.9	8.0	No	1	1
	MAM-6	19-Sep-15	14W	604228	7253834	6.4	6.0	No	1	1

Notes:
Haul depth start is the depth measured from the surface to the bottom of the cod end on the zooplankton net.

Table 6-2. Zooplankton richness and density (organisms/m^3) by major taxa group, Whale Tail Pit Baseline, 2015.

Area-Replicate	Haul Length[1] (m)	Total Richness[2]	Density[3] (organisms/m^3)					Total Density
			Cladocera	Calanoida	Cyclopoida	Copepod Nauplii	Rotifera	
Whale Tail Lake North Basin								
WTN-1	3.6	10	1140 (2.2)	825 (1.6)	10296 (20)	9169 (18)	30914 (59)	52344
WTN-2	2.6	5	3374 (7.6)	653 (1.5)	8651 (19)	13422 (30)	18500 (41)	44600
WTN-3	5.1	7	166 (0.4)	860 (2)	2136 (5)	9616 (23)	29174 (70)	41951
WTN-4	3.0	8	47 (0.07)	723 (1.1)	2326 (3.7)	20278 (32)	39769 (63)	63143
WTN-5	3.3	5	17 (0.05)	111 (0.3)	2255 (7)	5859 (18)	24079 (74)	32321
WTN-6	7.5	7	19 (0.04)	1103 (2.1)	5187 (10)	10249 (20)	35085 (68)	51643
Whale Tail Lake South Basin								
WTS-1	5.6	9	1011 (3.2)	126 (0.4)	6871 (22)	7831 (25)	16084 (50)	31924
WTS-2	1.6	6	725 (1.3)	265 (0.5)	18391 (32)	9431 (17)	28294 (50)	57107
WTS-3	4.4	5	0 (0)	1109 (2)	2508 (4.6)	10289 (19)	40727 (75)	54632
WTS-4	4.1	6	17 (0.04)	1070 (2.4)	2519 (5.6)	8971 (20)	32780 (72)	45357
WTS-5	3.1	7	68 (0.2)	479 (1.5)	4723 (15)	9736 (30)	17189 (53)	32196
WTS-6	4.4	5	32 (0.1)	322 (1.4)	3237 (14.1)	4609 (20)	14790 (64)	22989
Nemo Lake								
NEM-1	6.6	8	227 (0.8)	4116 (15)	4223 (16)	9146 (34)	9360 (35)	27071
NEM-2	8.6	8	191 (0.7)	2884 (11)	4228 (16)	12009 (45)	7457 (28)	26768
NEM-3	4.6	4	123 (0.3)	6858 (17)	5382 (13.4)	14762 (37)	12917 (32)	40042
NEM-4	6.8	3	0 (0)	3537 (13)	3495 (12.9)	12067 (45)	7906 (29)	27004
NEM-5	7.6	8	9 (0.04)	3109 (13)	2383 (10.3)	10859 (47)	6794 (29)	23153
NEM-6	7.6	5	19 (0.09)	1861 (9.3)	1173 (5.9)	8811 (44)	8066 (40)	19930
Mammoth Lake								
MAM-1	5.1	6	89 (0.5)	202 (1.1)	255 (1.3)	5733 (30)	12760 (67)	19039
MAM-2	1.6	8	3625 (2.5)	1238 (0.9)	12556 (9)	6985 (5)	120545 (83)	144949
MAM-3	4.0	9	354 (0.51)	13322 (19)	16151 (23)	10257 (15)	29591 (42)	69674
MAM-4	4.4	8	3 (0.01)	498 (1.8)	569 (2)	9324 (33)	18005 (63)	28400
MAM-5	5.6	6	17 (0.09)	472 (2.5)	1684 (9.1)	6231 (34)	10105 (55)	18509
MAM-6	3.6	7	24 (0.11)	495 (2.3)	1619 (7)	7336 (33)	12444 (57)	21918

Notes:

[1] Haul length = the vertical length of the water towed (i.e., length of the water column from the surface to the opening of the zooplankton net).

[2] Taxonomic richness measured at the lowest practical level (LPL) of taxonomic identification.

[3] Density reported as number of organisms/m^3 calculated based on the length of the haul (percent of total shown in parentheses). Volume of water (cubic meters) towed was calculated using the following equation: $V = \pi r^2 h$; where r = the radius of the net (0.15 m) and h = the haul length.

Table 6-3. Zooplankton biomass (mg/m³) by major taxa group, Whale Tail Pit Baseline, 2015.

Area-Replicate	Haul Length[1] (m)	Zooplankton Biomass[2] (mg/m³)					Total Biomass
		Cladocera	Calanoida	Cyclopoida	Copepod Nauplii	Rotifera	
Whale Tail Lake North Basin							
WTN-1	3.6	7 (9.4)	4 (6)	41 (58)	2 (2.1)	18 (25)	72
WTN-2	2.6	14 (21)	3 (5)	36 (54)	2 (3.4)	11 (16)	66
WTN-3	5.1	1 (3)	18 (38)	7 (13.6)	0 (0.5)	22 (45)	48
WTN-4	3.0	0 (0.7)	17 (29)	6 (11.1)	1 (0.9)	34 (58)	58
WTN-5	3.3	0 (0.2)	2 (6)	8 (26)	0 (0.9)	20 (67)	30
WTN-6	7.5	0 (0.1)	29 (34)	21 (25)	0 (0.5)	34 (40)	85
Whale Tail Lake South Basin							
WTS-1	5.6	3 (6.7)	1 (1)	26 (59)	1 (2.9)	13 (30)	43
WTS-2	1.6	2 (2)	1 (1)	63 (58)	1 (1.1)	41 (38)	109
WTS-3	4.4	0 (0)	24 (34)	7 (9.9)	0 (0.4)	40 (56)	71
WTS-4	4.1	0 (0.6)	22 (37)	6 (10.2)	1 (1.1)	31 (51)	61
WTS-5	3.1	1 (2)	12 (24)	20 (37)	1 (1.5)	19 (36)	53
WTS-6	4.4	1 (1.9)	6 (15)	14 (38)	0 (1.1)	16 (44)	37
Nemo Lake							
NEM-1	6.6	2 (4.2)	20 (41)	17 (35)	0.88 (1.8)	8.5 (18)	48
NEM-2	8.6	1 (2)	14 (41)	11 (33)	0.65 (1.9)	7.4 (22)	34
NEM-3	4.6	2 (2.1)	78 (75)	10 (9.4)	0.36 (0.3)	13.3 (13)	104
NEM-4	6.8	0 (0)	42 (74)	6 (10.8)	0.27 (0.5)	8.4 (15)	56
NEM-5	7.6	0.14 (0.2)	47 (79)	4 (7)	0.34 (0.6)	7.8 (13)	60
NEM-6	7.6	0.17 (0.4)	29 (70)	3 (6)	0.37 (0.9)	9.6 (23)	42
Mammoth Lake							
MAM-1	5.1	0 (4)	1.2 (10)	1 (12)	0.84 (7.4)	8 (66)	11
MAM-2	1.6	22 (11.8)	7.5 (4)	70 (38)	1.17 (0.6)	83 (45)	183
MAM-3	4.0	6 (2)	235 (78)	37 (12.2)	0.69 (0.2)	24 (8)	304
MAM-4	4.4	0.07 (0.1)	42 (70)	1 (2.1)	0.41 (0.7)	16 (27)	59
MAM-5	5.6	0.11 (0.4)	10 (38)	6 (19.8)	0.27 (1)	11 (41)	28
MAM-6	3.6	0.23 (0.8)	9 (33)	5 (18.5)	0.61 (2.1)	13 (46)	28

Notes:

[1] Haul length = the vertical length of the water towed (i.e., length of the water column from the surface to the opening of the zooplankton net).

[2] Biomass reported as grams dry weight/m³ calculated based on the length of the haul (percent of total shown in parentheses). Volume of water (cubic meters) towed was calculated using the following equation: $V = \pi r^2 h$; where r = the radius of the net (0.15 m) and h = the haul length.

Figure 6ï1. Zooplankton density (organisms/m^3) and biomass (mg/m^3 dry weight) by major taxa group, Whale Tail Pit Baseline, 2015.

Notes: See text for information on the major taxa groups (MTG). Vertical dashed lines separate the samples by sampling event (i.e., July, August, and September).

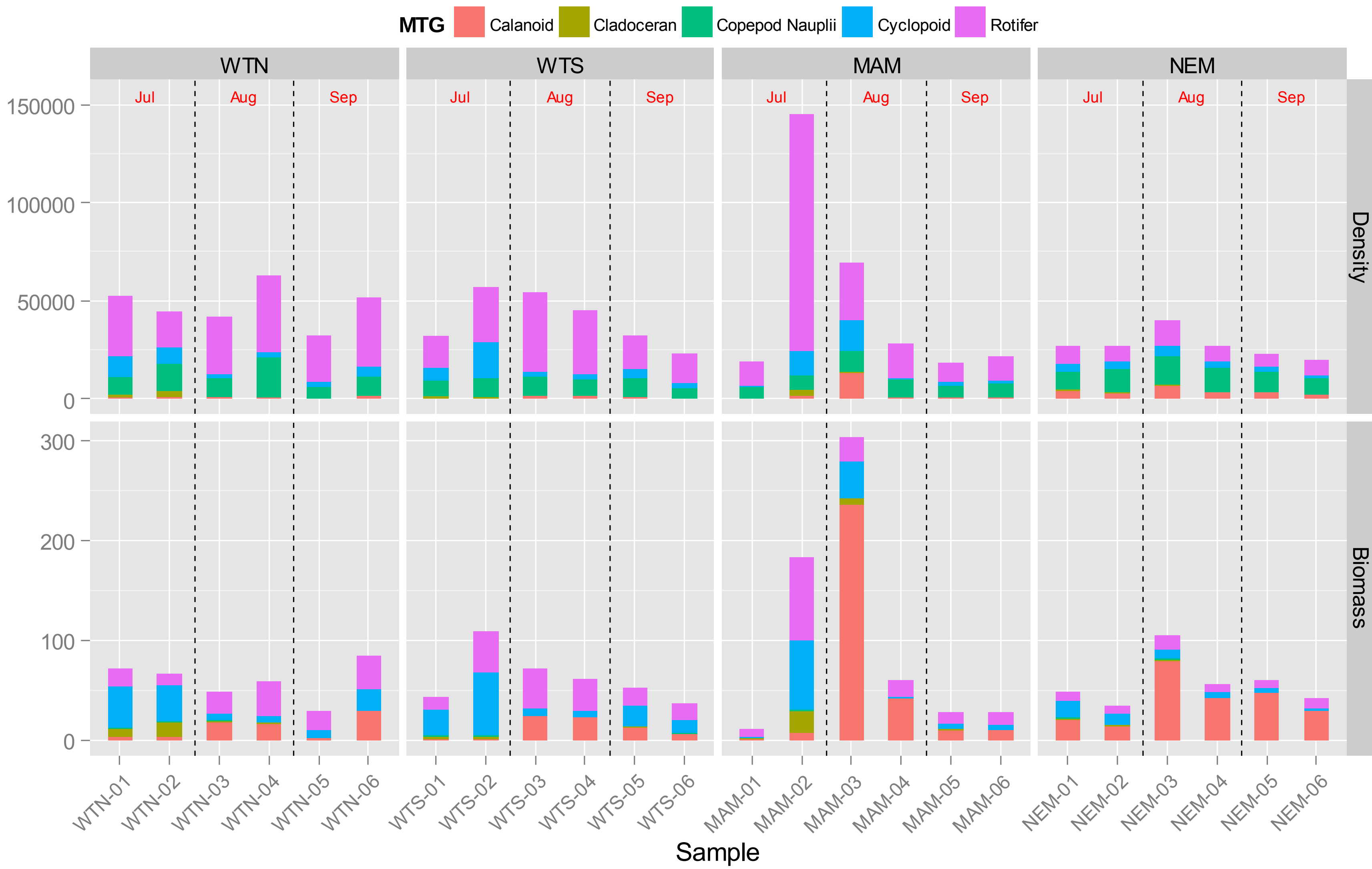
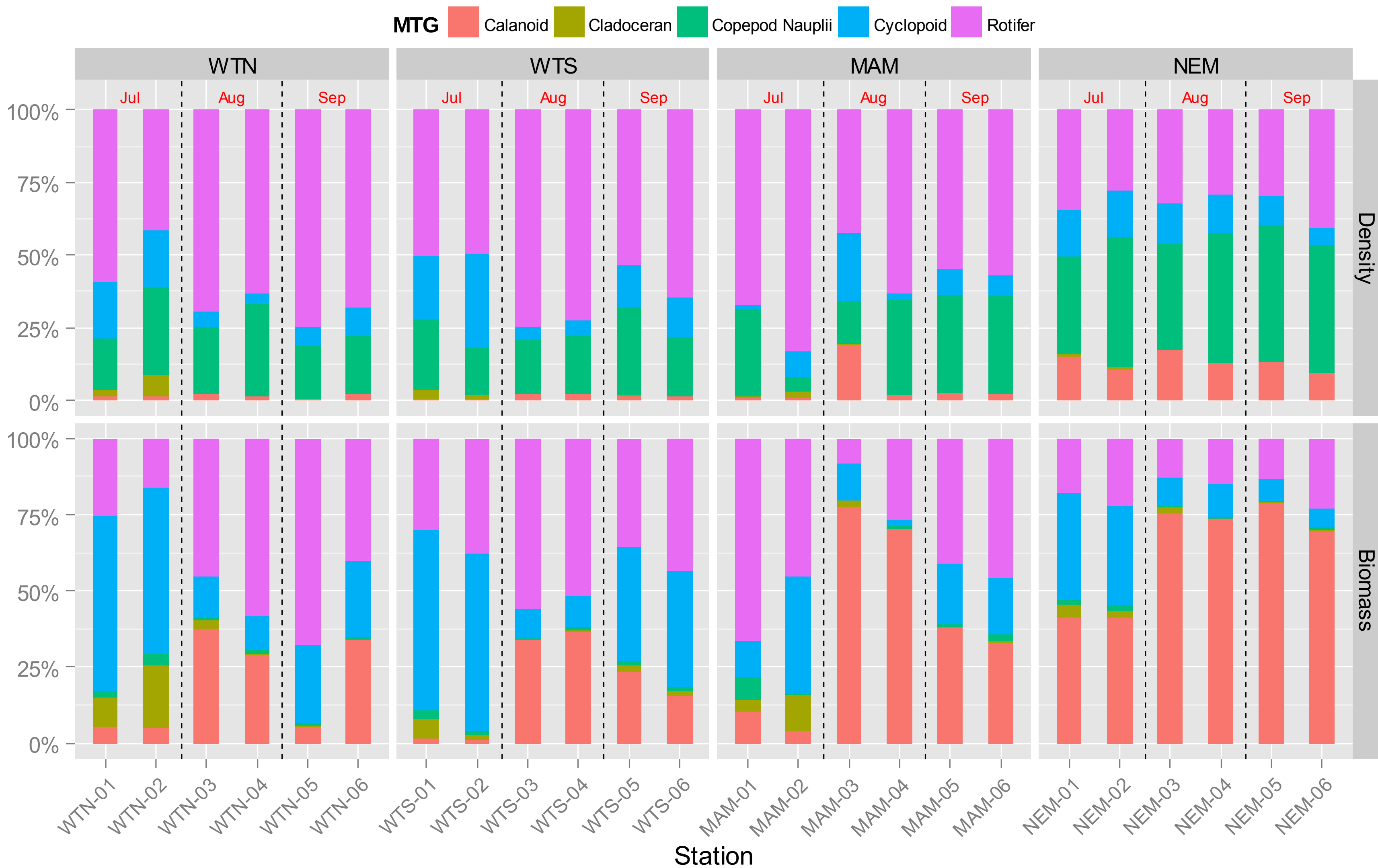


Figure 6ï2. Percent zooplankton density and biomass by major taxa group, Whale Tail Pit Baseline, 2015.

Notes: See text for information on the major taxa groups (MTG). Vertical dashed lines separate the samples by sampling event (i.e., July, August, and September).



7. PERIPHYTON

7.1. Qualitative Survey Methods

Periphyton surveys were completed during each 2015 sampling event to provide a qualitative assessment of the abundance and distribution of periphyton in the study area; no periphyton assessment was conducted in 2014. Data collection was carried out according to methods provided by Golder (Golder 2015b) and included the following:

- GPS coordinates,
- Photographs of the microhabitat of the sampling area as well as the macrohabitat surrounding the area,
- Visual estimate of the percent periphyton cover at the micro and macrohabitat scales,
- Substrate types present and their proportions, and
- A description of the periphyton community, including colour, thickness, and texture.

Results were recorded on waterproof paper using the field datasheet template provided by Golder. Field observations, coordinates, and photographs were submitted to Golder at the end of each sampling event for use in the EIA. Tabulated results are presented in **Appendix H**.

7.2. Results

Location of the periphyton surveys in Whale Tail, Nemo, and Mammoth Lakes are shown on **Figure 1ï3** to **Figure 1ï5**. The July and September surveys were completed in the same general location in each lake. Periphyton growth in the July survey was considered sparse to moderate at most locations. Sparse growth was evident in areas where ice scour was noticeable on the rock substrate. Periphyton cover was more noticeable at deeper depths (as an example, see notes for WTN-2 in **Appendix H**). Below 20 cm, periphyton cover was generally rated as moderate (25-75% cover). Periphyton growth was considered low to moderate at most stations in the August survey. Green filamentous algae was observed at most locations and the periphyton was firmly attached to the substrate with a thickness between 1 mm and 5 mm. Lake levels in the September survey were noticeably lower at several locations. Exposed rocks had dried periphyton visible along the shoreline, but below 10 cm growth was rated as moderate to high (>75%).

Periphyton surveys were completed at the Sentinel stations during each event (**Figure 1ï1**). Periphyton cover was spatially heterogeneous at the Sentinel stations during each of the sampling events. Areas of low flow and adequate depth had dense mats of periphyton growth (>75% cover). Lower water levels were noted in September relative to July, but in areas where the rocks were submerged, dense periphyton growth was noted (see the survey for C2 on September 20th as an example).

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APPENDICES

APPENDIX A

Quality Assurance / Quality Control Results

APPENDIX A1

Water and Sediment Chemistry QA/QC Results

LIST OF TABLES ï APPENDIX A1

A1-1. WATER CHEMISTRY QA/QC RESULTS

A1-1.1. Lake Stations (2014)

A full review of the QA/QC results for the 2014 surface water samples collected by Portt and Associates was not done in this report. The QA/QC assessment presented here is limited to results from the equipment blank and duplicate samples submitted with the 2014 Lake samples. **Table A1ï1** presents the DLs, equipment blank concentrations, and field duplicate RPDs.

- Equipment Blanks – A few metals were detected above the MDL in the equipment blank collected by Portt and Associates in September 2014, specifically total and dissolved barium, total and dissolved lead, total and dissolved manganese, dissolved aluminum, and dissolved organic carbon (DOC). Each of these parameters was reviewed in detail to evaluate the implications of the possible cross-contamination identified in the equipment blanks.
    - Barium – Barium was detected in the total and dissolved fractions of each sample submitted in 2014. The barium concentration in the total and dissolved blanks represented less than 5% of the concentrations reported in the Lake samples. The effects of cross-contamination (i.e., <5%) are well within laboratory variability, so the barium results for the 2014 Lake samples were considered reliable for this project.
    - Lead – Total lead was measured at the DL (0.00005 mg/L) in the equipment blank and dissolved lead was measured at nearly 10-times the DL (0.00047 mg/L). Dissolved lead was lower than the DL in all of the 2014 Lake samples, and only two samples had measured concentrations of total lead. One seemingly anomalous total lead concentration of 0.0069 mg/L in sample Rep-1 from Whale Tail Lake in 2014 exceeded the CCME aquatic life criteria as well as the trigger and threshold values developed for the Meadowbank project lakes (**Table 2ï1**). Rep-1 was collected from the North Basin in 2014 (Location 1, **Figure 1ï3**). The other two replicates were below the DL for total lead of (0.00005 mg/L), and based on these data, the total lead concentration from replicate 1 is considered unreliable. The other sample with detected total lead was at Location 3 in Mammoth Lake, and was considered unreliable because the reported concentration was less than 5-times the concentration in the equipment blank.
    - Manganese – Manganese, like barium, was detected in the total and dissolved fractions of each sample submitted in 2014, but in each case, the reported concentration was greater than 5-times the concentration in the equipment blank. The effect of cross-contamination from the equipment blank was minor, representing less than 6% for total manganese and 11% for dissolved manganese in the Lake samples. A cautionary flag is applied to the dissolved manganese results.
    - Dissolved aluminum – The DL for dissolved aluminum is 0.001 mg/L and the concentration measured in the equipment blank was 0.0018 mg/L (**Table A1ï1**). Seven of the nine Lake samples collected in 2014 had dissolved aluminum concentrations within 5-times the concentration in the equipment blank; consequently, a cautionary flag is applied to these results.
    - DOC – The equipment blank result for DOC was 0.83 mg/L, marginally above the DL of 0.5 mg/L. A cautionary flag is applied to all of the DOC results because the measured concentration in the Lake samples is less than 5-times the concentration in the equipment blank.

- Field Duplicates – All field duplicate parameters were less than the DQO of 50% RPD between the duplicate samples.
- Other Considerations – Replicate 3 from Whale Tail Lake had concentrations of ammonia and total phosphorus that were over an order of magnitude higher than the other two replicate samples collected from Whale Tail Lake during the same sampling event in September 2014 (**Table 2ï1**). In the case of phosphorus, replicate 1 and 5 were below the DL, while replicate 3 was 40-fold higher at 0.083 mg/L. The magnitude of the difference in ammonia between replicate 3 and replicates 1 and 5 is low (~5 to 20-fold). Surface water tends to be well mixed and homogenous throughout the Lakes, as evidenced by the similarity in *in-situ* field-measured water quality parameters (**Table B1ï1**); as such, order of magnitude differences in ammonia and total phosphorus observed at Whale Tail Lake would not be expected. For this reason, the results for ammonia and total phosphorus at Whale Tail Lake are flagged as unreliable.

A1-1.2. Lake and Sentinel Stations (2015)

One duplicate water sample and one equipment blank were collected during each of the three lake and sentinel station sampling events in July, August, and September. Travel blanks were submitted for the July and August events, but the September water samples were submitted without a travel blank, as one was not available on site. QA/QC results are presented in **Table A1ï2** (MDLs, equipment blanks, and travel blanks), **Table A1ï3** (laboratory duplicates), and **Table A1ï4** (field duplicates). Results of the QA/QC analyses are discussed below.

- Laboratory QC
  - There were no instances of laboratory duplicate samples failing the DQOs.
  - Matrix spike samples and CRM analyses were within the laboratory DQOs.
  - There were occasional exceedances of the MB DQO for total alkalinity (< 1.0 mg/L), calcium (<0.05 mg/L). In all cases the results were considered reliable (i.e., concentrations were at least 5-times greater than the blank levels).
  - Dissolved vs Total Concentrations – While lower MDLs are reported for dissolved aluminum, copper, and zinc compared to the total analyses, there were no unexpected patterns of higher dissolved concentrations relative to total.
- Travel Blanks – All analyses were below the MDLs in the travel blanks submitted in July and August.
- Equipment Blanks – The majority of the total and dissolved parameters were below the MDLs for the equipment blanks submitted in July, August, and September. A few metals were detected above the MDL in each event:
  - July – total lead and dissolved aluminum
  - August – total aluminum, barium, cadmium, and lead
  - September – total and dissolved lead

  Each metal parameter was reviewed in detail to evaluate the implications of the possible cross-contamination identified in the equipment blanks:
  - Total aluminum – The concentration in the August equipment blank was 0.0035 mg/L (MDL = 0.003 mg/L). Aluminum was detected in all of the August Lake and Sentinel station samples, but the concentrations were less than 10-times the MDL. For this

reason, even low levels of cross-contamination in the equipment blank have the potential to affect the results. In total, 12 Lake samples and 4 Sentinel station samples were less 5-times the concentration reported in the August equipment blank. Despite the potential influence of cross-contamination, the total aluminum data are only given a cautionary flagging for the following reasons: 1) the August total aluminum concentrations were generally less than the July and September results, and 2) dissolved aluminum was detected in all August samples.

  - Total barium – The concentration in the August equipment blank was 0.00009 mg/L. Barium was detected in every water sample (see **Table 2ï2**). The minimum concentration reported for the August event (Lake and Sentinel stations) was 0.0018 mg/L, or 20-fold higher than the equipment blank. Consequently, the effects of cross-contamination (i.e., <5%) are well within laboratory variability, so the barium results for August meet the overall DQOs for this project.
  - Total cadmium – The cadmium concentration in the August equipment blank was 0.0000089 mg/L. The single August field sample (collected from NEM-3) with measured concentrations was less than 5-times the equipment blank concentration, so is considered unreliable.
  - Total lead – Detected in each event's equipment blank, ranging in concentration from 0.00006 to 0.00071 mg/L. While most of the actual Lake and Sentinel station samples were less than MDL (0.00005 mg/L), total lead concentrations for MAM-06 (September) and PDL-39 (August) were flagged as unreliable, as well as 5 detected values from the Sentinel stations.
  - Dissolved aluminum – Dissolved aluminum was detected in the July equipment blank near the MDL (0.001 mg/L). A cautionary flag was applied to the dissolved aluminum results at NEM-01, NEM-02, C2-JUL, and C20-July because the concentration was below 5-times the concentration in the equipment blank (0.005 mg/L).
  - Dissolved lead – Detected in the September equipment blank (0.000069 mg/L). Results from four Lake samples (WTS-05, NEM-05, NEM-06, MAM-05) and one Sentinel station sample (C20-SEPT) were flagged as unreliable for two reasons: 1) the total lead concentrations were less than the MDL in each sample, and 2) the dissolved concentrations in these samples were less than 5-times the concentration detected in the equipment blank.

- Field Duplicates – All field duplicate parameters were less than the DQO of 50% RPD between the duplicate samples.
- Field Measurements – Anomalous water quality measurements were noted in several field-parameters collected by AEM technicians from the reference areas in 2015. At INUG-74, specific conductivity was greater than 121 µS/cm at all depth profiles down to 10 m. By comparison, the specific conductivity at INUG-75 was between 43 and 26 µS/cm, which is consistent with long-term conditions at INUG. The anomalous results are likely due to issues with the conductivity probe. Similarly, there were two instances of low pH (at or below pH 6.5) at PDL that are also likely reflective of water quality meter issues.
- Other Considerations – TSS was detected in the September sample from C41, which also had elevated concentrations of iron and total phosphorus relative to previous sampling events. The elevated TSS is likely a sampling artifact due to low flow at the time of sample collection; the total iron result for this station is flagged as unreliable.

A1-1.3. Tributary Stations (2015)

A duplicate water sample was collected during each of the August and September sampling events. A travel blank was submitted for the August event but not for September as one was not available at the time of sampling. Equipment blanks were not prepared as the samples were collected directly into the bottles. QA/QC results for the tributary samples are presented in **Table A1ï5** (MDLs, equipment blanks, and travel blanks), **Table A1ï6** (laboratory duplicates), and **Table A1ï7** (field duplicates). Results of the QA/QC analyses are discussed below.

- Travel Blanks – No parameters were above the MDL in the August travel blank.
- Laboratory Duplicates – There were no instances of laboratory duplicate samples failing the DQO.
- Field Duplicates – All field duplicate parameters were less than the DQO of 50% RPD between the duplicate samples.
- Dissolved vs Total Concentrations – There were two instances of dissolved organic carbon (DOC) concentration being reported higher than the total organic carbon (TOC) concentration in tributary samples collected in September (A16-A14 and A13-A12). The results were verified by repeat analysis, suggesting the DOC and TOC samples were labelled incorrectly in the field. No other issues were identified.
- Other Considerations – TSS was detected in a few of the samples. The highest concentration was observed in A55-A17 in September, and resulted in exceedances of the screening criteria of a few parameters. The elevated TSS is likely a sampling artifact due to low flow at the time of sample collection; the total iron result for this station is flagged as unreliable. Further discussion of the exceedance is presented in **Section 2.3.3** of the Main Report.

A1-2. SEDIMENT CHEMISTRY QA/QC RESULTS

Table A1ï8 presents the QA/QC assessment of the metal analyses and includes results of the laboratory duplicate RPDs, the field duplicate RPDs, and results from the equipment swipes. **Table A1ï9** shows the field duplicate RPD results for the hydrocarbon and PAH analyses. No laboratory duplicate or equipment swipe analyses were completed for hydrocarbons or PAHs.

A1-2.1. Laboratory Duplicates

There were no exceedance of the laboratory DQOs for the laboratory duplicates (**Table A1ï8**), indicating acceptable precision in the analytical method.

A1-2.2. Equipment Swipes

Four equipment swipes were submitted with the sediment samples, corresponding to approximately 10% of the samples that were collected. There were a few parameters that were detected on at least one of the swipe samples: aluminum, barium, chromium, iron, magnesium, manganese, nickel, tin, titanium, and zinc (**Table A1ï8**). Of these parameters, only iron was greater than 10-times the MDL (reported in mg metal per swipe). Because of the number of parameters that were detected, two "blank" swipes were submitted in October. Fewer analytes were detected in the blank swipes, but iron, magnesium, and zinc were detected at less than 10-times the MDL. Despite detectable metals on the swipes, the concentrations contributed less than 0.1% of the total metals concentration in the sediment samples in all cases, indicating that any residual metals present on the equipment would not influence the overall sediment chemistry.

A1-2.3. Field Duplicates

Four duplicate sediment samples were collected for metals analysis, one from each of the areas sampled in August. There were no exceedances of the DQO (50% RPD) for metals in the field duplicate samples (**Table A1ï8**). The range of reported RPDs was between -22% and 29%. One duplicate sample had RPDs that exceeded 50% for sand and clay content, likely an artifact of small-scale spatial heterogeneity in particle size at the location (MAM-2).

PAHs and hydrocarbons were below the MDL for the composite sample and duplicate collected from Mammoth Lake in August (**Table A1ï9**). Mineral oil and grease had an RPD of 64% in the field duplicates, but the concentrations were less than 10-times the MDL.

Table A1-1. Equipment blanks and field duplicate results for water parameters, Whale Tail Pit Baseline, 2014.

Analyte	Detection Limits	Equipment Blank[1]	Field Duplicate (Mammoth Lake Rep 5)		
			Rep 5	Duplicate	RPD[2]
Physical Tests					
Conductivity (µS/cm)	2	<2.0	20.40	20.8	-1.9
Hardness (mg/L)	0.5	<0.50	08.0	07.8	2.3
pH (Laboratory)	0.1	5.58	7.14	6.76	5.5
Total Suspended Solids (mg/L)	1	<1.0	<1.0	<1.0	
Total Dissolved Solids (mg/L)	3	<10	17.0	20.0	-16.2
Turbidity (NTU)	0.1	<0.10	0.42	0.39	7
Anions and Nutrients (mg/L)					
Alkalinity, Bicarbonate (as $CaCO_3$)	1	<1.0	5.70	4.00	35
Alkalinity, Carbonate (as $CaCO_3$)	1	<1.0	<1.0	<1.0	
Alkalinity, Hydroxide (as CaCO3)	1	<1.0	<1.0	<1.0	
Alkalinity, Total (as $CaCO_3$)	1	<1.0	5.70	4.00	35
Ammonia, Total (as N)	0.005	<0.0050	0.03	0.02	45
Bromide (Br)	0.05	<0.050	<0.050	<0.050	
Chloride (Cl)	0.1	<0.10	0.69	0.69	0
Fluoride (F)	0.02	<0.020	0.03	0.03	6.5
Nitrate (as N)	0.005	<0.0050	<0.0050	<0.0050	
Nitrite (as N)	0.001	<0.0010	<0.0010	<0.0010	
Total Kjeldahl Nitrogen	0.05				
Orthophosphate-Dissolved (as P)	0.001	<0.0010	<0.0010	<0.0010	
Phosphorus (P)-Total Dissolved	0.002	<0.0020	0.0021	<0.0020	
Phosphorus (P)-Total	0.002	<0.0020	<0.0020	<0.0020	
Silicate (as SiO_2)	0.5	<0.50	0.51	0.57	-11.1
Sulfate (SO_4)	0.3	<0.50	2.83	2.80	1
Cyanides (mg/L)					
Total Cyanide	0.001	<0.0050	<0.0050	<0.0050	
Free Cyanide	0.001	<0.0050	<0.0050	<0.0050	
Organic / Inorganic Carbon (mg/L)					
Dissolved Organic Carbon	0.5	**0.83**	2.19	2.25	-3
Total Organic Carbon	0.5	<0.50	1.93	1.87	3.2
Plant Pigments (µg/L)					
Chlorophyll-a	0.01	-	0.34	0.37	-10
Total Metals (mg/L)					
Aluminum	0.003	<0.0030	0.01	0.01	-10
Antimony	0.0001	<0.00010	<0.00010	<0.00010	
Arsenic	0.0001	<0.00010	0.00043	0.00043	0
Barium	0.00005	**0.00006**	0.0035	0.0035	1.2
Beryllium	0.0001	<0.00010	<0.00010	<0.00010	
Bismuth	0.0005	<0.00050	<0.00050	<0.00050	
Boron	0.01	<0.010	<0.010	<0.010	
Cadmium	0.00001	<0.000010	<0.000010	<0.000010	
Calcium	0.05	<0.050	1.91	1.89	1.1
Chromium	0.0001	<0.00010	0.00013	0.00	17
Cobalt	0.0001	<0.00010	<0.00010	<0.00010	
Copper	0.0005	<0.00050	<0.00050	<0.00050	
Iron	0.01	<0.010	0.021	0.021	0.0
Lead	0.00005	**0.00005**	<0.000050	<0.000050	
Lithium	0.0005	<0.00050	<0.00050	<0.00050	
Magnesium	0.1	<0.10	0.74	0.74	0.0
Manganese	0.00005	**0.00008**	0.0014	0.0014	1.4
Mercury	0.00001	<0.000010	<0.000010	<0.000010	
Molybdenum	0.00005	<0.000050	<0.000050	<0.000050	
Nickel	0.0005	<0.00050	0.00052	0.00050	3.9
Phosphorus	0.05	<0.050	<0.050	<0.050	
Potassium	0.1	<0.10	0.53	0.55	-4
Selenium	0.0001	<0.00010	<0.00010	<0.00010	
Silicon	0.05	<0.050	0.32	0.33	-1.5
Silver	0.00001	<0.000010	<0.000010	<0.000010	
Sodium	0.05	<0.050	0.50	0.50	-1.0
Strontium	0.0002	<0.00020	0.008	0.008	0
Sulfur	0.5	<0.50	0.96	0.93	3
Thallium	0.00001	<0.000010	<0.000010	<0.000010	
Tin	0.0001	<0.00010	<0.00010	<0.00010	
Titanium	0.01	<0.010	<0.010	<0.010	
Uranium	0.00001	<0.000010	0.000024	0.000021	13.3
Vanadium	0.001	<0.0010	<0.0010	<0.0010	
Zinc	0.003	<0.0030	<0.0030	<0.0030	

Table A1-1. Equipment blanks and field duplicate results for water parameters, Whale Tail Pit Baseline, 2014.

Analyte	Detection Limits	Equipment Blank[1]	Field Duplicate (Mammoth Lake Rep 5)		
			Rep 5	Duplicate	RPD[2]
Dissolved Metals (mg/L)					
Aluminum	0.001	**0.0018**	0.0060	0.0066	-10
Antimony	0.0001	*<0.00010*	*<0.00010*	*<0.00010*	
Arsenic	0.0001	*<0.00010*	0.0004	0.00040	-2.5
Barium	0.00005	**0.000099**	0.0035	0.0035	1.4
Beryllium	0.0001	*<0.00010*	*<0.00010*	*<0.00010*	
Bismuth	0.0005	*<0.00050*	*<0.00050*	*<0.00050*	
Boron	0.01	*<0.010*	*<0.010*	*<0.010*	
Cadmium	0.00001	*<0.000010*	*<0.000010*	*<0.000010*	
Calcium	0.05	*<0.050*	1.94	1.91	1.6
Chromium	0.0001	*<0.00010*	*<0.00010*	*<0.00010*	
Cobalt	0.0001	*<0.00010*	*<0.00010*	*<0.00010*	
Copper	0.0002	*<0.00020*	0.00039	0.00038	2.6
Iron	0.01	*<0.010*	0.01	0.01	10
Lead	0.00005	**0.00047**	*<0.000050*	*<0.000050*	
Lithium	0.0005	*<0.00050*	*<0.00050*	*<0.00050*	
Magnesium	0.1	*<0.10*	0.76	0.73	4.0
Manganese	0.00005	**0.000114**	0.0010	0.0009	7
Mercury	0.00001	*<0.000010*	*<0.000010*	*<0.000010*	
Molybdenum	0.00005	*<0.000050*	*<0.000050*	*<0.000050*	
Nickel	0.0005	*<0.00050*	*<0.00050*	*<0.00050*	
Phosphorus	0.05	*<0.050*	*<0.050*	*<0.050*	
Potassium	0.1	*<0.10*	0.53	0.53	0.0
Selenium	0.0001	*<0.00010*	*<0.00010*	*<0.00010*	
Silicon	0.05	*<0.050*	0.33	0.32	4.3
Silver	0.00001	*<0.000010*	*<0.000010*	*<0.000010*	
Sodium	0.05	*<0.050*	0.50	0.50	-0.8
Strontium	0.0002	*<0.00020*	0.008	0.008	0.0
Sulfur	0.5	*<0.50*	0.93	0.98	-5
Thallium	0.00001	*<0.000010*	*<0.000010*	*<0.000010*	
Tin	0.0001	*<0.00010*	*<0.00010*	*<0.00010*	
Titanium	0.01	*<0.010*	*<0.010*	*<0.010*	
Uranium	0.00001	*<0.000010*	0.000020	0.000022	-9.5
Vanadium	0.001	*<0.0010*	*<0.0010*	*<0.0010*	
Zinc	0.001	*<0.0010*	*<0.0010*	*<0.0010*	

Notes:

Data presented here were adapted from Portt and Associates (2015a).

1 **Bolded Equipment Blank values** — concentrations exceeds laboratory MDLs but < 10 x MDL.

Shaded Equipment Blank values — concentrations is > 10 x MDL.

2 RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

RPDs have not been calculated for cases where one of the samples is below detection and the other is not and in cases where both are below detection. RPD has been left blank.

The data quality objective (DQO) for field duplicates is an RPD < 50%.

Bolded RPDs — RPD values exceed 50% but < 10 x MDL.

Shaded RPD — RPD values exceed 50% and > 10 x MDL.

Italicized numbers are below detection limits.

Table A1-2. Detection limits, equipment blanks, and travel blanks for water parameters in Lake and Sentinel station samples, Whale Tail Pit Baseline, 2015.

Month	Detection Limits			Equipment Blanks			Travel Blanks[1]	
	July	August	September	JUL EB-1	AUG EB-1	SEPT EB-1	JUL TRAV-1	AUG TRAV-2
Analyte	Min	Min	Min					
Physical Tests								
Conductivity (µS/cm)	2	2	2	<2.0	<2.0	<2.0	<2.0	<2.0
Hardness (mg/L)	0.5	0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH (Laboratory)	0.1	0.1	0.1	5.45	5.4	5.54	5.8	5.34
Total Suspended Solids (mg/L)	1	1	1	<1.0	<1.0	<1.0	-	<1.0
Total Dissolved Solids (mg/L)	3	3	3	<3.0	<3.0	<3.0	-	<3.0
Turbidity (NTU)	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anions and Nutrients (mg/L)								
Alkalinity, Bicarbonate (as $CaCO_3$)	1	1	1	<1.0	<1.0	<1.0	<2.0	<1.0
Alkalinity, Carbonate (as $CaCO_3$)	1	1	1	<1.0	<1.0	<1.0	<2.0	<1.0
Alkalinity, Hydroxide (as CaCO3)	1	1	1	<1.0	<1.0	<1.0	<2.0	<1.0
Alkalinity, Total (as $CaCO_3$)	1	1	1	<1.0	<1.0	<1.0	<2.0	<1.0
Ammonia, Total (as N)	0.005	0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Bromide (Br)	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Cl)	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoride (F)	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nitrate (as N)	0.005	0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Kjeldahl Nitrogen	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Orthophosphate-Dissolved (as P)	0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus (P)-Total Dissolved	0.002	0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Phosphorus (P)-Total	0.002	0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicate (as SiO_2)	0.5	0.5	0.5	<0.5	<0.5	<0.5	<0.002	<0.5
Sulfate (SO_4)	0.3	0.3	0.3	<0.30	<0.30	<0.30	<0.5	<0.30
Cyanides (mg/L)								
Total Cyanide	0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Free Cyanide	0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Organic / Inorganic Carbon (mg/L)								
Dissolved Organic Carbon	0.5	0.5	0.5	<0.5	<0.5	<0.5	-	-
Total Organic Carbon	0.5	0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Plant Pigments (µg/L)								
Chlorophyll-a	0.01	0.01	0.01					
Total Metals (mg/L)								
Aluminum	0.003	0.003	0.003	<0.003	**0.0035**	<0.003	<0.003	<0.003
Antimony	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Barium	0.00005	0.00005	0.00005	<0.00005	**0.00009**	<0.00005	<0.00005	<0.00005
Beryllium	0.00002	0.00002	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Bismuth	0.00005	0.00005	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Boron	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	0.000005	0.000005	0.000005	<0.000005	**0.0000087**	<0.000005	<0.000005	<0.000005
Calcium	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper	0.0005	0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Iron	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lead	0.00005	0.00005	0.00005	**0.00006**	0.00071	**0.00019**	<0.00005	<0.00005
Lithium	0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Mercury	0.000005	0.000005	0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum	0.00005	0.00005	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Nickel	0.0005	0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Phosphorus	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	0.00005	0.00005	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Silicon	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	0.00001	0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sodium	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Strontium	0.0002	0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sulfur	0.5	0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Thallium	0.00001	0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Tin	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium	0.0003	0.0003	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Uranium	0.00001	0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Vanadium	0.0005	0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc	0.003	0.003	0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Zirconium	0.0003	0.0003	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Dissolved Metals (mg/L)	0							
Aluminum	0.001	0.001	0.001	**0.001**	<0.001	<0.001		
Antimony	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001		
Arsenic	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001		
Barium	0.00005	0.00005	0.00005	<0.00005	<0.00005	<0.00005		
Beryllium	0.00002	0.00002	0.00002	<0.00002	<0.00002	<0.00002		
Bismuth	0.00005	0.00005	0.00005	<0.00005	<0.00005	<0.00005		
Boron	0.01	0.01	0.01	<0.01	<0.01	<0.01		
Cadmium	0.000005	0.000005	0.000005	<0.000005	<0.000005	<0.000005		
Calcium	0.05	0.05	0.05	<0.05	<0.05	<0.05		
Chromium	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001		
Cobalt	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001		

Table A1-2. Detection limits, equipment blanks, and travel blanks for water parameters in Lake and Sentinel station samples, Whale Tail Pit Baseline, 2015.

	Detection Limits			Equipment Blanks			Travel Blanks[1]	
Month	**July**	**August**	**September**	**JUL EB-1**	**AUG EB-1**	**SEPT EB-1**	**JUL TRAV-1**	**AUG TRAV-2**
Analyte	Min	Min	Min					
Copper	0.0002	0.0002	0.0002	*<0.0002*	*<0.0002*	*<0.0002*		
Iron	0.01	0.01	0.01	*<0.01*	*<0.01*	*<0.01*		
Lead	0.00005	0.00005	0.00005	*<0.00005*	*<0.00005*	**0.00007**		
Lithium	0.001	0.001	0.001	*<0.001*	*<0.001*	*<0.001*		
Magnesium	0.1	0.1	0.1	*<0.1*	*<0.1*	*<0.1*		
Manganese	0.0001	0.0001	0.0001	*<0.0001*	*<0.0001*	*<0.0001*		
Mercury	0.000005	0.000005	0.000005	*<0.000005*	*<0.000005*	*<0.000005*		
Molybdenum	0.00005	0.00005	0.00005	*<0.00005*	*<0.00005*	*<0.00005*		
Nickel	0.0005	0.0005	0.0005	*<0.0005*	*<0.0005*	*<0.0005*		
Phosphorus	0.05	0.05	0.05	*<0.05*	*<0.05*	*<0.05*		
Potassium	0.1	0.1	0.1	*<0.1*	*<0.1*	*<0.1*		
Selenium	0.00005	0.00005	0.00005	*<0.00005*	*<0.00005*	*<0.00005*		
Silicon	0.05	0.05	0.05	*<0.05*	*<0.05*	*<0.05*		
Silver	0.00001	0.00001	0.00001	*<0.00001*	*<0.00001*	*<0.00001*		
Sodium	0.05	0.05	0.05	*<0.05*	*<0.05*	*<0.05*		
Strontium	0.0002	0.0002	0.0002	*<0.0002*	*<0.0002*	*<0.0002*		
Sulfur	0.5	0.5	0.5	*<0.5*	*<0.5*	*<0.5*		
Thallium	0.00001	0.00001	0.00001	*<0.00001*	*<0.00001*	*<0.00001*		
Tin	0.0001	0.0001	0.0001	*<0.0001*	*<0.0001*	*<0.0001*		
Titanium	0.0003	0.0003	0.0003	*<0.0003*	*<0.0003*	*<0.0003*		
Uranium	0.00001	0.00001	0.00001	*<0.00001*	*<0.00001*	*<0.00001*		
Vanadium	0.0005	0.0005	0.0005	*<0.0005*	*<0.0005*	*<0.0005*		
Zinc	0.001	0.001	0.0010	*<0.001*	*<0.001*	*<0.001*		
Zirconium	0.0003	0.0003	0.0003	*<0.0003*	*<0.0003*	*<0.0003*		

Notes:

[1] A travel blank was not available for submission with the September samples.

Bolded Equipment or Travel Blank values concentrations exceeds laboratory MDLs but < 10 x MDL.

Shaded Equipment or Travel Blank values concentrations is > 10 x MDL.

Italicized numbers are below detection limits.

Table A1-3. Laboratory QA/QC results for water parameters in Lake and Sentinel station samples, Whale Tail Pit Baseline, 2015.

Month			July				August				September		
ALS Report Number	Laboratory	July MDLs	L1648210 & L1649931			August MDLs	L1665542 & L1667195			September MDLs	L1679751 & L1681194		
Analyte	DQOs[1]		Original	Lab Dup	RPD[2]/Diff[3]		Original	Lab Dup	RPD[2]/Diff[3]		Original	Lab Dup	RPD[2]/Diff[3]
Physical Tests													
Conductivity (µS/cm)	10	2				2				2			
Hardness (mg/L)	25	0.5				0.5				0.5			
pH (Laboratory)	0.3	0.1				0.1				0.1			
Total Suspended Solids (mg/L)	20	1				1				1			
Total Dissolved Solids (mg/L)	20	3	16	14.9	7.1	3				3			
Turbidity (NTU)	15	0.1	0.39	0.39	0	0.1	0.23	0.26	-12	0.1			
Anions and Nutrients (mg/L)													
Alkalinity, Bicarbonate (as $CaCO_3$)	20	1				1				1			
Alkalinity, Carbonate (as $CaCO_3$)	20	1				1				1			
Alkalinity, Hydroxide (as CaCO3)	20	1				1				1			
Alkalinity, Total (as $CaCO_3$)	20	1				1				1			
Ammonia, Total (as N)	20	0.005				0.005	*<0.005*	*<0.005*		0.005	*<0.005*	*<0.005*	
Bromide (Br)	20	0.05				0.05	*<0.05*	*<0.05*		0.05			
Chloride (Cl)	20	0.1				0.1	1.57	1.57	0	0.1			
Fluoride (F)	20	0.02				0.02	0.025	0.025	0	0.02			
Nitrate (as N)	20	0.005				0.005	*<0.005*	*<0.005*		0.005			
Nitrite (as N)	20	0.001				0.001	*<0.001*	*<0.001*		0.001			
Total Kjeldahl Nitrogen	20	0.05	0.171	0.164	4.2	0.05	0.107	0.108	-0.9	0.05	0.129	0.127	1.6
Orthophosphate (as P)	20	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*		0.001			
Phosphorus (P)-Total Diss.	20	0.002				0.002	0.0023	0.003	0.0007	0.002			
Phosphorus (P)-Total	20	0.002				0.002	*<0.002*	*<0.002*		0.002	*<0.002*	*<0.002*	
Silicate (as SiO_2)	20	0.5				0.5				0.5			
Sulfate (SO_4)	20	0.3				0.3	1.31	1.31	0	0.3			
Cyanides (mg/L)													
Total Cyanide	20	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*	
Free Cyanide	20	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*	
Organic / Inorganic Carbon (mg/L)													
Dissolved Organic Carbon	20	0.5	2.15	2.07	3.8	0.5	1.85	1.77	4.4	0.5	1.22	1.31	-7.1
Total Organic Carbon	20	0.5	2.29	2.46	-7.2	0.5	1.72	1.8	-4.5	0.5	1.55	1.45	6.7
Plant Pigments (µg/L)													
Chlorophyll-a	35	0.01				0.01				0.01			
Total Metals (mg/L)													
Aluminum	20	0.003				0.003				0.003	0.0116	0.0127	-9.1
Antimony	20	0.0001				0.0001				0.0001	*<0.0001*	*<0.0001*	
Arsenic	20	0.0001				0.0001				0.0001	0.00019	0.00019	0
Barium	20	0.00005				0.00005				0.00005	0.0041	0.00411	-0.2
Beryllium	20	0.00002				0.00002				0.00002	*<0.00002*	*<0.00002*	
Bismuth	20	0.00005				0.00005				0.00005	*<0.00005*	*<0.00005*	
Boron	20	0.01				0.01				0.01	*<0.01*	*<0.01*	
Cadmium	20	0.000005				0.000005				0.000005	*<0.000005*	*<0.000005*	
Calcium	20	0.05				0.05				0.05	2.15	2.11	1.9
Chromium	20	0.0001				0.0001				0.0001	0.00014	0.00016	-13
Cobalt	20	0.0001				0.0001				0.0001	*<0.0001*	*<0.0001*	
Copper	20	0.0005				0.0005				0.0005	*<0.0005*	*<0.0005*	
Iron	20	0.01				0.01				0.01	0.021	0.028	0.007
Lead	20	0.00005				0.00005				0.00005	*<0.00005*	*<0.00005*	
Lithium	20	0.001				0.001				0.001	*<0.001*	*<0.001*	
Magnesium	20	0.1				0.1				0.1	0.71	0.7	1.4
Manganese	20	0.0001				0.0001				0.0001	0.00365	0.00359	1.7
Mercury	20	0.000005	*<0.000005*	*<0.000005*		0.000005				0.000005			
Molybdenum	20	0.00005				0.00005				0.00005	*<0.00005*	*<0.00005*	
Nickel	20	0.0005				0.0005				0.0005	0.0006	0.00063	-4.9
Phosphorus	20	0.05				0.05				0.05	*<0.05*	*<0.05*	
Potassium	20	0.1				0.1				0.1	0.39	0.38	2.6
Selenium	20	0.00005				0.00005				0.00005	*<0.00005*	*<0.00005*	
Silicon	20	0.05				0.05				0.05	0.247	0.246	0.4
Silver	20	0.00001				0.00001				0.00001	*<0.00001*	*<0.00001*	
Sodium	20	0.05				0.05				0.05	0.526	0.52	1.1
Strontium	20	0.0002				0.0002				0.0002	0.0145	0.0143	1.4
Sulfur	20	0.5				0.5				0.5	0.54	0.52	3.8
Thallium	20	0.00001				0.00001				0.00001	*<0.00001*	*<0.00001*	
Tin	20	0.0001				0.0001				0.0001	*<0.0001*	*<0.0001*	
Titanium	20	0.0003				0.0003				0.0003	*<0.0003*	*<0.0003*	
Uranium	20	0.00001				0.00001				0.00001	0.000032	0.000032	0
Vanadium	20	0.0005				0.0005				0.0005	*<0.0005*	*<0.0005*	
Zinc	20	0.003				0.003				0.003	*<0.003*	*<0.003*	
Zirconium	20	0.0003				0.0003				0.0003	*<0.0003*	*<0.0003*	
Dissolved Metals (mg/L)													
Aluminum	20	0.001				0.001	0.0053	0.0055	-3.7	0.001			
Antimony	20	0.0001				0.0001	*<0.0001*	*<0.0001*		0.0001			
Arsenic	20	0.0001				0.0001	0.00016	0.00017	-6.1	0.0001			
Barium	20	0.00005				0.00005	0.00329	0.00326	0.9	0.00005			
Beryllium	20	0.00002				0.00002	*<0.00002*	*<0.00002*		0.00002			
Bismuth	20	0.00005				0.00005	*<0.00005*	*<0.00005*		0.00005			
Boron	20	0.01				0.01	*<0.01*	*<0.01*		0.01			
Cadmium	20	0.000005				0.000005	*<0.000005*	*<0.000005*		0.000005			
Calcium	20	0.05				0.05	1.63	1.65	-1.2	0.05			
Chromium	20	0.0001				0.0001	*<0.0001*	*<0.0001*		0.0001			
Cobalt	20	0.0001				0.0001	*<0.0001*	*<0.0001*		0.0001			
Copper	20	0.0002				0.0002	0.00034	0.00036	-5.7	0.0002			
Iron	20	0.01				0.01	0.011	0.011	0	0.01			
Lead	20	0.00005				0.00005	*<0.00005*	*<0.00005*		0.00005			
Lithium	20	0.001				0.001	*<0.001*	*<0.001*		0.001			
Magnesium	20	0.1				0.1	0.63	0.64	-1.6	0.1			
Manganese	20	0.0001				0.0001	0.00136	0.00134	1.5	0.0001			
Mercury	20	0.000005	*<0.000005*	*<0.000005*		0.000005				0.000005			
Molybdenum	20	0.00005				0.00005	*<0.00005*	*<0.00005*		0.00005			
Nickel	20	0.0005				0.0005	0.0005	0.0005	0	0.0005			
Phosphorus	20	0.05				0.05	*<0.05*	*<0.05*		0.05			
Potassium	20	0.1				0.1	0.36	0.35	2.8	0.1			
Selenium	20	0.00005				0.00005	*<0.00005*	*<0.00005*		0.00005			
Silicon	20	0.05				0.05	0.25	0.253	-1.2	0.05			
Silver	20	0.00001				0.00001	*<0.00001*	*<0.00001*		0.00001			
Sodium	20	0.05				0.05	0.502	0.506	-0.8	0.05			
Strontium	20	0.0002				0.0002	0.00984	0.00986	-0.2	0.0002			
Sulfur	20	0.5				0.5	*<0.5*	*<0.5*		0.5			
Thallium	20	0.00001				0.00001	*<0.00001*	*<0.00001*		0.00001			
Tin	20	0.0001				0.0001	*<0.0001*	*<0.0001*		0.0001			
Titanium	20	0.0003				0.0003	*<0.0003*	*<0.0003*		0.0003			
Uranium	20	0.00001				0.00001	0.000031	0.000032	-3.2	0.00001			
Vanadium	20	0.0005				0.0005	*<0.0005*	*<0.0005*		0.0005			
Zinc	20	0.001				0.001	*<0.001*	*<0.001*		0.001			
Zirconium	20	0.0003				0.0003	*<0.0003*	*<0.0003*		0.0003			

Notes:

[1] DQO = Data quality objectives (i.e., RPD limits) for laboratory duplicate samples. DQOs shown as percentages except for pH (units).

[2] RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

RPDs have not been calculated for cases where one of the samples is below detection and the other is not and in cases where both are below detection. RPD has been left blank.

[3] Diff = The difference between the replicate values in concentration units. Used in cases where the concentration is <10x the MDL.

For low level results, the DQO is a concentration difference between the two measurements of < 2x the MDL (unless the RPD is met).

Bolded RPDs RPD values exceed laboratory DQO but < 10 x MDL.

Shaded RPD RPD values exceed laboratory DQO and > 10 x MDL.

Blank cells indicate no laboratory duplicate analysis was conducted.

Italicized numbers are below detection limits.

Table A1-4. Field duplicate QA/QC results from the Lake and Sentinel station water sampling program, Whale Tail Pit Baseline, 2015.

Month	July				August				September			
Station	July MDLs	Whale Tail Lake (South Basin)			August MDLs	Whale Tail Lake (North Basin)			September MDLs	Whale Tail Lake (North Basin)		
Analyte		WTS-02-S	JUL DUP-1	RPD		WTN-04-S	AUG DUP-1	RPD		WTN-06-S	SEP DUP-1	RPD
Physical Tests												
Conductivity (µS/cm)	2	15.9	15.4	3.2	2	19.80	19.5	1.5	2	21.80	21.4	1.9
Hardness (mg/L)	0.5	5.8	5.9	-1.7	0.5	07.2	07.1	0.6	0.5	07.8	8.09	-4.2
pH (Laboratory)	0.1	6.78	6.76	0.3	0.1	6.82	6.70	1.8	0.1	6.75	6.76	-0.1
Total Suspended Solids (mg/L)	1	*<1.0*	*<1.0*		1	*<1.0*	*<1.0*		1	*<1.0*	*<1.0*	
Total Dissolved Solids (mg/L)	3	13.8	13.3	3.7	3	13.2	14.2	-7.3	3	17.7	17.0	4.0
Turbidity (NTU)	0.1	0.35	0.37	-5.6	0.1	0.28	0.24	15	0.1	0.35	0.32	9.0
Anions and Nutrients (mg/L)												
Alkalinity, Bicarbonate (as $CaCO_3$)	1	4.20	3.90	7.4	1	3.90	4.30	-10	1	5	4	6.7
Alkalinity, Carbonate (as $CaCO_3$)	1	*<1.0*	*<1.0*		1	*<1.0*	*<1.0*		1	*<1.0*	*<1.0*	
Alkalinity, Hydroxide (as CaCO3)	1	*<1.0*	*<1.0*		1	*<1.0*	*<1.0*		1	*<1.0*	*<1.0*	
Alkalinity, Total (as $CaCO_3$)	1	4.20	3.90	7.4	1	3.90	4.30	-10	1	5	4	6.7
Ammonia, Total (as N)	0.005	*<0.005*	*<0.005*		0.005	*<0.005*	0.01		0.005	*<0.005*	*<0.005*	
Bromide (Br)	0.05	*<0.05*	*<0.05*		0.05	*<0.05*	*<0.05*		0.05	*<0.05*	*<0.05*	
Chloride (Cl)	0.1	1.06	1.05	0.9	0.1	1.84	1.84	0	0.1	2.38	2.36	0.8
Fluoride (F)	0.02	0.03	0.02	4.1	0.02	0.03	0.03	-3.9	0.02	0.026	0.026	0
Nitrate (as N)	0.005	*<0.005*	*<0.005*		0.005	*<0.005*	*<0.005*		0.005	*<0.005*	*<0.005*	
Nitrite (as N)	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*	
Total Kjeldahl Nitrogen	0.05	0.14	0.16	-13	0.05	0.11	0.15	-35	0.05	0.12	0.12	-2.5
Orthophosphate-Dissolved (as P)	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*	
Phosphorus (P)-Total Dissolved	0.002	0.002	*<0.002*		0.002	0.0028	0.0025	11	0.002	*<0.002*	*<0.002*	
Phosphorus (P)-Total	0.002	0.002	0.005	**-67**	0.002	0.002	0.004	-44	0.002	0.0031	*<0.002*	
Silicate (as SiO_2)	0.5	0.54	0.54	0	0.5	0.57	0.56	1.8	0.5	0.67	0.67	0
Sulfate (SO_4)	0.3	1.22	1.21	0.8	0.3	1.37	1.37	0	0.3	1.37	1.37	0
Cyanides (mg/L)												
Total Cyanide	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*	
Free Cyanide	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*	
Organic / Inorganic Carbon (mg/L)												
Dissolved Organic Carbon	0.5	1.98	2.04	-3.0	0.5	2.09	1.79	15	0.5	1.74	1.79	-2.8
Total Organic Carbon	0.5	2.02	1.96	3.0	0.5	1.78	1.80	-1.1	0.5	1.77	1.87	-5.5
Plant Pigments (µg/L)												
Chlorophyll-a	0.01	0.28	0.21	29	0.01	0.70	0.80	-14	0.01	0.934	0.85	10
Total Metals (mg/L)												
Aluminum	0.003	0.02	0.02	-2.9	0.003	0.01	0.01	18	0.003	0.012	0.0112	6.9
Antimony	0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*	
Arsenic	0.0001	0.00013	0.00013	0	0.0001	0.00018	0.00021	-15	0.0001	0.00018	0.00018	0
Barium	0.00005	0.0033	0.0034	-3.3	0.00005	0.0035	0.0036	-2.9	0.00005	0.00372	0.00374	-0.5
Beryllium	0.00002	*<0.00002*	*<0.00002*		0.00002	*<0.00002*	*<0.00002*		0.00002	*<0.00002*	*<0.00002*	
Bismuth	0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*	
Boron	0.01	*<0.01*	*<0.01*		0.01	*<0.01*	*<0.01*		0.01	*<0.01*	*<0.01*	
Cadmium	0.000005	*<0.000005*	*<0.000005*		0.000005	*<0.000005*	*<0.000005*		0.000005	*<0.000005*	*<0.000005*	
Calcium	0.05	1.37	1.36	0.7	0.05	1.77	1.74	1.7	0.05	1.95	1.93	1.0
Chromium	0.0001	*<0.0001*	0.00012		0.0001	0.00010	*<0.0001*		0.0001	0.00011	0.00017	-43
Cobalt	0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*	
Copper	0.0005	*<0.0005*	*<0.0005*		0.0005	*<0.0005*	*<0.0005*		0.0005	*<0.0005*	*<0.0005*	
Iron	0.01	0.037	0.037	0	0.01	0.019	0.018	5.4	0.01	0.024	0.021	13
Lead	0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*	
Lithium	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*	
Magnesium	0.1	0.56	0.55	1.8	0.1	0.65	0.64	1.6	0.1	0.70	0.70	0
Manganese	0.0001	0.0052	0.0051	0.8	0.0001	0.0026	0.0027	-4.6	0.0001	0.00294	0.00262	12
Mercury	0.000005	*<0.000005*	*<0.000005*		0.000005	*<0.000005*	*<0.000005*		0.000005	*<0.000005*	*<0.000005*	
Molybdenum	0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*		0.00005	0.000059	*<0.00005*	
Nickel	0.0005	0.00067	0.00067	0	0.0005	0.00059	0.00061	-3.3	0.0005	0.00061	0.00057	6.8
Phosphorus	0.05	*<0.05*	*<0.05*		0.05	*<0.05*	*<0.05*		0.05	*<0.05*	*<0.05*	
Potassium	0.1	0.33	0.33	0	0.1	0.37	0.37	0	0.1	0.38	0.36	5.4
Selenium	0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*	
Silicon	0.05	0.31	0.30	3.0	0.05	0.27	0.25	5.0	0.05	0.263	0.259	1.5
Silver	0.00001	*<0.00001*	*<0.00001*		0.00001	*<0.00001*	*<0.00001*		0.00001	*<0.00001*	*<0.00001*	
Sodium	0.05	0.47	0.48	-0.4	0.05	0.49	0.52	-4.6	0.05	0.55	0.52	4.5
Strontium	0.0002	0.008	0.008	0	0.0002	0.011	0.011	0	0.0002	0.0128	0.0126	1.6
Sulfur	0.5	*<0.5*	*<0.5*		0.5	*<0.5*	0.52		0.5	0.53	*<0.5*	
Thallium	0.00001	*<0.00001*	*<0.00001*		0.00001	*<0.00001*	*<0.00001*		0.00001	*<0.00001*	*<0.00001*	
Tin	0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*	
Titanium	0.0003	*<0.0003*	*<0.0003*		0.0003	*<0.0003*	*<0.0003*		0.0003	*<0.0003*	*<0.0003*	
Uranium	0.00001	0.000043	0.000042	2.4	0.00001	0.000035	0.000034	2.9	0.00001	0.000035	0.000035	0
Vanadium	0.0005	*<0.0005*	*<0.0005*		0.0005	*<0.0005*	*<0.0005*		0.0005	*<0.0005*	*<0.0005*	
Zinc	0.003	*<0.003*	*<0.003*		0.003	*<0.003*	*<0.003*		0.003	*<0.003*	*<0.003*	
Zirconium	0.0003	*<0.0003*	*<0.0003*		0.0003	*<0.0003*	*<0.0003*		0.0003	*<0.0003*	*<0.0003*	
Dissolved Metals (mg/L)												
Aluminum	0.001	0.012	0.013	-10	0.001	0.0048	0.0048	0	0.001	0.0038	0.0037	2.7
Antimony	0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*	
Arsenic	0.0001	0.00012	0.00011	8.7	0.0001	0.00	0.00020	-5.1	0.0001	0.00017	0.00017	0
Barium	0.00005	0.0033	0.0032	3.1	0.00005	0.00	0.0036	-2.9	0.00005	0.00373	0.00380	-1.9
Beryllium	0.00002	0.00	*<0.00002*		0.00002	*<0.00002*	*<0.00002*		0.00002	*<0.00002*	*<0.00002*	
Bismuth	0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*	
Boron	0.01	*<0.01*	*<0.01*		0.01	*<0.01*	*<0.01*		0.01	*<0.01*	*<0.01*	
Cadmium	0.000005	*<0.000005*	*<0.000005*		0.000005	*<0.000005*	*<0.000005*		0.000005	*<0.000005*	*<0.000005*	
Calcium	0.05	1.39	1.42	-2.1	0.05	1.80	1.78	1.1	0.05	1.96	2.06	-5.0
Chromium	0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*	
Cobalt	0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*	
Copper	0.0002	0.00034	0.00034	0	0.0002	0.00037	0.00036	2.7	0.0002	0.00031	0.00033	-6.3
Iron	0.01	0.023	0.021	9.1	0.01	*<0.01*	*<0.01*		0.01	*<0.01*	*<0.01*	
Lead	0.00005	0.00008	0.00006	37	0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*	
Lithium	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*	
Magnesium	0.1	0.56	0.57	-1.8	0.1	0.66	0.65	1.5	0.1	0.70	0.71	-1.4
Manganese	0.0001	0.0042	0.0041	3.1	0.0001	0.0013	0.0012	12	0.0001	0.00084	0.00085	-1.2
Mercury	0.000005	*<0.000005*	*<0.000005*		0.000005	*<0.000005*	*<0.000005*		0.000005	*<0.000005*	*<0.000005*	
Molybdenum	0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*	
Nickel	0.0005	0.00068	0.00063	7.6	0.0005	0.00053	0.00054	-1.9	0.0005	0.00053	0.00051	3.8
Phosphorus	0.05	*<0.05*	*<0.05*		0.05	*<0.05*	*<0.05*		0.05	*<0.05*	*<0.05*	
Potassium	0.1	0.31	0.32	-3.2	0.1	0.37	0.38	-2.7	0.1	0.39	0.37	5.3
Selenium	0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*		0.00005	*<0.00005*	*<0.00005*	
Silicon	0.05	0.30	0.30	0	0.05	0.26	0.25	2.4	0.05	0.246	0.243	1.2
Silver	0.00001	*<0.00001*	*<0.00001*		0.00001	*<0.00001*	*<0.00001*		0.00001	*<0.00001*	*<0.00001*	
Sodium	0.05	0.46	0.47	-1.3	0.05	0.50	0.51	-1.8	0.05	0.53	0.52	1.7
Strontium	0.0002	0.01	0.01	-1.7	0.0002	0.011	0.011	-0.9	0.0002	0.0128	0.01320	-3.1
Sulfur	0.5	*<0.5*	*<0.5*		0.5	*<0.5*	*<0.5*		0.5	*<0.5*	*<0.5*	
Thallium	0.00001	*<0.00001*	*<0.00001*		0.00001	*<0.00001*	*<0.00001*		0.00001	*<0.00001*	*<0.00001*	
Tin	0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*		0.0001	*<0.0001*	*<0.0001*	
Titanium	0.0003	*<0.0003*	*<0.0003*		0.0003	*<0.0003*	*<0.0003*		0.0003	*<0.0003*	*<0.0003*	
Uranium	0.00001	0.000042	0.000040	4.9	0.00001	0.000031	0.000030	3.3	0.00001	0.000028	0.000027	3.6
Vanadium	0.0005	*<0.0005*	*<0.0005*		0.0005	*<0.0005*	*<0.0005*		0.0005	*<0.0005*	*<0.0005*	
Zinc	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*		0.001	*<0.001*	0.006	
Zirconium	0.0003	*<0.0003*	*<0.0003*		0.0003	*<0.0003*	*<0.0003*		0.0003	*<0.0003*	*<0.0003*	

Notes:

RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

RPDs have not been calculated for cases where one of the samples is below detection and the other is not and in cases where both are below detection. RPD has been left blank.

The data quality objective (DQO) for field duplicates is an RPD < 50%.

Bolded RPDs RPD values exceed 50% but < 10 x MDL.

Shaded RPD RPD values exceed 50% and > 10 x MDL.

Italicized numbers are below detection limits.

Table A1-5. Detection limits and travel blanks for water parameters from the Tributary sampling program, Whale Tail Pit Baseline, 2015.

Month	Detection Limits		Travel Blanks[1]
	August	September	AUG TRAV-2
Analyte	Min	Min	
Physical Tests			
Conductivity (µS/cm)	2	2	
Hardness (mg/L)	0.5	0.5	*<0.5*
pH (Laboratory)	0.1	0.1	
Total Suspended Solids (mg/L)	1	1	
Total Dissolved Solids (mg/L)	3	3	
Turbidity (NTU)	0.1	0.1	
Anions and Nutrients (mg/L)			
Alkalinity, Bicarbonate (as $CaCO_3$)	1	1	
Alkalinity, Carbonate (as $CaCO_3$)	1	1	
Alkalinity, Hydroxide (as CaCO3)	1	1	
Alkalinity, Total (as $CaCO_3$)	1	1	
Ammonia, Total (as N)	0.005	0.005	*<0.005*
Bromide (Br)	0.05	0.05	
Chloride (Cl)	0.1	0.1	
Fluoride (F)	0.02	0.02	
Nitrate (as N)	0.005	0.005	
Nitrite (as N)	0.001	0.001	
Total Kjeldahl Nitrogen	0.05	0.05	*<0.05*
Orthophosphate-Dissolved (as P)	0.001	0.001	
Phosphorus (P)-Total Dissolved	0.002	0.002	
Phosphorus (P)-Total	0.002	-	*<0.002*
Silicate (as SiO_2)	0.5	0.5	
Sulfate (SO_4)	0.3	0.3	
Cyanides (mg/L)			
Total Cyanide	0.001	0.001	*<0.001*
Free Cyanide	0.001	0.001	*<0.001*
Organic / Inorganic Carbon (mg/L)			
Dissolved Organic Carbon	0.5	0.5	
Total Organic Carbon	0.5	0.5	*<0.5*
Plant Pigments (µg/L)			
Chlorophyll-a			
Total Metals (mg/L)			
Aluminum	0.003	0.003	*<0.003*
Antimony	0.0001	0.0001	*<0.0001*
Arsenic	0.0001	0.0001	*<0.0001*
Barium	0.00005	0.00005	*<0.00005*
Beryllium	0.00002	0.00002	*<0.00002*
Bismuth	0.00005	0.00005	*<0.00005*
Boron	0.01	0.01	*<0.01*
Cadmium	0.000005	0.000005	*<0.000005*
Calcium	0.05	0.05	*<0.05*
Chromium	0.0001	0.0001	*<0.0001*
Cobalt	0.0001	0.0001	*<0.0001*
Copper	0.0005	0.0005	*<0.0005*
Iron	0.01	0.01	*<0.01*
Lead	0.00005	0.00005	*<0.00005*
Lithium	0.001	0.001	*<0.001*
Magnesium	0.1	0.1	*<0.1*
Manganese	0.0001	0.0001	*<0.0001*
Mercury	0.000005	0.000005	*<0.000005*
Molybdenum	0.00005	0.00005	*<0.00005*
Nickel	0.0005	0.0005	*<0.0005*
Phosphorus	0.05	0.05	*<0.05*
Potassium	0.1	0.1	*<0.1*
Selenium	0.00005	0.00005	*<0.00005*
Silicon	0.05	0.05	*<0.05*
Silver	0.00001	0.00001	*<0.00001*
Sodium	0.05	0.05	*<0.05*
Strontium	0.0002	0.0002	*<0.0002*
Sulfur	0.5	0.5	*<0.5*
Thallium	0.00001	0.00001	*<0.00001*
Tin	0.0001	0.0001	*<0.0001*
Titanium	0.0003	0.0003	*<0.0003*
Uranium	0.00001	0.00001	*<0.00001*
Vanadium	0.0005	0.0005	*<0.0005*
Zinc	0.003	0.003	*<0.003*
Zirconium	0.0003	0.0003	*<0.0003*

Table A1-5. Detection limits and travel blanks for water parameters from the Tributary sampling program, Whale Tail Pit Baseline, 2015.

	Detection Limits		Travel Blanks[1]
Month	August	September	AUG TRAV-2
Analyte	Min	Min	
Dissolved Metals (mg/L)			
Aluminum	0.001	0.001	
Antimony	0.0001	0.0001	
Arsenic	0.0001	0.0001	
Barium	0.00005	0.00005	
Beryllium	0.00002	0.00002	
Bismuth	0.00005	0.00005	
Boron	0.01	0.01	
Cadmium	0.000005	0.000005	
Calcium	0.05	0.05	
Chromium	0.0001	0.0001	
Cobalt	0.0001	0.0001	
Copper	0.0002	0.0002	
Iron	0.01	0.01	
Lead	0.00005	0.00005	
Lithium	0.001	0.001	
Magnesium	0.1	0.1	
Manganese	0.0001	0.0001	
Mercury	0.000005	0.000005	
Molybdenum	0.00005	0.00005	
Nickel	0.0005	0.0005	
Phosphorus	0.05	0.05	
Potassium	0.1	0.1	
Selenium	0.00005	0.00005	
Silicon	0.05	0.05	
Silver	0.00001	0.00001	
Sodium	0.05	0.05	
Strontium	0.0002	0.0002	
Sulfur	0.5	0.5	
Thallium	0.00001	0.00001	
Tin	0.0001	0.0001	
Titanium	0.0003	0.0003	
Uranium	0.00001	0.00001	
Vanadium	0.0005	0.0005	
Zinc	0.001	0.0010	
Zirconium	0.0003	0.0003	

Notes:

[1] A travel blank was not submitted with the September samples.

Bolded Equipment or Travel Blank values concentrations exceeds laboratory MDLs but < 10 x MDL.

Shaded Equipment or Travel Blank values concentrations is > 10 x MDL.

Italicized numbers are below detection limits.

Table A1-6. Laboratory QA/QC results for water parameters from the Tributary sampling program, Whale Tail Pit Baseline, 2015.

Month			August			September			
ALS Report Numbers			L1655097, L1658117, L1659270 & L1659279				L1679754 & L1681194		
Analyte	Laboratory DQOs[1]	August MDLs	Original	Lab Dup	RPD[2]/Diff[3]	September MDLs	Original	Lab Dup	RPD[2]/Diff[3]
Physical Tests									
Conductivity (µS/cm)	10	2	12.6	12.6	0.0	2			
Hardness (mg/L)	25	0.5				0.5			
pH (Laboratory)	0.3	0.1	6.74	6.75	-0.01	0.1			
Total Suspended Solids (mg/L)	20	1				1			
Total Dissolved Solids (mg/L)	20	3				3			
Turbidity (NTU)	15	0.1	0.22	0.2	9.5	0.1			
Anions and Nutrients (mg/L)									
Alkalinity, Bicarbonate (as $CaCO_3$)	20	1				1			
Alkalinity, Carbonate (as $CaCO_3$)	20	1				1			
Alkalinity, Hydroxide (as CaCO3)	20	1				1			
Alkalinity, Total (as $CaCO_3$)	20	1				1	5.8	5.3	9.0
Ammonia, Total (as N)	20	0.005				0.005			
Bromide (Br)	20	0.05	*<0.05*	*<0.05*		0.05	*<0.05*	*<0.05*	
Chloride (Cl)	20	0.1	1.73	1.73	0.0	0.1	0.73	0.73	0.0
Fluoride (F)	20	0.02	0.025	0.025	0.0	0.02	0.032	0.032	0.0
Nitrate (as N)	20	0.005	0.0065	0.0061	6.3	0.005	0.0068	0.0067	1.5
Nitrite (as N)	20	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*	
Total Kjeldahl Nitrogen	20	0.05				0.05			
Orthophosphate (as P)	20	0.001				0.001			
Phosphorus (P)-Total Diss.	20	0.002	*<0.002*	*<0.002*		0.002			
Phosphorus (P)-Total	20	0.002	0.0026	0.0021	0.0005	-			
Silicate (as SiO_2)	20	0.5	0.88	0.87	1.14	0.5	0.89	0.93	-4.4
Sulfate (SO_4)	20	0.3	2.57	2.57	0.0	0.3	1.06	1.05	0.9
Cyanides (mg/L)									
Total Cyanide	20	0.001	*<0.001*	*<0.001*		0.001	*<0.001*	*<0.001*	
Free Cyanide	20	0.001	*<0.001*	*<0.001*		0.001	0.001	0.001	0.0
Organic / Inorganic Carbon (mg/L)									
Dissolved Organic Carbon	20	0.5	1.92	1.77	8.1	0.5	2.76	2.62	5.2
Total Organic Carbon	20	0.5	1.9	1.66	13.5	0.5	2.76	2.46	11.5
Plant Pigments (µg/L)									
Chlorophyll-a	35								
Total Metals (mg/L)									
Aluminum	20	0.003				0.003	0.0087	0.0088	-1.1
Antimony	20	0.0001				0.0001	*<0.0001*	*<0.0001*	
Arsenic	20	0.0001				0.0001	0.00027	0.00027	0.0
Barium	20	0.00005				0.00005	0.00508	0.00518	-1.9
Beryllium	20	0.00002				0.00002	*<0.00002*	*<0.00002*	
Bismuth	20	0.00005				0.00005	*<0.00005*	*<0.00005*	
Boron	20	0.01				0.01	*<0.01*	*<0.01*	
Cadmium	20	0.000005				0.000005	*<0.000005*	*<0.000005*	
Calcium	20	0.05				0.05	3.07	3.08	-0.3
Chromium	20	0.0001				0.0001	0.00014	0.00012	15.4
Cobalt	20	0.0001				0.0001	*<0.0001*	*<0.0001*	
Copper	20	0.0005				0.0005	*<0.0005*	*<0.0005*	
Iron	20	0.01				0.01	0.02	0.021	-4.9
Lead	20	0.00005				0.00005	*<0.00005*	*<0.00005*	
Lithium	20	0.001				0.001	*<0.001*	*<0.001*	
Magnesium	20	0.1				0.1	0.92	0.93	-1.1
Manganese	20	0.0001				0.0001	0.00313	0.00323	-3.1
Mercury	20	0.000005	*<0.000005*	*<0.000005*		0.000005			
Molybdenum	20	0.00005				0.00005	*<0.00005*	*<0.00005*	
Nickel	20	0.0005				0.0005	0.00103	0.00101	2.0
Phosphorus	20	0.05				0.05	*<0.05*	*<0.05*	
Potassium	20	0.1				0.1	0.4	0.4	0.0
Selenium	20	0.00005				0.00005	*<0.00005*	*<0.00005*	
Silicon	20	0.05				0.05	0.266	0.273	-2.6
Silver	20	0.00001				0.00001	*<0.00001*	*<0.00001*	
Sodium	20	0.05				0.05	0.574	0.571	0.5
Strontium	20	0.0002				0.0002	0.0223	0.0221	0.9
Sulfur	20	0.5				0.5	0.61	0.59	3.3
Thallium	20	0.00001				0.00001	*<0.00001*	*<0.00001*	
Tin	20	0.0001				0.0001	*<0.0001*	*<0.0001*	
Titanium	20	0.0003				0.0003	*<0.0003*	*<0.0003*	
Uranium	20	0.00001				0.00001	0.000027	0.000026	3.8
Vanadium	20	0.0005				0.0005	*<0.0005*	*<0.0005*	
Zinc	20	0.003				0.003	*<0.003*	*<0.003*	
Zirconium	20	0.0003				0.0003	*<0.0003*	*<0.0003*	
Dissolved Metals (mg/L)									
Aluminum	20	0.001	0.0033	0.0025	0.0008	0.001			
Antimony	20	0.0001	*<0.0001*	*<0.0001*		0.0001			
Arsenic	20	0.0001	0.0002	0.00019	5.1	0.0001			
Barium	20	0.00005	0.00802	0.00809	-0.9	0.00005			
Beryllium	20	0.00002	*<0.00002*	*<0.00002*		0.00002			
Bismuth	20	0.00005	*<0.00005*	*<0.00005*		0.00005			
Boron	20	0.01	*<0.01*	*<0.01*		0.01			
Cadmium	20	0.000005	*<0.000005*	*<0.000005*		0.000005			
Calcium	20	0.05	2.15	2.14	0.5	0.05			
Chromium	20	0.0001	*<0.0001*	*<0.0001*		0.0001			
Cobalt	20	0.0001	*<0.0001*	*<0.0001*		0.0001			
Copper	20	0.0002	0.00059	0.00059	0.0	0.0002			
Iron	20	0.01	*<0.01*	*<0.01*		0.01			
Lead	20	0.00005	*<0.00005*	*<0.00005*		0.00005			
Lithium	20	0.001	*<0.001*	*<0.001*		0.001			
Magnesium	20	0.1	0.74	0.72	2.7	0.1			
Manganese	20	0.0001	0.00094	0.00094	0.0	0.0001			
Mercury	20	0.000005	*<0.000005*	*<0.000005*		0.000005	*<0.000005*	*<0.000005*	
Molybdenum	20	0.00005	*<0.00005*	*<0.00005*		0.00005			
Nickel	20	0.0005	0.00052	*<0.0005*		0.0005			
Phosphorus	20	0.05	*<0.05*	*<0.05*		0.05			
Potassium	20	0.1	0.55	0.54	1.8	0.1			
Selenium	20	0.00005	*<0.00005*	*<0.00005*		0.00005			
Silicon	20	0.05	0.39	0.387	0.8	0.05			
Silver	20	0.00001	*<0.00001*	*<0.00001*		0.00001			
Sodium	20	0.05	0.658	0.662	-0.6	0.05			
Strontium	20	0.0002	0.00868	0.00864	0.5	0.0002			
Sulfur	20	0.5	0.89	0.9	-1.1	0.5			
Thallium	20	0.00001	*<0.00001*	*<0.00001*		0.00001			
Tin	20	0.0001	0.00013	0.00012	8.0	0.0001			
Titanium	20	0.0003	*<0.0003*	*<0.0003*		0.0003			
Uranium	20	0.00001	0.000018	0.000017	5.7	0.00001			
Vanadium	20	0.0005	*<0.0005*	*<0.0005*		0.0005			
Zinc	20	0.001	*<0.001*	*<0.001*		0.001			
Zirconium	20	0.0003	*<0.0003*	*<0.0003*		0.0003			

Notes:

[1] DQO = Data quality objectives (i.e., RPD limits) for laboratory duplicate samples. DQOs shown as percentages except for pH (units).

[2] RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

RPDs have not been calculated for cases where one of the samples is below detection and the other is not and in cases where both are below detection. RPD has been left blank.

[3] Diff = The difference between the replicate values in concentration units. Used in cases where the concentration is <10x the MDL.

For low level results, the DQO is a concentration difference between the two measurements of < 2x the MDL (unless the RPD is met).

Bolded RPDs RPD values exceed laboratory DQO but < 10 x MDL.

Shaded RPD RPD values exceed laboratory DQO and > 10 x MDL.

Blank cells indicate no laboratory duplicate analysis was conducted.

Italicized numbers are below detection limits.

Table A1-7. Field duplicate QA/QC results from the Tributary water sampling program, Whale Tail Pit Baseline, 2015.

Month / Station	August	August			September	September		
	August	A8-A7			September	A1-DS1		
Analyte	MDLs	Original	E3-E2 (Dup)	RPD	MDLs	Original	E5-E4 (Dup)	RPD
Physical Tests								
Conductivity (µS/cm)	2	23	23	0.9	2	21	21	1.9
Hardness (mg/L)	0.5	8.2	8.4	-2.2	0.5	7.3	7.4	-0.4
pH (Laboratory)	0.1	7.0	7.0	-0.3	0.1	6.9	6.9	-0.3
Total Suspended Solids (mg/L)	1	<1.0	<1.0		1	<1.0	1.1	
Total Dissolved Solids (mg/L)	3	19	20	-2.1	3	14	16	-10.2
Turbidity (NTU)	0.1	0.24	0.27	-11.8	0.1	0.81	0.77	5
Anions and Nutrients (mg/L)								
Alkalinity, Bicarbonate (as $CaCO_3$)	1	6.4	6.3	1.6	1	6.3	5.8	8.3
Alkalinity, Carbonate (as $CaCO_3$)	1	<1.0	<1.0		1	<1.0	<1.0	
Alkalinity, Hydroxide (as CaCO3)	1	<1.0	<1.0		1	<1.0	<1.0	
Alkalinity, Total (as $CaCO_3$)	1	6.4	6.3	1.6	1	6.3	5.8	8.3
Ammonia, Total (as N)	0.005	<0.005	0.0061		0.005	<0.005	<0.005	
Bromide (Br)	0.05	<0.05	<0.05		0.05	<0.05	<0.05	
Chloride (Cl)	0.1	0.94	0.94	0.0	0.1	0.95	0.96	-1.0
Fluoride (F)	0.02	0.025	0.025	0.0	0.02	0.028	0.027	3.6
Nitrate (as N)	0.005	<0.005	<0.005		0.005	0.011	0.011	-4.6
Nitrite (as N)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Total Kjeldahl Nitrogen	0.05	0.15	0.13	12.8	0.05	0.18	0.12	43.5
Orthophosphate-Dissolved (as P)	0.001	<0.001	<0.001		0.001	0.0011	<0.001	
Phosphorus (P)-Total Dissolved	0.002	<0.002	<0.002		0.002	0.0026	<0.002	
Phosphorus (P)-Total	0.002	<0.002	0.0048		-			
Silicate (as SiO_2)	0.5	0.87	0.88	-1.1	0.5	1.0	0.89	12.6
Sulfate (SO_4)	0.3	2.6	2.6	0.0	0.3	2.0	2.1	-2.0
Cyanides (mg/L)								
Total Cyanide	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Free Cyanide	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Organic / Inorganic Carbon (mg/L)								
Dissolved Organic Carbon	0.5	1.7	1.9	-6.7	0.5	1.9	2.2	-13.9
Total Organic Carbon	0.5	1.6	1.5	11.0	0.5	1.8	1.9	-4.4
Plant Pigments (µg/L)								
Chlorophyll-a	0				0			
Total Metals (mg/L)								
Aluminum	0.003	0.0064	0.0060	6.5	0.003	0.030	0.024	24.4
Antimony	0.0001	<0.0001	<0.0001		0.0001	<0.0001	<0.0001	
Arsenic	0.0001	0.00023	0.00023	0.0	0.0001	0.00011	0.00011	0.0
Barium	0.00005	0.0047	0.0048	-0.4	0.00005	0.0038	0.0036	3.5
Beryllium	0.00002	<0.00002	<0.00002		0.00002	<0.00002	<0.00002	
Bismuth	0.00005	<0.00005	<0.00005		0.00005	<0.00005	<0.00005	
Boron	0.01	<0.01	<0.01		0.01	<0.01	<0.01	
Cadmium	0.000005	<0.000005	<0.000005		0.000005	<0.000005	<0.000005	
Calcium	0.05	2.1	2.2	-5.6	0.05	1.9	1.9	-0.5
Chromium	0.0001	<0.0001	<0.0001		0.0001	0.00014	0.00011	24.0
Cobalt	0.0001	<0.0001	<0.0001		0.0001	<0.0001	<0.0001	
Copper	0.0005	<0.0005	<0.0005		0.0005	<0.0005	<0.0005	
Iron	0.01	0.017	0.016	6.1	0.01	0.070	0.062	12.1
Lead	0.00005	<0.00005	<0.00005		0.00005	<0.00005	0.00006	
Lithium	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Magnesium	0.1	0.72	0.80	-10.5	0.1	0.59	0.61	-3.3
Manganese	0.0001	0.0023	0.0018	22.8	0.0001	0.0015	0.0013	20.8
Mercury	0.000005	<0.000005	<0.000005		0.000005	<0.000005	<0.000005	
Molybdenum	0.00005	<0.00005	<0.00005		0.00005	<0.00005	<0.00005	
Nickel	0.0005	0.00054	0.00052	3.8	0.0005	<0.0005	<0.0005	
Phosphorus	0.05	<0.05	<0.05		0.05	<0.05	<0.05	
Potassium	0.1	0.53	0.61	-14.0	0.1	0.45	0.47	-4.3
Selenium	0.00005	<0.00005	<0.00005		0.00005	<0.00005	<0.00005	
Silicon	0.05	0.37	0.40	-7.5	0.05	0.49	0.47	2.7
Silver	0.00001	<0.00001	<0.00001		0.00001	<0.00001	<0.00001	
Sodium	0.05	0.54	0.54	0.7	0.05	0.61	0.66	-8.7
Strontium	0.0002	0.0090	0.0090	-0.4	0.0002	0.0081	0.0081	0.5
Sulfur	0.5	0.91	1.0	-9.4	0.5	0.67	0.68	-1.5
Thallium	0.00001	<0.00001	<0.00001		0.00001	<0.00001	<0.00001	
Tin	0.0001	<0.0001	<0.0001		0.0001	<0.0001	<0.0001	
Titanium	0.0003	<0.0003	<0.0003		0.0003	0.00081	0.00068	17.4
Uranium	0.00001	0.00002	0.00002	0.0	0.00001	0.00003	0.00003	12.9
Vanadium	0.0005	<0.0005	<0.0005		0.0005	<0.0005	<0.0005	
Zinc	0.003	<0.003	<0.003		0.003	<0.003	<0.003	
Zirconium	0.0003	<0.0003	<0.0003		0.0003	<0.0003	<0.0003	
Dissolved Metals (mg/L)								
Aluminum	0.001	0.0027	0.0033	-20.0	0.001	0.0072	0.0076	-5
Antimony	0.0001	<0.0001	<0.0001		0.0001	<0.0001	<0.0001	
Arsenic	0.0001	0.00020	0.00020	0.0	0.0001	0.00010	<0.0001	
Barium	0.00005	0.0075	0.0080	-7.0	0.00005	0.0058	0.0044	27.8
Beryllium	0.00002	<0.00002	<0.00002		0.00002	<0.00002	<0.00002	
Bismuth	0.00005	<0.00005	<0.00005		0.00005	<0.00005	<0.00005	
Boron	0.01	<0.01	<0.01		0.01	<0.01	<0.01	
Cadmium	0.000005	<0.000005	<0.000005		0.000005	<0.000005	<0.000005	
Calcium	0.05	2.1	2.2	-1.9	0.05	1.9	1.9	0.0
Chromium	0.0001	<0.0001	<0.0001		0.0001	<0.0001	<0.0001	
Cobalt	0.0001	<0.0001	<0.0001		0.0001	<0.0001	<0.0001	
Copper	0.0002	0.00063	0.00059	6.6	0.0002	0.00056	0.00048	15.4
Iron	0.01	<0.01	<0.01		0.01	0.021	0.021	0.0
Lead	0.00005	<0.00005	<0.00005		0.00005	<0.00005	<0.00005	
Lithium	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Magnesium	0.1	0.72	0.74	-2.7	0.1	0.62	0.62	0.0
Manganese	0.0001	0.00096	0.00094	2.1	0.0001	0.00083	0.00088	-5.8
Mercury	0.000005	<0.000005	<0.000005		0.000005	<0.000005	<0.000005	
Molybdenum	0.00005	<0.00005	<0.00005		0.00005	<0.00005	<0.00005	
Nickel	0.0005	0.00052	0.00052	0.0	0.0005	<0.0005	<0.0005	
Phosphorus	0.05	<0.05	<0.05		0.05	<0.05	<0.05	
Potassium	0.1	0.54	0.55	-1.8	0.1	0.45	0.48	-6
Selenium	0.00005	<0.00005	<0.00005		0.00005	<0.00005	<0.00005	
Silicon	0.05	0.37	0.39	-5.5	0.05	0.46	0.46	0.2

Table A1-7. Field duplicate QA/QC results from the Tributary water sampling program, Whale Tail Pit Baseline, 2015.

Month	August	August			September	September		
Station	August	A8-A7			September	A1-DS1		
Analyte	**MDLs**	**Original**	**E3-E2 (Dup)**	**RPD**	**MDLs**	**Original**	**E5-E4 (Dup)**	**RPD**
Silver	0.00001	*<0.00001*	*<0.00001*		0.00001	*<0.00001*	*<0.00001*	
Sodium	0.05	0.63	0.66	-4.5	0.05	0.74	0.75	-1.6
Strontium	0.0002	0.0087	0.0087	0.2	0.0002	0.0080	0.0081	0
Sulfur	0.5	0.89	0.89	0.0	0.5	0.71	0.69	3
Thallium	0.00001	*<0.00001*	*<0.00001*		0.00001	*<0.00001*	*<0.00001*	
Tin	0.0001	0.00012	0.00013	-8.0	0.0001	*<0.0001*	*<0.0001*	
Titanium	0.0003	*<0.0003*	*<0.0003*		0.0003	*<0.0003*	*<0.0003*	
Uranium	0.00001	0.00002	0.00002	-5.7	0.00001	0.00002	0.00002	4
Vanadium	0.0005	*<0.0005*	*<0.0005*		0.0005	*<0.0005*	*<0.0005*	
Zinc	0.001	*<0.001*	*<0.001*		0.001	0.0012	*<0.001*	
Zirconium	0.0003	*<0.0003*	*<0.0003*		0.0003	*<0.0003*	*<0.0003*	

Notes:

RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

RPDs have not been calculated for cases where one of the samples is below detection and the other is not and in cases where both are below detection. RPD has been left blank.

The data quality objective (DQO) for field duplicates is an RPD < 50%.

Bolded RPDs	RPD values exceed 50% but < 10 x MDL.
Shaded RPD	RPD values exceed 50% and > 10 x MDL.

Italicized numbers are below detection limits.

Table A1-8. QA/QC data for sediment metals analyses, Whale Tail Baseline, 2015.

			Field Duplicates												Laboratory Duplicates								
			Whale Tail Lake			Whale Tail Lake			Nemo Lake			Mammoth Lake			WTN-1 (L1669874-6)			WTN-4 (L1669874-9)			MAM-5 (L1669874-22)		
Analyte	Laboratory DQOs[1,2]	MDLs	WTN-3 22-Aug-15	Field DUP-1 21-Aug-15	RPD[3] (%)	WTS-1 21-Aug-05	Field DUP-2 21-Aug-05	RPD[3] (%)	NEM-3 23-Aug-15	Field DUP-3 23-Aug-15	RPD[3] (%)	MAM-2 24-Aug-15	Field DUP-4 24-Aug-15	RPD[3] (%)	Original	Laboratory Duplicate	RPD (%)	Original	Laboratory Duplicate	RPD (%)	Original	Laboratory Duplicate	RPD (%)
Physical & Organic Parameters																							
Moisture (%)	20	*0.25*	80.9	84.3	-4.1	85.5	85.6	-0.1	90.9	91.3	-0.4	90.7	90.4	0.3									
pH	0.30	*0.10*	5.71	5.47	4.3	5.48	5.83	-6.2	6.32	6.37	-0.8	5.98	6.27	-4.7	6.29	6.36	0.07				5.4	5.55	0.15
Total Organic Carbon (% dw)	30	*0.10*	4.65	4.61	0.9	5.29	5.33	-0.8	11.10	9.18	19	11.70	11.70	0.0				5.72	5.73	-0.2			
Particle Size																							
% Gravel (>2mm)	5	*0.10*	*<0.10*	0.34		*<0.10*	*<0.10*		*<0.10*	*<0.10*		*<0.10*	*<0.10*					*<0.10*	*<0.10*				
% Sand (2.00mm - 0.063mm)	5	*0.10*	4.68	4.54	3.0	5.4	5.1	5.5	19.2	17.2	11.0	2.5	0.5	132.2				3.18	2.89	0.3			
% Silt (0.063mm - 4µm)	5	*0.10*	82.6	82.8	-0.2	82.0	82.8	-1.0	76.4	78.7	-3.0	92.4	86.1	7.1				84.6	89	4.4			
% Clay (<4µm)	5	*0.10*	12.6	12.3	2.4	12.6	12.0	4.9	4.4	4.2	5.6	5.1	13.4	-89.3				12.2	8.08	4.1			
Total Metals (mg/kg dw)																							
Aluminum	40	*50*	14800	14300	3.4	14700	14500	1.4	10800	10300	4.7	18600	17200	7.8	13900	13500	2.9				18400	19500	-5.8
Antimony	30	*0.10*	0.25	0.22	12.8	0.23	0.21	9.1	0.35	0.38	-8.2	0.32	0.33	-3.1	0.25	0.33	-27.6				0.26	0.27	-3.8
Arsenic	30	*0.100*	568.0	557.0	2.0	102.0	96.7	5.3	46.4	47.2	-1.7	143.0	138.0	3.6	897	859	4.3				70	71.2	-1.7
Barium	40	*0.50*	97	92	5.5	113	112	0.9	91	92	-1.0	142	138	2.9	212	214	-0.9				136	140	-2.9
Beryllium	30	*0.10*	1.27	1.09	15.3	1.35	1.26	6.9	0.59	0.68	-14	1.29	1.34	-3.8	1.22	1.17	4.2				1.2	1.25	-4.1
Bismuth	30	*0.20*	0.47	0.40	16.1	0.52	0.49	5.9	0.21	0.25	-17	0.45	0.45	0.0	0.45	0.44	2.2				0.43	0.42	2.4
Cadmium	30	*5.0*	0.151	0.137	9.7	0.410	0.383	6.8	0.221	0.273	-21	0.255	0.258	-1.2	0.315	0.319	-1.3				0.296	0.278	6.3
Calcium	30	*50*	2050	1720	17.5	2300	2270	1.3	3690	3620	1.9	3370	3370	0.0	1950	2010	-3.0				2780	2920	-4.9
Chromium	30	*0.50*	94.5	92.4	2.2	63	63	1.3	110.0	113.0	-2.7	162.0	158.0	2.5	84.4	82.6	2.2				158	162	-2.5
Cobalt	30	*0.10*	20.5	19.7	4.0	16.1	15.8	1.9	8.0	8.1	-1.2	11.5	11.4	0.9	24	23.9	0.4				13.3	13.4	-0.7
Copper	30	*0.50*	35.5	33.6	5.5	37.9	36.5	3.8	36.4	39.7	-8.7	63.9	63.1	1.3	37.3	36.4	2.4				60.5	60.5	0.0
Iron	30	*50*	127000	122000	4.0	69000	64300	7.1	23800	24500	-2.9	43400	43800	-1	151000	143000	5.4				33000	34700	-5.0
Lead	40	*0.5*	11.7	10.4	11.8	13.7	13.3	3.0	8.4	9.4	-12	16.5	16.2	1.8	10.9	10.8	0.9				16.8	16.6	1.2
Lithium	30	*2.0*	14.0	10.5	28.6	13.1	11.2	16	10.0	12.4	-21	17.1	18.0	-5	13.4	12.9	3.8				15.1	15.8	-4.5
Magnesium	30	*20*	6300	6000	4.9	5690	5620	1.2	6590	6610	-0.3	9010	8570	5.0	5800	5640	2.8				8900	9190	-3.2
Manganese	30	*1.0*	2200	1960	11.5	2010	1850	8.3	302	304	-0.7	414	389	6	6660	6950	-4.3				408	417	-2.2
Mercury	40	*0.005*	0.0612	0.0542	12.1	0.0764	0.0746	2.4	0.0289	0.0304	-5	0.0991	0.0874	13	0.0742	0.0704	5.3				0.0955	0.0965	-1.0
Molybdenum	40	*0.10*	5.33	4.88	8.8	3.26	3.21	1.5	2.50	2.70	-7.7	3.73	3.64	2.4	6.27	6.21	1.0				2.89	3	-3.7
Nickel	30	*0.5*	59.9	57.8	3.6	73.9	71.5	3.3	78.4	83.7	-6.5	102.0	99.80	2.2	92	93.6	-1.7				107	108	-0.9
Phosphorus	30	*50*	1770	1680	5.2	1680	1560	7.4	664	656	1.2	911	876	3.9	1830	1690	8.0				796	810	-1.7
Potassium	40	*100*	2150	1950	9.8	2170	2100	3.3	1460	1440	1.4	2950	2780	6	2040	2010	1.5				2990	3200	-6.8
Selenium	30	*0.20*	0.75	0.71	5.5	0.67	0.67	0.0	0.51	0.57	-11	0.63	0.66	-4.7	0.78	0.76	2.6				0.67	0.65	3.0
Silver	40	*0.1*	0.23	0.20	14.0	0.26	0.24	8.0	0.16	0.20	-22	0.42	0.42	0.0	0.26	0.25	3.9				0.44	0.47	-6.6
Sodium	40	*50*	257	222	14.6	282	284	-0.7	555	503	9.8	442	342	26	292	269	8.2				338	351	-3.8
Strontium	40	*0.5*	21.6	18.1	17.6	22.1	22.1	0.0	26.7	27.1	-1.5	24.3	23.7	2.5	22	22.5	-2.2				20.6	22.3	-7.9
Thallium	30	*0.05*	0.154	0.130	16.9	0.195	0.190	2.6	0.079	0.090	-13	0.223	0.215	4	0.219	0.226	-3.1				0.249	0.252	-1.2
Tin	40	*2.0*	*<2.0*	*<2.0*		*<2.0*	*<2.0*		*<2.0*	*<2.0*		*<2.0*	*<2.0*		*<2.0*	*<2.0*					*<2.0*	*<2.0*	
Titanium	40	*1.0*	413	363	12.9	407	403	1.0	258	247	4.4	510	457	11	379	366	3.5				481	586	-19.7
Uranium	30	*0.05*	9.2	8.1	13.4	9.5	9.3	2.3	3.6	4.2	-15	11.8	11.9	-0.8	8.78	8.67	1.3				11.1	10.8	2.7
Vanadium	30	*0.2*	25.9	24.7	4.7	24.3	23.6	2.9	23.1	23.4	-1.3	39.6	38.6	2.6	23.7	23	3.0				38.4	39.9	-3.8
Zinc	30	*2.0*	79.1	75.2	5.1	86.7	82.7	4.7	54.2	57.7	-6.3	109.0	106.0	2.8	88.1	85.9	2.5				110	111	-0.9

Notes:

[1] Laboratory data quality objectives (DQOs) for moisture, TOC, and metals are expressed as the relative percent difference (RPD).

[2] The laboratory DQOs for pH and particle size are the absolute difference between the original sample and laboratory duplicate.

[3] The DQO for field duplicates is an RPD of < 50%.

RPD (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

RPDs have not been calculated for cases where one of the samples is below detection and the other is not and in cases where both are below detection. RPD has been left blank.

Bold RPDs values exceed the DQOs, but concentrations are < 10 x MDL.

Shaded RPDs values exceed the DQOs, and concentrations are > 10 x MDL.

Bold Filter Swipe value is > MDL, but < 10 x MDL.

Shaded Filter Swipe value > 10x MDL.

Field Dup' samples are homogenization duplicates - the original and duplicate samples were split from the same homogenized bowl of sediment.

Italicized numbers are below detection limits.

Table A1-8. QA/QC data for sediment metals analyses, Whale Tail Baseline, 2015.

			Laboratory Duplicates											Equipment Swipes					
			Field DUP-1 (L1669874-30)			**Field DUP-3** (L1669874-32)			**Field DUP-4** (L1669874-33)				SWIPE-1	SWIPE-2	SWIPE-3	SWIPE-4	SWIPE-QA-1	SWIPE-QA-2
	Laboratory			Laboratory	RPD		Laboratory	RPD		Laboratory	RPD		FILTER	FILTER	FILTER	FILTER	FILTER	FILTER
Analyte	DQOs[1,2]	MDLs	Original	Duplicate	(%)	Original	Duplicate	(%)	Original	Duplicate	(%)		22-Aug-15	21-Aug-15	24-Aug-15	24-Aug-15	8-Oct-15	8-Oct-15
Physical & Organic Parameters																		
Moisture (%)	20	*0.25*				91.3	91.2	0.1										
pH	0.30	*0.10*																
Total Organic Carbon (% dw)	30	*0.10*				9.18	9.28	-1.1										
Particle Size																		
% Gravel (>2mm)	5	*0.10*	0.34	0.34	0.0													
% Sand (2.00mm - 0.063mm)	5	*0.10*	4.54	4.14	0.4													
% Silt (0.063mm - 4µm)	5	*0.10*	82.8	83.4	0.6													
% Clay (<4µm)	5	*0.10*	12.3	12.2	0.1							Swipe MDLs						
Total Metals (mg/kg dw)												(mg)	TOTAL METALS (mg)					
Aluminum	40	*50*							17200	17400	-1.2	0.010	**0.011**	**0.018**	**0.015**	*<0.010*	*<0.010*	*<0.010*
Antimony	30	*0.10*							0.33	0.33	0.0	0.010	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Arsenic	30	*0.100*							138	138	0.0	0.010	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Barium	40	*0.50*							138	140	-1.4	0.00050	**0.00135**	**0.00147**	**0.00084**	*<0.00050*	*<0.00050*	*<0.00050*
Beryllium	30	*0.10*							1.34	1.35	-0.7	0.00030	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Bismuth	30	*0.20*							0.45	0.47	-4.3	0.010	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Cadmium	30	*5.0*							0.258	0.258	0.0	0.00050	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Calcium	30	*50*							3370	4140	-20.5	0.050	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	*<0.050*
Chromium	30	*0.50*							158	158	0.0	0.0010	**0.0021**	**0.0083**	**0.0042**	**0.0054**	*<0.0010*	*<0.0010*
Cobalt	30	*0.10*							11.4	11.7	-2.6	0.00050	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Copper	30	*0.50*							63.1	64.8	-2.7	0.00050	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Iron	30	*50*							43800	44300	-1.1	0.0020	0.0312	0.0696	0.0452	0.0395	**0.0074**	**0.0124**
Lead	40	*0.5*							16.2	16.2	0.0	0.0030	*<0.0030*	**0.0038**	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Lithium	30	*2.0*							18	18.1	-0.6	0.00050	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Magnesium	30	*20*							8570	8740	-2.0	0.0050	**0.0084**	**0.0170**	**0.0154**	**0.0094**	**0.0090**	**0.0098**
Manganese	30	*1.0*							389	395	-1.5	0.00030	**0.00147**	**0.00107**	**0.00077**	**0.00060**	*<0.00030*	*<0.00030*
Mercury	40	*0.005*							0.0874	0.0855	2.2							
Molybdenum	40	*0.10*							3.64	3.66	-0.5	0.0020	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*
Nickel	30	*0.5*							99.8	102	-2.2	0.0030	*<0.0030*	**0.0038**	*<0.0030*	*<0.0030*	*<0.0030*	*<0.0030*
Phosphorus	30	*50*							876	899	-2.6	0.020	*<0.020*	*<0.020*	*<0.020*	*<0.020*	*<0.020*	*<0.020*
Potassium	40	*100*							2780	2790	-0.4	0.10	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*
Selenium	30	*0.20*							0.66	0.71	-7.3	0.010	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Silver	40	*0.1*							0.42	0.43	-2.4	0.00050	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*	*<0.00050*
Sodium	40	*50*							342	355	-3.7	0.10	**0.10**	*<0.10*	*<0.10*	*<0.10*	*<0.10*	*<0.10*
Strontium	40	*0.5*							23.7	24.4	-2.9	0.00030	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*	*<0.00030*
Thallium	30	*0.05*							0.215	0.218	-1.4	0.010	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*	*<0.010*
Tin	40	*2.0*							*<2.0*	*<2.0*		0.0020	*<0.0020*	**0.0023**	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*
Titanium	40	*1.0*							457	453	0.9	0.00050	**0.00059**	**0.00089**	**0.00055**	*<0.00050*	*<0.00050*	*<0.00050*
Uranium	30	*0.05*							11.9	11.9	0.0							
Vanadium	30	*0.2*							38.6	39.3	-1.8	0.0020	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*	*<0.0020*
Zinc	30	*2.0*							106	107	-0.9	0.00030	**0.00031**	**0.00113**	**0.00095**	**0.00047**	**0.00033**	**0.00042**

Notes:

[1] Laboratory data quality objectives (DQOs) for moisture, TOC, and metals are expressed as the relative percent difference (RPD).

[2] The laboratory DQOs for pH and particle size are the absolute difference between the original sample and laboratory duplicate.

[3] The DQO for field duplicates is an RPD of < 50%.

RPD (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

RPDs have not been calculated for cases where one of the samples is below detection and the other is not and in cases where both are below detection. RPD has been left blank.

Bold RPDs values exceed the DQOs, but concentrations are < 10 x MDL.

Shaded RPDs values exceed the DQOs, and concentrations are > 10 x MDL.

Bold Filter Swipe value is > MDL, but < 10 x MDL.

Shaded Filter Swipe value > 10x MDL.

Field Dup' samples are homogenization duplicates - the original and duplicate samples were split from the same homogenized bowl of sediment.

Italicized numbers are below detection limits.

Table A1-9. QA/QC data for sediment hydrocarbon and PAH analyses, Whale Tail Baseline, 2015.

Analyte	MDLs	Mammoth Lake		
		MAM-COMP	COMP DUP-1	RPD (%)
Physical Parameters				
Moisture (%)	*0.25*	90.9	91.2	-0.3
Aggregate Organics (mg/kg)				
Mineral Oil and Grease	*500*	1960	1010	**64.0**
Hydrocarbons (mg/kg)				
EPH10-19	*680*	*<1100*	*<1000*	
EPH19-32	*680*	*<1100*	*<1000*	
LEPH	*680*	*<1100*	*<1000*	
HEPH	*680*	*<1100*	*<1000*	
Polycyclic Aromatic Hydrocarbons (mg/kg)				
Acenaphthene	*0.0050*	*<0.015*	*<0.015*	
Acenaphthylene	*0.0050*	*<0.015*	*<0.015*	
Anthracene	*0.0040*	*<0.012*	*<0.012*	
Benzo(a)anthracene	*0.010*	*<0.030*	*<0.030*	
Benzo(a)pyrene	*0.010*	*<0.030*	*<0.030*	
Benzo(b)fluoranthene	*0.010*	*<0.030*	*<0.030*	
Benzo(b+j+k)fluoranthene	*0.015*	*<0.042*	*<0.042*	
Benzo(g,h,i)perylene	*0.010*	*<0.030*	*<0.030*	
Benzo(k)fluoranthene	*0.010*	*<0.030*	*<0.030*	
Chrysene	*0.010*	*<0.030*	*<0.030*	
Dibenz(a,h)anthracene	*0.0050*	*<0.015*	*<0.015*	
Fluoranthene	*0.010*	*<0.030*	*<0.030*	
Fluorene	*0.010*	*<0.030*	*<0.030*	
Indeno(1,2,3-c,d)pyrene	*0.010*	*<0.030*	*<0.030*	
2-Methylnaphthalene	*0.010*	*<0.030*	*<0.030*	
Naphthalene	*0.010*	*<0.030*	*<0.030*	
Phenanthrene	*0.010*	*<0.030*	*<0.030*	
Pyrene	*0.010*	*<0.030*	*<0.030*	
d10-Acenaphthene (%)		87.7	90.8	-3.5
d12-Chrysene (%)		115.7	115.6	0.1
d8-Naphthalene (%)		78.1	85.0	-8.5
d10-Phenanthrene (%)		108.1	108.4	-0.3
B(a)P Total Potency Equivalent	*0.020*	*<0.029*	*<0.029*	
IACR (CCME)	*0.15*	*<0.32*	*<0.32*	

Notes:

RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

RPDs have not been calculated for cases where one of the samples is below detection and the other is not and in cases where both are below detection. RPD has been left blank.

Bold RPDs values exceed the DQOs, but concentrations are < 10 x MDL.

Shaded RPDs values exceed the DQOs, and concentrations are > 10 x MDL.

COMP DUP samples are homogenization duplicates - the original and duplicate samples were split from the same homogenized bowl of sediment.

"-" = no measurement

Italicized numbers are below detection limits.

APPENDIX A2

Phytoplankton, Benthic Invertebrate, and Zooplankton QA/QC Results

LIST OF TABLES ï APPENDIX A2

Table A2-1. QA/QC results for the laboratory duplicate phytoplankton samples, Whale Tail Pit Baseline, 2014 and 2015.

2014 Baseline Program			
	September Lab Duplicate		
Sample	LAK3 - 1	LAK3 - 1R	
date	04/09/14	04/09/14	**RPD**[1]
Total biomass (mg/m^3)	268	253	5.7
Total Density (cells/L)	3,674,640	3,573,464	2.8

Notes:

2014 baseline data was adapted from Portt and Associates (2015a).

[1] The DQO for laboratory duplicates is an RPD of < 25% for total biomass and total density.

RPD (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

2015 Baseline Program									
	July Field Duplicate			August Laboratory Duplicate			September Field Duplicate		
Sample	NEM2-S	NEM2-SR		WTN3-S	WTN3-SR		NEM6-S	NEM6-SR	
date	18/07/15	18/07/15	**RPD**[1]	20/08/15	20/08/15	**RPD**[1]	19/09/15	19/09/15	**RPD**[1]
Total biomass (mg/m^3)	257	245	4.8	184	198	-7.4	152	153	-0.8
Total Density (cells/L)	3,132,904	3,103,968	0.9	2,053,840	2,062,424	-0.4	1,783,464	1,692,472	5.2

Notes:

[1] The DQO for laboratory duplicates is an RPD of < 25% for total biomass and total density.

RPD (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

Table A2-2. QA/QC results for the field duplicate phytoplankton samples, Whale Tail Pit Baseline, 2014 and 2015.

2014 Baseline Program			
	September Lab Duplicate		
Sample	LAK3 - 5	DUP - 1	
date	04/09/14	04/09/14	**RPD**[1]
Total biomass (mg/m^3)	286	246	14.9
Total Density (cells/L)	3,728,328	3,824,704	-2.6

Notes:

2014 baseline data was adapted from Portt and Associates (2015a).

[1] The DQO for field duplicates is an RPD of < 50% for total biomass and total density.

RPD (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

2015 Baseline Program									
	July Field Duplicate			August Field Duplicate			September Field Duplicate		
Sample	WTS2-S	DUP1		WTN4-S	DUP1		WTN6-S	DUP1	
date	17/07/15	01/07/15	**RPD**[1]	20/08/15	01/08/15	**RPD**[1]	18/09/15	01/09/15	**RPD**[1]
Total Biomass (mg/m^3)	265	321	-19.1	154	211	-31.4	226	205	10.1
Total Density (cells/L)	4,154,600	4,115,096	1.0	1,651,536	2,808,760	-51.9	2,536,000	2,629,192	-3.6

Notes:

[1] The DQO for field duplicates is an RPD of < 50% for total biomass and total density.

RPD (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

Table A2-3. QA/QC summary of the benthic invertebrate taxonomy, 2015 baseline program.

Area-Replicate	Number of Organisms		
	Initial Count	Resort	Percent Recovery
MAM-2	135	142	95.1%
NEM-1	143	147	97.3%
WTN-3	53	57	93.0%
		Average % Recovery	95.1%

Notes:
All samples were sorted in their entirety.

Table A2-4. Laboratory QA/QC results from the zooplankton taxonomic identification, Whale Tail Pit Baseline, 2015.

Subsampling Accuracy			
QA Sample	**Abundance (Original Replicate) (A)**	**Abundance (QA Replicate) (B)**	**Accuracy 1-(A/B)*100**
MAM-02-S	16393	18903	15.3
WTS-05-S	7055	7852	10.2
MAM-05-S	7327	7833	6.5
		Mean Subsampling Error (%)	**10.6**

Taxonomic Accuracy - Internal			
QA Sample	**Number of Unique Taxa (B)**	**Number of disagreements (A)**	**% Accuracy 1-(A/B)*100**
MAM-02-S	7	0	100.0
WTS-05-S	7	0	100.0
MAM-05-S	6	0	100.0
		Mean Internal Taxonomic Accuracy (%)	**100.0**

Table A2-5. QA/QC results for the field duplicate zooplankton samples, Whale Tail Pit Baseline, 2015.

	July Field Duplicate (WTS-2)					
	Biomass (ww/sample)			Abundance (organisms/sample)		
Major Taxa Group	**Original**	**Duplicate**	**RPDs**[1]	**Original**	**Duplicate**	**RPDs**[1]
Cladocera	1.1	2.7	-82	82	186	-78
Calanoida	3.7	49	-172	30	400	-172
Cyclopoida	36	81	-78	2080	5440	-89
Copepod Nauplii	0.69	1.0	-40	1067	1433	-29
Rotifera	47	61	-27	3200	4833	-41
Total Zooplankton	88	195	-76	6459	12293	-62

	August Field Duplicate (WTS-3)					
	Biomass (ww/sample)			Abundance (organisms/sample)		
Major Taxa Group	**Original**	**Duplicate**	**RPDs**[1]	**Original**	**Duplicate**	**RPDs**[1]
Cladocera	0.00	0.62	-200	0	23	-200
Calanoida	155	113	31	345	243	35
Cyclopoida	11	7.1	42	780	650	18
Copepod Nauplii	0.40	0.31	25	3200	2300	33
Rotifera	123	39	104	12667	5300	82
Total Zooplankton	289	160	57	16992	8516	66

	September Field Duplicate (WTS-5)					
	Biomass (ww/sample)			Abundance (organisms/sample)		
Major Taxa Group	**Original**	**Duplicate**	**RPDs**[1]	**Original**	**Duplicate**	**RPDs**[1]
Cladocera	1.16	0.48	84	15	10	40
Calanoida	49	57	-15	105	123	-15
Cyclopoida	21	15	33	1035	688	40
Copepod Nauplii	0.84	0.30	94	2133	667	105
Rotifera	41	40	2.3	3767	3900	-3.5
Total Zooplankton	113	113	0.1	7055	5387	27

Notes:

[1] RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

APPENDIX B

In-situ Water Quality Results, Whale Tail Pit Baseline, 2014 and 2015

APPENDIX B1

2014 *In-situ* Water Quality Results: Lake Stations

Table B1-1. *In-situ* water quality results from the Lake stations, Whale Tail Pit Baseline, 2014.

Lake	Date	Location	UTM Coordinates			Water Depth	Secchi Depth	Profile Depth	pH	Temp.	Specific Conductivity	Dissolved Oxygen	Turbidity
			Zone	Easting	Northing	(m)	(m)	(m)		(°C)	(µS/cm)	(mg/L)	(NTU)
Whale Tail Lake	05-Sep-14	1*	14W	607005	7255983	8.5	8.5	0	7.30	9.3	21.8	11.6	0.06
								1	7.30	9.3	21.8	11.5	0.05
								2	7.24	9.3	21.7	11.4	0.06
								3	7.21	9.3	21.8	11.2	0.09
								4	7.06	9.3	21.7	11.1	0.09
								5	7.05	9.3	21.7	10.8	0.09
								6	7.14	9.3	21.8	11.0	0.10
								7	7.03	9.3	21.7	11.2	0.10
								8	7.05	9.3	21.7	11.2	0.11
		2	14W	607431	7255251	7.8	6.4	0	6.77	9.4	18.5	11.6	0.10
								1	6.97	9.4	18.5	11.5	0.09
								2	6.83	9.4	18.5	11.6	0.10
								3	6.79	9.4	18.5	11.6	0.09
								4	6.76	9.4	18.5	11.7	0.10
								5	6.80	9.4	18.5	11.8	0.10
								6	6.80	9.4	18.5	11.7	0.11
								7	6.85	9.4	18.5	11.8	0.10
		3*	14W	607538	7254596	8	7	0	7.02	9.4	17.3	11.5	0.10
								1	6.93	9.5	17.4	11.5	0.11
								2	6.87	9.5	17.4	11.5	0.13
								3	6.83	9.4	17.4	11.6	0.13
								4	6.92	9.4	17.4	11.6	0.13
								5	6.99	9.4	17.3	11.6	0.13
								6	6.95	9.4	17.4	11.7	0.14
								7	6.95	9.4	17.3	11.7	0.14
		4	14W	607230	7253781	7.8	6.5	0	7.07	9.3	17.3	11.4	0.09
								1	7.01	9.3	17.3	11.5	0.12
								2	6.97	9.3	17.3	11.4	0.14
								3	7.01	9.3	17.3	11.5	0.13
								4	6.90	9.3	17.3	11.5	0.14
								5	6.90	9.3	17.3	11.6	0.15
								6	6.91	9.3	17.3	11.6	0.12
								7	6.88	9.3	17.3	11.6	0.13
		5*	14W	607120	7253603	8	7	0	7.12	9.2	17.4	11.4	0.15
								1	7.14	9.2	17.3	11.4	0.15
								2	6.95	9.3	17.4	11.3	0.15
								3	6.89	9.2	17.4	11.5	0.15
								4	6.99	9.2	17.3	11.5	0.15
								5	7.03	9.3	17.3	11.5	0.15
								6	6.87	9.3	17.3	11.5	0.15
								7	6.95	9.3	17.3	11.6	0.15
Nemo Lake	06-Sep-14	1*	14W	606358	7257042	7.6	>7.6	0	7.32	9.2	25.1	11.51	0.00
								1	7.23	9.2	25.1	11.50	0.00
								2	7.28	9.2	25.1	11.52	0.00
								3	7.23	9.1	25.1	11.58	0.00
								4	7.28	9.1	25.1	11.62	0.00
								5	7.28	9.1	25.1	11.59	0.00
								6	7.28	9.1	25.1	11.58	0.00
								7	7.29	9.1	25.1	11.62	0.00
		2	14W	606040	7257418	7.4	>7.4	0	7.34	9.5	25.1	11.47	0.00
								1	7.19	9.3	25.1	11.45	0.00
								2	7.28	9.3	25.1	11.45	0.00
								3	7.14	9.3	25.1	11.49	0.00
								4	7.26	9.3	25.1	11.51	0.00
								5	7.20	9.3	25.1	11.54	0.00
								6	7.22	9.3	25.1	11.57	0.00
								7	7.11	9.3	25.1	11.56	0.00
		3*	14W	606048	7257571	8.3	>8.3	0	7.09	9.3	25.1	11.39	0.00
								1	7.17	9.3	25.1	11.34	0.00
								2	7.20	9.3	25.1	11.26	0.00
								3	7.15	9.3	25.0	11.00	0.00
								4	7.19	9.3	25.0	10.76	0.00
								5	7.23	9.2	25.1	10.67	0.00
								6	7.07	9.2	25.0	10.66	0.00
								7	7.11	9.2	25.0	10.62	0.00

Table B1-1. *In-situ* water quality results from the Lake stations, Whale Tail Pit Baseline, 2014.

Lake	Date	Location	UTM Coordinates Zone	UTM Coordinates Easting	UTM Coordinates Northing	Water Depth (m)	Secchi Depth (m)	Profile Depth (m)	pH	Temp. (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
								0	7.31	9.4	25.0	11.30	0.00
								1	7.20	9.4	25.0	11.27	0.00
								2	7.28	9.4	25.0	11.18	0.00
								3	7.29	9.4	25.0	11.14	0.00
		4	14W	606963	7257756	8.5	>8.5	4	7.22	9.4	25.0	11.05	0.00
								5	7.28	9.4	25.0	10.97	0.00
								6	7.28	9.4	25.0	11.04	0.00
								7	7.27	9.4	25.0	11.00	0.00
Nemo Lake	6-Sep-14							8	7.21	9.4	25.0	11.14	0.00
								0	7.29	9.4	25.0	11.35	0.00
								1	7.31	9.4	25.0	11.29	0.00
								2	7.29	9.4	25.0	11.17	0.00
								3	7.25	9.4	25.0	10.98	0.00
		5*	14W	606740	7257566	8.7	8.3	4	7.18	9.4	25.0	10.84	0.00
								5	7.25	9.4	25.0	10.81	0.00
								6	7.27	9.4	25.0	10.79	0.00
								7	7.15	9.4	25.0	10.79	0.00
								8	7.24	9.4	25.0	10.85	0.00
								0	7.59	9.8	21.6	11.5	0.29
								1	7.53	9.8	21.6	11.5	0.29
								2	7.59	9.8	21.6	11.3	0.32
								3	7.54	9.8	21.6	11.6	0.31
		1*	14W	605074	7254893	8.1	6.5	4	7.46	9.3	22.1	11.9	0.31
								5	7.30	9.8	21.7	12.4	0.31
								6	7.30	9.7	21.9	11.9	0.28
								7	7.37	9.6	21.9	11.8	0.33
								8	7.24	9.5	22.1	11.6	
								0	7.23	10.0	21.0	11.5	0.14
								1	7.30	10.0	20.9	11.5	0.16
								2	7.24	10.0	20.9	11.2	0.16
		2	14W	604486	7254566	7.3	7.2	3	7.24	10.0	21.0	11.1	0.17
								4	7.28	10.0	21.0	11.1	0.17
								5	7.20	10.0	21.0	11.2	0.16
								6	7.19	10.0	21.0	11.2	0.16
								7	7.24	9.7	20.9	11.2	0.17
								0	7.00	10.0	20.9	11.7	0.14
								1	7.07	9.9	20.9	11.7	0.14
								2	6.99	9.9	20.9	11.5	0.15
								3	7.04	9.9	20.9	11.2	0.16
Mammoth Lake	04-Sep-14	3*	14W	604398	7254336	8.3	7.5	4	6.96	9.9	20.9	11.1	0.16
								5	7.00	9.9	20.9	11.0	0.16
								6	7.11	9.9	21.0	10.9	0.16
								7	7.15	9.5	21.0	11.0	0.17
								8	7.02	9.4	21.0	11.0	0.16
								0	7.00	9.9	20.9	11.8	0.17
								1	7.00	9.8	20.9	11.7	0.16
								2	6.94	9.8	20.9	11.5	0.17
		4	14W	603925	7254200	7.4	7.0	3	7.02	9.8	20.9	11.3	0.17
								4	6.98	9.8	20.9	11.2	0.17
								5	7.00	9.8	20.9	11.1	0.17
								6	7.03	9.7	20.9	10.9	0.17
								7	7.06	9.7	20.8	11.0	0.18
								0	7.04	10.1	20.8	11.2	0.11
								1	7.10	10.1	20.8	11.3	0.13
								2	7.07	10.1	20.9	11.0	0.14
		5*	14W	604191	7253847	7.3	7.3	3	7.08	10.0	20.9	11.0	0.13
								4	7.14	9.9	20.8	11.4	0.15
								5	6.94	9.9	20.8	11.5	0.17
								6	7.05	9.6	20.8	11.6	0.17
								7	7.11	9.6	20.9	11.4	0.17

Notes:

Data presented here were adapted from Portt and Associates (2015a).

* = water, phytoplankton, and sediment were submitted for analysis from these locations.

APPENDIX B2

2015 *In-situ* Water Quality Results: Lakes Stations

Table B2-1. *In-situ* water quality results from the Lake stations, Whale Tail Pit Baseline, 2015.

Area-Replicate	Date	UTM Coordinates			Water Depth (m)	Secchi Depth (m)	Profile Depth (m)	pH	Temp. (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)
		Zone	Easting	Northing							
WTN-1	17-Jul-15	14W	607207	7254975	7.4	4.3	0	6.81	10.1	19.2	11.3
							1	6.77	10.1	19.2	11.4
							2	6.76	10.1	19.2	11.2
							3	6.77	8.1	19.2	11.8
							4	6.71	7.8	19.7	11.7
							5	6.71	7.1	20.3	12.1
							6	6.68	6.8	20.4	12.2
							7	6.70	6.6	20.7	12.5
WTN-2	17-Jul-15	14W	607252	7254613	6.7	4.7	0	6.85	9.2	15.8	11.4
							1	6.84	9.1	15.8	11.5
							2	6.85	9.1	15.8	11.3
							3	6.77	9.1	15.9	11.2
							4	6.79	7.9	15.7	11.6
							5	6.79	6.4	15.2	12.0
WTN-3	20-Aug-15	14W	607387	7254563	6.8	6.1	0	7.03	11.4	17.1	10.5
							1	7.00	11.4	17.1	10.3
							2	6.99	11.4	17.1	10.2
							3	6.99	11.4	17.1	10.2
							4	6.99	11.4	17.1	10.1
							5	6.99	11.4	17.1	10.1
							6	6.99	11.4	17.1	10.1
WTN-4	20-Aug-15	14W	607221	7254980	7.9	5.4	0	6.99	11.3	18.2	10.1
							1	6.97	11.3	18.3	10.0
							2	6.97	11.3	18.2	10.0
							3	6.98	11.3	18.2	10.0
							4	6.96	11.4	18.3	9.9
							5	6.97	11.4	18.1	9.9
							6	6.96	11.4	18.2	9.9
							7	6.95	11.4	18.6	9.8
WTN-5	18-Sep-15	14W	607244	7255025	6.7	4.0	0	6.81	4.8	23.5	12.2
							1	6.82	4.8	23.4	11.8
							2	6.80	4.8	23.5	11.8
							3	6.79	4.8	23.4	11.8
							4	6.79	4.8	23.4	11.7
							5	6.76	4.8	23.4	11.8
							6	6.78	4.8	23.3	11.9
WTN-6	18-Sep-15	14W	607329	7254542	10.9	5.6	0	6.82	4.9	20.4	11.2
							1	6.81	4.9	20.4	11.1
							2	6.82	4.9	20.4	11.2
							3	6.79	5.0	20.6	11.2
							4	6.78	5.0	20.8	11.1
							5	6.78	4.9	21.0	11.1
							6	6.78	5.0	21.1	11.1
							7	6.74	5.0	21.2	11.1
							8	6.71	5.0	21.2	11.1
							9	6.72	5.0	21.1	11.2
							10	6.72	4.9	21.1	11.3
WTS-1	17-Jul-15	14W	607450	7253884	9.5	3.7	0	6.85	9.1	15.3	11.4
							1	6.80	9.1	15.3	11.1
							2	6.79	9.0	15.2	11.3
							3	6.80	9.0	15.1	11.1
							4	6.78	8.7	15.0	11.2
							5	6.80	7.9	15.0	11.2
							6	6.75	5.7	14.9	12.0
							7	6.70	5.6	15.0	12.0
							8	6.73	5.4	14.9	12.0
WTS-2	17-Jul-15	14W	607621	7254253	5.1	3.5	0	6.79	7.7	15.2	11.7
							1	6.78	7.7	15.2	11.8
							2	6.79	7.7	15.1	11.6
							3	6.77	7.6	15.1	11.6
							4	6.78	7.6	15.5	11.9
WTS-3	21-Aug-15	14W	607173	7253550	8.5	5.5	0	6.77	10.8	17.0	10.3
							1	6.81	10.8	17.0	10.1

Table B2-1. *In-situ* water quality results from the Lake stations, Whale Tail Pit Baseline, 2015.

Area-Replicate	Date	UTM Coordinates			Water Depth	Secchi Depth	Profile Depth	pH	Temp.	Specific Conductivity	Dissolved Oxygen
		Zone	Easting	Northing	(m)	(m)	(m)		(°C)	(µS/cm)	(mg/L)
WTS-3 (con't)							2	6.84	10.8	17.0	10.0
							3	6.90	10.8	17.0	10.1
							4	6.90	10.8	17.0	10.0
							5	6.90	10.8	17.0	10.1
							6	6.91	10.8	17.0	10.0
							7	6.91	10.8	17.0	9.9
							8	6.90	10.8	17.0	10.0
WTS-4	21-Aug-15	14W	607571	7254138	7.5	6.5	0	6.84	10.8	17.1	10.3
							1	6.86	10.8	17.1	10.3
							2	6.86	10.8	17.1	10.2
							3	6.85	10.8	17.1	10.2
							4	6.86	10.8	17.1	10.2
							5	6.87	10.8	17.1	10.0
							6	6.87	10.8	17.1	10.1
							7	6.85	10.8	17.1	10.1
WTS-5	18-Sep-15	14W	607612	7253907	6.5	5.1	0	6.59	4.9	19.8	13.1
							1	6.60	4.9	19.8	13.1
							2	6.57	4.9	19.8	13.1
							3	6.49	4.9	19.8	13.1
							4	6.47	4.9	19.8	13.1
							5	6.38	4.9	19.8	13.4
WTS-6	18-Sep-15	14W	607568	725459	7.8	5.0	0	6.76	4.9	19.8	12.1
							1	6.75	4.9	19.8	12.0
							2	6.73	4.9	19.8	12.0
							3	6.76	4.9	19.7	12.0
							4	6.74	4.9	19.8	12.0
							5	6.68	4.9	19.8	12.1
							6	6.69	4.9	19.8	12.1
							7	6.66	4.9	19.8	12.3
NEM-1	18-Jul-15	14W	606604	7257508	10.5	8.0	0	7.06	6.2	24.1	14.8
							1	7.08	6.2	24.2	14.8
							2	7.07	6.3	24.1	14.5
							3	7.08	6.2	24.2	14.6
							4	7.10	6.2	24.1	14.5
							5	7.09	6.2	24.2	14.3
							6	7.10	6.1	24.1	14.4
							7	7.11	6.1	24.1	14.4
							8	7.12	6.1	24.1	14.3
							9	7.15	6.1	24.1	14.2
NEM-2	18-Jul-15	14W	606454	7257135	11.1	7.0	0	7.01	6.4	24.1	15.3
							1	7.01	6.4	24.2	15.2
							2	7.01	6.4	24.1	15.2
							3	7.03	6.1	24.1	15.0
							4	7.03	6.1	24.2	15.1
							5	7.04	6.0	24.2	15.3
							6	7.05	6.0	24.2	15.1
							7	7.07	5.9	24.3	15.4
							8	7.09	5.9	24.2	15.2
							9	7.13	5.9	24.2	15.2
							10	7.22	6.1	24.1	15.2
NEM-3	23-Aug-15	14W	606553	7257360	8	7.6	0	7.25	11.3	21.7	11.7
							1	7.25	11.2	21.7	11.6
							2	7.27	11.2	21.7	11.1
							3	7.26	11.2	21.7	11.2
							4	7.26	11.1	21.7	11.3
							5	7.26	11.1	21.7	11.0
							6	7.26	11.1	21.7	10.7
							7	7.26	11.1	21.7	11.0
NEM-4	23-Aug-15	14W	606378	7257257	11.8	8.4	0	7.08	11.1	21.7	12.9
							1	7.12	11.1	21.7	12.6
							2	7.14	11.1	21.7	12.6
							3	7.14	11.1	21.7	12.7
							4	7.16	11.1	21.7	12.7

Table B2-1. *In-situ* water quality results from the Lake stations, Whale Tail Pit Baseline, 2015.

Area-Replicate	Date	UTM Coordinates			Water Depth	Secchi Depth	Profile Depth	pH	Temp.	Specific Conductivity	Dissolved Oxygen
		Zone	Easting	Northing	(m)	(m)	(m)		(°C)	(µS/cm)	(mg/L)
NEM-4 (con't)							5	7.16	11.1	21.7	12.2
							6	7.17	11.1	21.7	12.4
							7	7.17	11.0	21.7	12.5
							8	7.18	11.0	21.7	12.0
							9	7.18	11.0	21.7	12.2
							10	7.18	11.0	21.7	12.0
							11	7.19	11.0	21.7	12.1
NEM-5	19-Sep-15	14W	606288	7257418	10.5	7.5	0	7.17	5.5	23.4	14.1
							1	7.15	5.5	23.4	13.9
							2	7.12	5.5	23.4	14.0
							3	7.18	5.5	23.4	14.0
							4	7.19	5.5	23.4	14.0
							5	7.14	5.5	23.4	14.0
							6	7.16	5.5	23.4	14.2
							7	7.14	5.5	23.4	14.2
							8	7.20	5.5	23.4	14.3
							9	7.24	5.5	23.4	14.7
NEM-6	19-Sep-15	14W	606611	7257938	15.2	8.5	0	7.20	5.8	23.4	14.3
							1	7.17	5.8	23.4	14.1
							2	7.18	5.8	23.4	14.0
							3	7.19	5.8	23.4	13.9
							4	7.18	5.8	23.4	13.9
							5	7.17	5.8	23.4	14.0
							6	7.15	5.8	23.4	13.9
							7	7.19	5.8	23.4	13.8
							8	7.21	5.8	23.4	13.8
							9	7.19	5.8	23.4	13.9
							10	7.19	5.8	23.4	14.0
							11	7.17	5.8	23.4	14.1
							12	7.18	5.8	23.4	13.9
							13	7.17	5.8	23.4	14.2
							14	7.12	5.8	23.4	14.3
MAM-1	18-Jul-15	14W	604278	7254163	5.1	5.1	0	7.09	10.6	22.1	12.5
							1	7.08	10.5	22.1	12.4
							2	7.09	10.5	22.1	12.2
							3	7.08	10.4	22.1	12.2
							4	7.08	10.4	22.1	12.2
MAM-2	18-Jul-15	14W	604145	7254415	7.8	6.5	0	7.09	10.2	22.1	12.5
							1	7.10	10.1	22.1	12.5
							2	7.08	10.0	22.1	12.4
							3	7.07	10.0	22.1	12.1
							4	7.05	9.9	22.1	12.1
							5	7.04	8.8	21.8	12.2
							6	7.07	7.7	21.4	13.3
							7	7.09	6.9	21.3	13.8
MAM-3	24-Aug-15	14W	604273	7254244	7.2	6.6	0	6.96	11.0	21.3	11.1
							1	6.96	11.0	21.3	11.0
							2	6.95	11.0	21.3	10.9
							3	6.95	10.9	21.3	11.0
							4	6.96	10.9	21.3	10.8
							5	6.95	10.9	21.3	10.8
							6	6.96	10.9	21.3	10.6
							7	6.95	10.9	21.3	10.5
MAM-4	24-Aug-15	14W	604239	7253860	7.8	6.5	0	7.11	11.0	21.3	12.6
							1	7.10	11.0	21.3	12.2
							2	7.08	11.0	21.3	12.4
							3	7.08	11.0	21.3	12.3
							4	7.08	11.0	21.3	12.0
							5	7.08	11.0	21.3	11.8
							6	7.07	11.0	21.3	12.0
							7	7.07	11.0	21.3	12.0
MAM-5	19-Sep-15	14W	604357	7254348	8.9	6.0	0	7.04	4.5	24.0	14.5
							1	7.06	4.5	24.0	14.4

Table B2-1. *In-situ* water quality results from the Lake stations, Whale Tail Pit Baseline, 2015.

Area-Replicate	Date	UTM Coordinates			Water Depth	Secchi Depth	Profile Depth	pH	Temp.	Specific Conductivity	Dissolved Oxygen
		Zone	Easting	Northing	(m)	(m)	(m)		(°C)	(µS/cm)	(mg/L)
MAM-5 (con't)							2	7.06	4.5	24.0	14.4
							3	7.07	4.5	24.0	14.3
							4	7.11	4.5	24.0	14.3
							5	7.08	4.5	24.0	14.4
							6	7.09	4.5	24.0	14.4
							7	7.08	4.5	24.0	14.5
							8	7.15	4.5	24.0	14.5
MAM-6	19-Sep-15	14W	604228	7253834	6.4	5.9	0	6.97	4.5	23.8	15.2
							1	7.00	4.5	23.8	15.1
							2	7.00	4.5	23.8	15.0
							3	7.00	4.5	23.8	15.1
							4	6.97	4.5	23.8	14.9
PDL-37	28-Jul-15	14W	631323	7224998	28		0	6.55			
							1		7.9	15.0	11.6
							2		7.0	18.0	11.6
							3		6.8	19.0	11.2
							4		6.7	19.0	10.9
							5		6.1	20.0	10.7
							6		5.5	21.0	11.1
							7		5.3	21.0	11.2
							8		5.2	24.0	11.1
							9		5.1	18.0	11.0
							10		5.1	18.0	10.9
							11		5.0	18.0	10.7
							12		5.0	18.0	10.4
							13		4.9	17.0	10.7
							14		4.9	17.0	10.7
							15		4.8	17.0	10.8
PDL-38†	28-Jul-15	14W	632161	7225256	27	10.0	0	6.20			
							1		6.3	18.0	10.7
							2		5.9	20.0	10.3
							3		5.7	21.0	10.3
							4		5.3	21.0	9.4
							5		5.2	21.0	9.6
							6		4.9	21.0	10.1
							7		4.8	20.0	9.8
							8		4.8	18.0	9.9
							9		4.8	17.0	10.0
							10		4.7	17.0	10.1
							11		4.7	16.0	10.0
							12		4.6	15.0	10.0
							13		4.6	14.0	9.2
							14		4.5	16.0	9.6
							15		4.5	16.0	9.4
PDL-39	26-Aug-15	14W	631743	7224224	23.4	9.9	0	7.16	10.6	18.7	12.2
							1	7.15	10.4	18.7	12.3
							2	7.15	10.4	18.7	12.4
							3	7.16	10.3	18.7	12.3
							4	7.15	10.3	18.7	12.3
							5	7.15	10.2	18.7	12.2
							6	7.15	10.2	18.7	12.2
							7	7.14	10.2	18.7	12.0
							8	7.15	10.2	18.7	12.2
							9	7.15	10.2	18.7	12.1
							10	7.15	10.2	18.7	12.2
							11	7.15	10.2	18.7	12.1
							12	7.15	10.2	18.7	12.1
							13	7.16	10.2	18.7	12.2
							14	7.14	10.1	18.7	12.0
							15	7.16	10.1	18.7	12.0
							16	7.14	10.1	18.7	12.1
							17	7.15	10.1	18.7	11.9
							18	7.15	10.1	18.7	11.9

Table B2-1. *In-situ* water quality results from the Lake stations, Whale Tail Pit Baseline, 2015.

Area-Replicate	Date	UTM Coordinates			Water Depth	Secchi Depth	Profile Depth	pH	Temp.	Specific Conductivity	Dissolved Oxygen
		Zone	Easting	Northing	(m)	(m)	(m)		(°C)	(µS/cm)	(mg/L)
PDL-39 (con't)							19	7.15	10.1	18.7	12.0
							20	7.15	10.1	18.7	12.0
PDL-40	26-Aug-15	14W	632623	7223870	26.9	11.6	0	7.27	10.6	18.7	13.0
							1	7.27	10.3	18.7	13.0
							2	7.27	10.3	18.6	13.0
							3	7.26	10.1	18.7	12.1
							4	7.26	10.1	18.7	12.2
							5	7.25	10.1	18.7	12.1
							6	7.25	10.1	18.7	12.0
							7	7.25	10.1	18.7	12.0
							8	7.25	10.1	18.7	12.1
							9	7.24	10.1	18.7	12.0
							10	7.25	10.1	18.7	12.1
							11	7.24	10.1	18.7	12.1
							12	7.24	10.1	18.7	11.9
							13	7.24	10.1	18.7	12.0
							14	7.24	10.1	18.7	12.1
							15	7.24	10.0	18.7	12.1
							16	7.24	10.0	18.7	12.0
							17	7.23	10.0	18.7	12.0
							18	7.23	9.9	18.7	11.9
							19	7.21	9.8	18.7	12.0
							20	7.20	9.8	18.7	11.9
PDL-41†	4-Oct-15	14W	630089	7223596	13.5		0	6.43			
							1		3.0	37.0	10.6
							2		3.0	26.0	10.5
							3		3.1	26.0	10.4
							4		3.1	26.0	10.2
							5		3.1	25.0	10.2
							6		3.1	25.0	10.2
							7		3.1	25.0	10.2
							8		3.1	25.0	10.1
							9		3.1	25.0	10.1
							10		3.1	25.0	10.1
							11		3.1	26.0	10.1
							12		3.1	26.0	10.1
							13		3.1	26.0	10.1
INUG-70	27-Jul-15	14W	622965	7216215	4.5		0	7.04			
							1		10.7	12.0	10.0
							2		10.5	12.0	9.8
							3		10.2	12.0	9.9
							4		10.1	12.0	9.8
INUG-71	27-Jul-15	14W	622256	7214295	8.5	8.5	0	7.12			
							1		10.7	12.0	10.0
							2		10.4	12.0	10.3
							3		10.1	12.0	9.8
							4		10.1	12.0	10.0
							5		9.9	13.0	10.1
							6		9.5	13.0	10.1
							7		9.2	13.0	10.1
INUG-72	27-Aug-15	14W	621832	7215439	9.8	9.4	0	7.31	11.5	13.3	10.0
							1	7.27	11.6	13.3	9.9
							2	7.26	11.5	13.3	10.1
							3	7.24	11.5	13.3	9.9
							4	7.22	11.5	13.3	9.9
							5	7.18	11.5	13.3	9.8
							6	7.18	11.5	13.3	9.8
							7	7.16	11.5	13.3	9.6
							8	7.16	11.5	13.3	9.7
							9	7.12	11.4	13.3	9.9
INUG-73	27-Aug-15	14W	622718	7214853	9.3	8.6	0	6.94	11.5	13.2	10.1
							1	6.95	11.5	13.2	9.8
							2	6.94	11.5	13.2	9.9

Table B2-1. *In-situ* water quality results from the Lake stations, Whale Tail Pit Baseline, 2015.

Area-Replicate	Date	UTM Coordinates			Water Depth	Secchi Depth	Profile Depth	pH	Temp.	Specific Conductivity	Dissolved Oxygen
		Zone	Easting	Northing	(m)	(m)	(m)		(°C)	(µS/cm)	(mg/L)
INUG-73 (con't)							3	6.94	11.5	13.2	10.0
							4	6.94	11.5	13.3	10.0
							5	6.94	11.5	13.2	9.9
							6	6.94	11.4	13.2	9.8
							7	6.94	11.4	13.3	9.9
							8	6.94	11.4	13.3	9.8
							9	6.94	11.4	13.3	9.7
INUG-74*	1-Oct-15	14W	622518	7214715	11		0	6.74	2.5	157	10.4
							1		2.5	154	10.3
							2		2.4	153	10.3
							3		2.4	140	10.2
							4		2.4	140	10.1
							5		2.4	138	10.1
							6		2.4	132	10.1
							7		2.4	129	10.2
							8		2.4	126	10.1
							9		2.4	122	10.1
							10		2.4	121	10.1
INUG-75	1-Oct-15	14W	622756	7215766	13		0	7.00	2.4	43.0	10.3
							1		2.4	27.0	10.4
							2		2.4	27.0	10.3
							3		2.4	26.0	10.3
							4		2.4	26.0	10.2
							5		2.4	27.0	10.2
							6		2.4	27.0	10.3
							7		2.4	27.0	10.3
							8		2.4	27.0	10.2
							9		2.4	28.0	10.2
							10		2.4	29.0	10.2
							11		2.4	29.0	10.2
							12		2.4	29.0	10.2

Notes:

pH profiles were not recorded by AEM staff at PDL and INUG during the July and September/October sampling events.

* Specific conductivity measurements for INUG-74 are considered anomalous relative to the measurements recorded at INUG-75 and long-term specific conductivity at INUG.

† pH measurements at PDL-38 and PDL-41 were considered anomalous relative to the other pH measurement taken during the sampling event.

APPENDIX B3

2015 *In-situ* Water Quality Results: Sentinel Stations

Table B3-1. *In-situ* water quality results from the Sentinel stations, Whale Tail Pit Baseline, 2015.

Area-Replicate	Date	UTM Coordinates			pH	Temp.	Specific Conductivity	Dissolved Oxygen
		Zone	Easting	Northing		(°C)	(µS/cm)	(mg/L)
C2	19-Jul-15	14W	638199	7221598	-	10.3	22.7	11.98
	25-Aug-15	14W	638217	7221627	7.22	9.6	16.9	11.34
	20-Sep-15	14W	638328	7221902	7.02	2.7	22.6	13.71
C14	19-Jul-15	14W	632916	7232202	7.03	9.4	24.8	13.03
	25-Aug-15	14W	632890	7232182	7.36	10.9	20.4	10.97
	20-Sep-15	14W	632916	7232202	6.98	4.0	22.7	13.3
C17	19-Jul-15	14W	630583	7234684	7.03	10.0	23.4	12.5
	25-Aug-15	14W	630557	7234667	6.78	10.1	14.1	11.2
	20-Sep-15	14W	630583	7234684	6.98	3.2	21.3	13.5
C20	19-Jul-15	14W	627265	7236464	7.05	8.2	23.4	13.8
	25-Aug-15	14W	627186	7236475	7.36	10.6	18.6	10.7
	20-Sep-15	14W	627265	7236464	6.92	3.6	20.3	13.6
C41	19-Jul-15	14W	620607	7244690	7.10	10.7	17.2	11.7
	25-Aug-15	14W	620637	7244668	7.22	9.6	16.9	11.3
	20-Sep-15	14W	620607	7244690	6.90	2.5	23.3	15.0

Notes:
No pH for C2 in July.

APPENDIX C

ALS Certificates of Analysis, Whale Tail Pit Baseline, 2015

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 27-JUL-15
Report Date: 30-JUL-15 14:31 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1648210

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1648210-1 Surface Water 17-JUL-15 WTN-1-S	L1648210-2 Surface Water 17-JUL-15 WTN-2-S	L1648210-3 Surface Water 17-JUL-15 WTS-1-S	L1648210-4 Surface Water 17-JUL-15 WTS-2-S	L1648210-5 Surface Water 18-JUL-15 NEM-1-S
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	20.4	17.4	16.0	15.9	24.5
	pH (pH)	6.83	6.81	6.78	6.78	7.03
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	16.0	12.8	13.0	13.8	16.6
	Turbidity (NTU)	0.42	0.39	0.43	0.35	0.24
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	4.5	4.2	4.2	4.2	7.1
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	4.5	4.2	4.2	4.2	7.1
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	1.94	1.22	1.06	1.06	0.53
	Fluoride (F) (mg/L)	0.022	0.025	0.023	0.025	0.023
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	0.0020	<0.0020
	Silicate (as SiO2) (mg/L)	0.56	0.57	0.54	0.54	<0.50
	Sulfate (SO4) (mg/L)	1.39	1.24	1.20	1.22	3.19

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1648210-6	L1648210-7	L1648210-8	L1648210-9	L1648210-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	18-JUL-15	18-JUL-15	18-JUL-15		18-JUL-15
	Sampled Time					
	Client ID	NEM-2-S	MAM-1-S	MAM-2-S	DUP-JULY-AMARUQ	EB-JULY-AMARUQ
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	24.5	22.5	22.6	15.4	<2.0
	pH (pH)	7.04	6.86	6.86	6.76	5.45
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	17.6	16.9	16.2	13.3	<3.0
	Turbidity (NTU)	0.23	0.36	0.37	0.37	<0.10
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	7.0	4.8	5.0	3.9	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	7.0	4.8	5.0	3.9	<1.0
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	0.53	1.98	1.98	1.05	<0.10
	Fluoride (F) (mg/L)	0.021	0.023	0.024	0.024	<0.020
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Silicate (as SiO2) (mg/L)	<0.50	0.55	0.58	0.54	<0.50
	Sulfate (SO4) (mg/L)	3.19	2.10	2.11	1.21	<0.30

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Fluoride (F)	DLM	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Bromide (Br)	DLM	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Fluoride (F)	DLM	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nitrite (as N)	DLM	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Nitrate (as N)	MS-B	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Fluoride (F)	MS-B	L1648210-1, -10, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

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

Test Method References:

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

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

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

CL-L-IC-N-VA	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

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

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

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

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

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

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

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

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

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

P-TD-COL-VA	Water	Total Dissolved P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

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

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

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

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

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

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

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SILICATE-COL-VA	Water	Silicate by Colourimetric analysis	APHA 4500-SiO2 E.

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

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

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

Reference Information

TDS-LOW-VA	Water	Low Level TDS (3.0mg/L) by Gravimetric	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA	Water	Total Suspended Solids by Grav. (1 mg/L)	APHA 2540D

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

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

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

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

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

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

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

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

Chain of Custody Numbers:

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

ALS Environmental

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

COC # ________

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Azimuth Consulting Group	☐ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Eric Franz	☐ PDF ☐ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	218-2902 West Broadway	Email 1:	efranz@azimuthgroup.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6K2G8	Email 2:	gmann@azimuthgroup.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-730-1220 Fax:	Email 3:	ryan.vanengen@agnicoeagle.com	Analysis Request
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Amaruq Surfacewater	
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:	Q39503	
Lab Work Order (lab use only)	L1648210-COFC	ALS Contact:	Sampler:	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Conventionals** see notes	TSS-Low, TDS-Low
	WTN-1-S	17-Jul-15		Surface Water	X	X
	WTN-2-S	17-Jul-15		Surface Water	X	X
	WTS-1-S	17-Jul-15		Surface Water	X	X
	WTS-2-S	17-Jul-15		Surface Water	X	X
	NEM-1-S	18-Jul-15		Surface Water	X	X
	NEM-2-S	18-Jul-15		Surface Water	X	X
	MAM-1-S	18-Jul-15		Surface Water	X	X
	MAM-2-S	18-Jul-15		Surface Water	X	X
	DUP-JULY-AMARUQ			Surface Water	X	X
	EB-JULY-AMARUQ	18-Jul-15		Surface Water	X	X

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

**Conventionals includes: Alk Species, pH, EC, Turbidity, Conductivity, Anions (F, NO2, NO3, Br, SO4), low-level Chloride, Silicate, TD-P, and Ortho-PO4.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add
Morgan Finley	20-Jul-15	9:00	Jean	27 Jul	8:38	18.1 18.1 °C				

L1648210-COFC

2

Number of Containers
2
2
2
2
2
2
2
2
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2

ons:

SIF

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 27-JUL-15
Report Date: 29-JUL-15 16:19 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1648239

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1648239-1	L1648239-2	L1648239-3	L1648239-4	L1648239-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	19-JUL-15	19-JUL-15	19-JUL-15	19-JUL-15	19-JUL-15
	Sampled Time					
	Client ID	C2	C14	C17	C20	C41
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	22.1	24.5	22.8	23.1	17.0
	pH (pH)	6.92	7.13	7.07	7.12	6.91
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	1.3
	Total Dissolved Solids (mg/L)	15.0	17.7	18.4	15.4	13.3
	Turbidity (NTU)	0.33	0.32	0.38	0.21	0.83
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	5.7	8.7	7.7	7.8	5.1
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	5.7	8.7	7.7	7.8	5.1
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	0.47	0.55	0.57	0.67	0.50
	Fluoride (F) (mg/L)	0.063	0.034	0.046	0.039	0.043
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0055
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0020	0.0028	0.0022	<0.0020	0.0022
	Silicate (as SiO2) (mg/L)	0.64	0.59	0.76	<0.50	0.52
	Sulfate (SO4) (mg/L)	3.45	1.52	1.48	1.71	1.73

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Fluoride (F)	DLM	L1648239-1, -2, -3, -4, -5
Duplicate	Bromide (Br)	DLM	L1648239-1, -2, -3, -4, -5
Duplicate	Fluoride (F)	DLM	L1648239-1, -2, -3, -4, -5
Duplicate	Nitrite (as N)	DLM	L1648239-1, -2, -3, -4, -5
Matrix Spike	Nitrate (as N)	MS-B	L1648239-1, -2, -3, -4, -5
Matrix Spike	Fluoride (F)	MS-B	L1648239-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

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

Test Method References:

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

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

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

CL-L-IC-N-VA	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

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

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

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

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

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

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

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

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

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

P-TD-COL-VA	Water	Total Dissolved P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

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

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

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

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

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

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

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SILICATE-COL-VA	Water	Silicate by Colourimetric analysis	APHA 4500-SiO2 E.

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

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

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

Reference Information

TDS-LOW-VA	Water	Low Level TDS (3.0mg/L) by Gravimetric	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA	Water	Total Suspended Solids by Grav. (1 mg/L)	APHA 2540D

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

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

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

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

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

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

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

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

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

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

COC # ______

Report To	
Company:	Azimuth Consulting Group
Contact:	Eric Franz
Address:	218-2902 West Broadway
	Vancouver, BC V6K2G8
Phone:	604-730-1220 Fax:

Report Format / Distribution	
☐ Standard ☐ Other	
☐ PDF ☐ Excel ☐ Digital ☐ Fax	
Email 1:	efranz@azimuthgroup.ca
Email 2:	gmann@azimuthgroup.ca
Email 3:	ryan.vanengen@agnicoeagle.com

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

Invoice To	
Same as Report ?	☑ Yes ☐ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	
Contact:	
Address:	
Phone:	
Lab Work Order # (lab use only)	L1648239-COFC

Client / Project Information	
Job #:	Amaruq Surfacewater
PO / AFE:	
LSD:	
Quote #:	Q39503
ALS Contact:	Sampler:

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	Conventionals** see notes	TSS-Low, TDS-Low
	C2	19-Jul-15		Surface Water	X	X
	C14	19-Jul-15		Surface Water	X	X
	C17	19-Jul-15		Surface Water	X	X
	C20	19-Jul-15		Surface Water	X	X
	C41	19-Jul-15		Surface Water	X	X

Short Holding Time

● *Rush Processing*

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

**Conventionals includes: Alk Species, pH, EC, Turbidity, Conductivity, Anions (F, NO2, NO3, Br, SO4), low-level Chloride, Silicate, TD-P, and Ortho-PO4.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Morgan Finley	Date (dd-mmm-yy) 20-Jul-15	Time (hh-mm) 9:00	Received by: Jean	Date: 27 Jul	Time: 8:38	Temperature: 18.1 18.1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add

L1648239-COFC

2

Number of Containers
2
2
2
2
2

ons:

SIF

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 29-JUL-15
Report Date: 07-AUG-15 12:24 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1649855

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

		L1649855-1	L1649855-2	L1649855-3	L1649855-4	L1649855-5
	Sample ID	L1649855-1	L1649855-2	L1649855-3	L1649855-4	L1649855-5
	Description	OTHER	OTHER	OTHER	OTHER	OTHER
	Sampled Date	17-JUL-15	17-JUL-15	17-JUL-15	17-JUL-15	18-JUL-15
	Sampled Time					
	Client ID	WTN-1-S	WTN-2-S	WTS-1-S	WTS-2-S	NEM-1-S
Grouping	**Analyte**					
FILTER						
Plant Pigments	Chlorophyll a (ug/L)	0.320	0.251	0.282	0.284	0.148

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1649855-6	L1649855-7	L1649855-8	L1649855-9	L1649855-10
	Description	OTHER	OTHER	OTHER	OTHER	OTHER
	Sampled Date	18-JUL-15	18-JUL-15	18-JUL-15		19-JUL-15
	Sampled Time					
	Client ID	NEM-2-S	MAM-1-S	MAM-2-S	DUP-JULY-AMARUQ	C2
Grouping	**Analyte**					
FILTER						
Plant Pigments	Chlorophyll a (ug/L)	0.134	0.237	0.231	0.211	0.340

ALS ENVIRONMENTAL ANALYTICAL REPORT

		L1649855-11	L1649855-12	L1649855-13	L1649855-14	
	Sample ID	L1649855-11	L1649855-12	L1649855-13	L1649855-14	
	Description	OTHER	OTHER	OTHER	OTHER	
	Sampled Date	19-JUL-15	19-JUL-15	19-JUL-15	19-JUL-15	
	Sampled Time					
	Client ID	C14	C17	C20	C41	
Grouping	**Analyte**					
FILTER						
Plant Pigments	Chlorophyll a (ug/L)	0.370	0.359	0.209	0.360	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CHLOROA-F-VA	Filter	Chlorophyll a by Fluorometer (Filter)	EPA 445.0

This analysis is done using procedures modified from EPA Method 445.0. Chlorophyll-a is determined by a routine acetone extraction followed with analysis by fluorometry using the non-acidification procedure. This method is not subject to interferences from chlorophyll b.

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

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

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

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

COC #

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Azimuth Consulting Group	☐ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Eric Franz	☐ PDF ☐ Excel ☐ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	218-2902 West Broadway	Email 1: efranz@azimuthgroup.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TA
	Vancouver, BC V6K2G8	Email 2: gmann@azimuthgroup.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-730-1220 Fax:	Email 3: ryan.vanengen@agnicoeagle.com	**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #: Amaruq Surfacewater	
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #: Q39503	
Lab Work Order # (lab use only)		ALS Contact: / Sampler:	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Chlorophyl 'a'
	WTN-1-S	17-Jul-15		Other	X
	WTN-2-S	17-Jul-15		Other	X
	WTS-1-S	17-Jul-15		Other	X
	WTS-2-S	17-Jul-15		Other	X
	NEM-1-S	18-Jul-15		Other	X
	NEM-2-S	18-Jul-15		Other	X
	MAM-1-S	18-Jul-15		Other	X
	MAM-2-S	18-Jul-15		Other	X
	DUP-JULY-AMARUQ			Other	X

L1649855-COFC

Short Holding Time
Rush Processing

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Morgan Finley	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature: 22 °C	Verified by: EC	Date: July 29/15	Time: 11:59	Observatio Yes / No ? If Yes add

ALS Environmental

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

COC # ______

Report To	
Company:	Azimuth Consulting Group
Contact:	Eric Franz
Address:	218-2902 West Broadway
	Vancouver, BC V6K2G8
Phone:	604-730-1220 Fax:
Invoice To	Same as Report ? ☑ Yes ☐ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	
Contact:	
Address:	
Phone:	Fax:
Lab Work Order # (lab use only)	

Report Format / Distribution	
☐ Standard ☐ Other	
☐ PDF ☐ Excel ☐ Digital ☐ Fax	
Email 1:	efranz@azimuthgroup.ca
Email 2:	gmann@azimuthgroup.ca
Email 3:	ryan.vanengen@agnicoeagle.com
Client / Project Information	
Job #:	Amaruq Surfacewater
PO / AFE:	
LSD:	
Quote #:	Q39503
ALS Contact:	**Sampler:**

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Chlorophyl 'a'
	C2	19-Jul-15		Other	X
	C14	19-Jul-15		Other	X
	C17	19-Jul-15		Other	X
	C20	19-Jul-15		Other	X
	C41	19-Jul-15		Other	X

L1649855-COFC

Short Holding Time
Rush Processing

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Morgan Finley	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature: 22 °C	Verified by: Ee	Date: July 29/15	Time: 11:59	Observatio[ns] Yes / No ? If Yes add

GENF 20.00 Front

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 29-JUL-15
Report Date: 07-AUG-15 13:40 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1649931

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1649931-1	L1649931-2	L1649931-3	L1649931-4	L1649931-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	17-JUL-15	17-JUL-15	17-JUL-15	17-JUL-15	18-JUL-15
	Sampled Time					
	Client ID	WTN-1-S	WTN-2-S	WTS-1-S	WTS-2-S	NEM-1-S
WATER						
Physical Tests	Conductivity (uS/cm)					
	Hardness (as CaCO3) (mg/L)	7.33	6.17	5.91	5.80	9.83
	pH (pH)					
	Turbidity (NTU)					
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)					
	Alkalinity, Carbonate (as CaCO3) (mg/L)					
	Alkalinity, Hydroxide (as CaCO3) (mg/L)					
	Alkalinity, Total (as CaCO3) (mg/L)					
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Bromide (Br) (mg/L)					
	Chloride (Cl) (mg/L)					
	Fluoride (F) (mg/L)					
	Nitrate (as N) (mg/L)					
	Nitrite (as N) (mg/L)					
	Total Kjeldahl Nitrogen (mg/L)	0.173	0.137	0.140	0.143	0.171
	Orthophosphate-Dissolved (as P) (mg/L)					
	Phosphorus (P)-Total Dissolved (mg/L)					
	Phosphorus (P)-Total (mg/L)	0.0020	0.0028	0.0025	0.0024	<0.0020
	Silicate (as SiO2) (mg/L)					
	Sulfate (SO4) (mg/L)					
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.15	2.07	2.04	1.98	1.45
	Total Organic Carbon (mg/L)	2.29	2.12	2.24	2.02	1.54
Total Metals	Aluminum (Al)-Total (mg/L)	0.0215	0.0176	0.0172	0.0170	0.0043
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00018	0.00014	0.00012	0.00013	0.00025
	Barium (Ba)-Total (mg/L)	0.00440	0.00343	0.00335	0.00325	0.00429
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	1.87	1.44	1.39	1.37	2.20
	Chromium (Cr)-Total (mg/L)	0.00013	0.00013	0.00012	<0.00010	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1649931-6	L1649931-7	L1649931-8	L1649931-9	L1649931-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	18-JUL-15	18-JUL-15	18-JUL-15	18-JUL-15	18-JUL-15
	Sampled Time					
	Client ID	NEM-2-S	MAM-1-S	MAM-2-S	DUP-JULY-AMARUQ	EB-JULY-AMARUQ
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)					
	Hardness (as CaCO3) (mg/L)	9.78	8.48	8.44	5.90	<0.50
	pH (pH)					
	Turbidity (NTU)					
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)					
	Alkalinity, Carbonate (as CaCO3) (mg/L)					
	Alkalinity, Hydroxide (as CaCO3) (mg/L)					
	Alkalinity, Total (as CaCO3) (mg/L)					
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Bromide (Br) (mg/L)					
	Chloride (Cl) (mg/L)					
	Fluoride (F) (mg/L)					
	Nitrate (as N) (mg/L)					
	Nitrite (as N) (mg/L)					
	Total Kjeldahl Nitrogen (mg/L)	0.171	0.139	0.137	0.163	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)					
	Phosphorus (P)-Total Dissolved (mg/L)					
	Phosphorus (P)-Total (mg/L)	0.0035	0.0031	0.0033	0.0048	<0.0020
	Silicate (as SiO2) (mg/L)					
	Sulfate (SO4) (mg/L)					
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.43	1.81	1.85	2.04	<0.50
	Total Organic Carbon (mg/L)	1.97	1.91	1.86	1.96	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.0981	0.0152	0.0142	0.0175	<0.0030
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00024	0.00030	0.00031	0.00013	<0.00010
	Barium (Ba)-Total (mg/L)	0.00423	0.00485	0.00479	0.00336	<0.000050
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	2.24	2.16	2.14	1.36	<0.050
	Chromium (Cr)-Total (mg/L)	0.00013	0.00016	0.00015	0.00012	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1649931-11	L1649931-12	L1649931-13	L1649931-14	L1649931-15
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	18-JUL-15	19-JUL-15	19-JUL-15	19-JUL-15	19-JUL-15
	Sampled Time					
	Client ID	TRAVEL BLANK-JULY-AMARUQ	C2	C14	C17	C20
WATER						
Physical Tests	Conductivity (uS/cm)	<2.0				
	Hardness (as CaCO3) (mg/L)	<0.50	8.72	10.4	9.60	9.60
	pH (pH)	5.80				
	Turbidity (NTU)	<0.10				
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Total (as CaCO3) (mg/L)	<2.0				
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Bromide (Br) (mg/L)	<0.050				
	Chloride (Cl) (mg/L)	<0.10				
	Fluoride (F) (mg/L)	<0.020				
	Nitrate (as N) (mg/L)	<0.0050				
	Nitrite (as N) (mg/L)	<0.0010				
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.154	0.265	0.184	0.124
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020				
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0022	0.0022	<0.0020
	Silicate (as SiO2) (mg/L)	<0.50				
	Sulfate (SO4) (mg/L)	<0.30				
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		1.62	2.51	2.80	1.51
	Total Organic Carbon (mg/L)	<0.50	1.61	2.52	2.74	1.47
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030	0.0126	0.0086	0.0148	0.0050
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	<0.00010	0.00015	0.00024	0.00023	0.00014
	Barium (Ba)-Total (mg/L)	<0.000050	0.00352	0.00361	0.00274	0.00205
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	<0.050	2.15	2.82	2.49	2.27
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00012	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	0.00099	0.00064	0.00069	<0.00050

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1649931-16
	Description	Surface Water
	Sampled Date	19-JUL-15
	Sampled Time	
	Client ID	C41
Grouping	**Analyte**	
WATER		
Physical Tests	Conductivity (uS/cm)	
	Hardness (as CaCO3) (mg/L)	6.77
	pH (pH)	
	Turbidity (NTU)	
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	
	Alkalinity, Total (as CaCO3) (mg/L)	
	Ammonia, Total (as N) (mg/L)	<0.0050
	Bromide (Br) (mg/L)	
	Chloride (Cl) (mg/L)	
	Fluoride (F) (mg/L)	
	Nitrate (as N) (mg/L)	
	Nitrite (as N) (mg/L)	
	Total Kjeldahl Nitrogen (mg/L)	0.129
	Orthophosphate-Dissolved (as P) (mg/L)	
	Phosphorus (P)-Total Dissolved (mg/L)	
	Phosphorus (P)-Total (mg/L)	0.0030
	Silicate (as SiO2) (mg/L)	
	Sulfate (SO4) (mg/L)	
Cyanides	Cyanide, Total (mg/L)	<0.0010
	Cyanide, Free (mg/L)	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.61
	Total Organic Carbon (mg/L)	1.98
Total Metals	Aluminum (Al)-Total (mg/L)	0.0210
	Antimony (Sb)-Total (mg/L)	<0.00010
	Arsenic (As)-Total (mg/L)	0.00013
	Barium (Ba)-Total (mg/L)	0.00426
	Beryllium (Be)-Total (mg/L)	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050
	Boron (B)-Total (mg/L)	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050
	Calcium (Ca)-Total (mg/L)	1.42
	Chromium (Cr)-Total (mg/L)	0.00040
	Cobalt (Co)-Total (mg/L)	<0.00010
	Copper (Cu)-Total (mg/L)	0.00066

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1649931-1	L1649931-2	L1649931-3	L1649931-4	L1649931-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	17-JUL-15	17-JUL-15	17-JUL-15	17-JUL-15	18-JUL-15
	Sampled Time					
	Client ID	WTN-1-S	WTN-2-S	WTS-1-S	WTS-2-S	NEM-1-S
Grouping	**Analyte**					
WATER						
Total Metals	Iron (Fe)-Total (mg/L)	0.036	0.037	0.037	0.037	0.018
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.63	0.59	0.57	0.56	1.00
	Manganese (Mn)-Total (mg/L)	0.00635	0.00490	0.00494	0.00516	0.0104
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00086	0.00069	0.00069	0.00067	0.00075
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.38	0.32	0.33	0.33	0.59
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.312	0.307	0.301	0.307	0.209
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.513	0.473	0.492	0.473	0.479
	Strontium (Sr)-Total (mg/L)	0.0131	0.00866	0.00800	0.00780	0.00908
	Sulfur (S)-Total (mg/L)	0.50	<0.50	<0.50	<0.50	1.07
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00038	0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000045	0.000045	0.000047	0.000043	<0.000010
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0081	0.0085	0.0110	0.0120	0.0023
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00013	0.00013	0.00011	0.00012	0.00023
	Barium (Ba)-Dissolved (mg/L)	0.00416	0.00340	0.00329	0.00330	0.00410
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	1.89	1.48	1.42	1.39	2.28
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	DTC 0.00170	0.00035	0.00031	0.00034	<0.00020

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1649931-6	L1649931-7	L1649931-8	L1649931-9	L1649931-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	18-JUL-15	18-JUL-15	18-JUL-15	18-JUL-15	18-JUL-15
	Sampled Time					
	Client ID	NEM-2-S	MAM-1-S	MAM-2-S	DUP-JULY-AMARUQ	EB-JULY-AMARUQ
Grouping	**Analyte**					
WATER						
Total Metals	Iron (Fe)-Total (mg/L)	0.021	0.024	0.024	0.037	<0.010
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000062
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	1.02	0.74	0.73	0.55	<0.10
	Manganese (Mn)-Total (mg/L)	0.00974	0.00428	0.00399	0.00512	<0.00010
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00074	0.00091	0.00089	0.00067	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.59	0.49	0.49	0.33	<0.10
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.214	0.313	0.314	0.298	<0.050
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.481	0.510	0.498	0.475	<0.050
	Strontium (Sr)-Total (mg/L)	0.00917	0.0119	0.0119	0.00778	<0.00020
	Sulfur (S)-Total (mg/L)	1.07	0.73	0.73	<0.50	<0.50
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	0.00032	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	<0.000010	0.000031	0.000034	0.000042	<0.000010
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0017	0.0064	0.0066	0.0132	0.0010
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00022	0.00027	0.00026	0.00011	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.00417	0.00471	0.00462	0.00320	<0.000050
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.26	2.20	2.19	1.42	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00021	0.00036	0.00037	0.00034	<0.00020

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		L1649931-11	L1649931-12	L1649931-13	L1649931-14	L1649931-15
	Sample ID	L1649931-11	L1649931-12	L1649931-13	L1649931-14	L1649931-15
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	18-JUL-15	19-JUL-15	19-JUL-15	19-JUL-15	19-JUL-15
	Sampled Time					
	Client ID	TRAVEL BLANK-JULY-AMARUQ	C2	C14	C17	C20
Grouping	**Analyte**					
WATER						
Total Metals	Iron (Fe)-Total (mg/L)	<0.010	0.032	0.028	0.044	0.012
	Lead (Pb)-Total (mg/L)	<0.000050	0.000061	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	<0.10	0.80	0.74	0.82	0.81
	Manganese (Mn)-Total (mg/L)	<0.00010	0.00161	0.00244	0.00390	0.00133
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00057	<0.00050	0.00051	0.00055
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	<0.10	0.32	0.37	0.40	0.36
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	<0.050	0.357	0.309	0.425	0.153
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	<0.050	0.494	0.512	0.559	0.506
	Strontium (Sr)-Total (mg/L)	<0.00020	0.0115	0.0143	0.0129	0.00913
	Sulfur (S)-Total (mg/L)	<0.50	1.17	0.55	0.54	0.60
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00027	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	<0.000010	0.000060	0.000033	0.000043	0.000022
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0038	0.0053	0.0065	0.0021
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00014	0.00023	0.00023	0.00013
	Barium (Ba)-Dissolved (mg/L)		0.00332	0.00351	0.00260	0.00203
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)		2.18	2.90	2.52	2.44
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)		0.00080	0.00061	0.00062	0.00037

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1649931-16				
	Description	Surface Water				
	Sampled Date	19-JUL-15				
	Sampled Time					
	Client ID	C41				
Grouping	**Analyte**					
WATER						
Total Metals	Iron (Fe)-Total (mg/L)	0.070				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	<0.0010				
	Magnesium (Mg)-Total (mg/L)	0.76				
	Manganese (Mn)-Total (mg/L)	0.00164				
	Mercury (Hg)-Total (mg/L)	<0.0000050				
	Molybdenum (Mo)-Total (mg/L)	0.000062				
	Nickel (Ni)-Total (mg/L)	0.00318				
	Phosphorus (P)-Total (mg/L)	<0.050				
	Potassium (K)-Total (mg/L)	0.29				
	Selenium (Se)-Total (mg/L)	<0.000050				
	Silicon (Si)-Total (mg/L)	0.306				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	0.417				
	Strontium (Sr)-Total (mg/L)	0.00720				
	Sulfur (S)-Total (mg/L)	0.60				
	Thallium (Tl)-Total (mg/L)	<0.000010				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	0.00034				
	Uranium (U)-Total (mg/L)	0.000038				
	Vanadium (V)-Total (mg/L)	<0.00050				
	Zinc (Zn)-Total (mg/L)	<0.0030				
	Zirconium (Zr)-Total (mg/L)	<0.00030				
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD				
	Dissolved Metals Filtration Location	FIELD				
	Aluminum (Al)-Dissolved (mg/L)	0.0062				
	Antimony (Sb)-Dissolved (mg/L)	<0.00010				
	Arsenic (As)-Dissolved (mg/L)	0.00011				
	Barium (Ba)-Dissolved (mg/L)	0.00400				
	Beryllium (Be)-Dissolved (mg/L)	<0.000020				
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050				
	Boron (B)-Dissolved (mg/L)	<0.010				
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050				
	Calcium (Ca)-Dissolved (mg/L)	1.47				
	Chromium (Cr)-Dissolved (mg/L)	0.00013				
	Cobalt (Co)-Dissolved (mg/L)	<0.00010				
	Copper (Cu)-Dissolved (mg/L)	0.00053				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID		L1649931-1	L1649931-2	L1649931-3	L1649931-4	L1649931-5
Description		Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sampled Date		17-JUL-15	17-JUL-15	17-JUL-15	17-JUL-15	18-JUL-15
Sampled Time						
Client ID		WTN-1-S	WTN-2-S	WTS-1-S	WTS-2-S	NEM-1-S
Grouping	**Analyte**					
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)	<0.010	0.096 DTC	0.018	0.023	<0.010
	Lead (Pb)-Dissolved (mg/L)	0.000104	<0.000050	<0.000050	0.000080	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.64	0.60	0.57	0.56	1.01
	Manganese (Mn)-Dissolved (mg/L)	0.00445	0.00431	0.00377	0.00424	0.00766
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00082	0.00071	0.00066	0.00068	0.00073
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.38	0.34	0.35	0.31	0.57
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.288	0.288	0.296	0.301	0.207
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.492	0.479	0.474	0.463	0.474
	Strontium (Sr)-Dissolved (mg/L)	0.0128	0.00857	0.00782	0.00774	0.00891
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	<0.50	1.05
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000037	0.000041	0.000040	0.000042	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0016	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1649931-6	L1649931-7	L1649931-8	L1649931-9	L1649931-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	18-JUL-15	18-JUL-15	18-JUL-15	18-JUL-15	18-JUL-15
	Sampled Time					
	Client ID	NEM-2-S	MAM-1-S	MAM-2-S	DUP-JULY-AMARUQ	EB-JULY-AMARUQ
Grouping	**Analyte**					
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	0.021	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	0.000055	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	1.00	0.72	0.72	0.57	<0.10
	Manganese (Mn)-Dissolved (mg/L)	0.00750	0.00323	0.00314	0.00411	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00071	0.00085	0.00089	0.00063	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.55	0.46	0.46	0.32	<0.10
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.208	0.296	0.298	0.300	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.471	0.500	0.504	0.469	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.00903	0.0116	0.0116	0.00787	<0.00020
	Sulfur (S)-Dissolved (mg/L)	1.07	0.71	0.71	<0.50	<0.50
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.000027	0.000030	0.000040	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1649931-11	L1649931-12	L1649931-13	L1649931-14	L1649931-15
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	18-JUL-15	19-JUL-15	19-JUL-15	19-JUL-15	19-JUL-15
	Sampled Time					
	Client ID	TRAVEL BLANK-JULY-AMARUQ	C2	C14	C17	C20
Grouping	**Analyte**					
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)		0.012	0.011	0.020	0.014
	Lead (Pb)-Dissolved (mg/L)		<0.000050	0.000053	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)		0.80	0.76	0.80	0.85
	Manganese (Mn)-Dissolved (mg/L)		0.00123	0.00144	0.00300	0.00095
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)		0.00055	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		0.32	0.37	0.38	0.36
	Selenium (Se)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)		0.342	0.307	0.401	0.155
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		0.484	0.507	0.542	0.511
	Strontium (Sr)-Dissolved (mg/L)		0.0112	0.0143	0.0124	0.00921
	Sulfur (S)-Dissolved (mg/L)		1.13	0.54	0.52	0.61
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.000051	0.000028	0.000039	0.000020
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1649931-16				
	Description	Surface Water				
	Sampled Date	19-JUL-15				
	Sampled Time					
	Client ID	C41				
Grouping	**Analyte**					
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (mg/L)	0.026				
	Lead (Pb)-Dissolved (mg/L)	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	<0.0010				
	Magnesium (Mg)-Dissolved (mg/L)	0.75				
	Manganese (Mn)-Dissolved (mg/L)	0.00097				
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050				
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050				
	Nickel (Ni)-Dissolved (mg/L)	0.00286				
	Phosphorus (P)-Dissolved (mg/L)	<0.050				
	Potassium (K)-Dissolved (mg/L)	0.26				
	Selenium (Se)-Dissolved (mg/L)	<0.000050				
	Silicon (Si)-Dissolved (mg/L)	0.286				
	Silver (Ag)-Dissolved (mg/L)	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	0.396				
	Strontium (Sr)-Dissolved (mg/L)	0.00704				
	Sulfur (S)-Dissolved (mg/L)	0.60				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010				
	Tin (Sn)-Dissolved (mg/L)	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	<0.00030				
	Uranium (U)-Dissolved (mg/L)	0.000035				
	Vanadium (V)-Dissolved (mg/L)	<0.00050				
	Zinc (Zn)-Dissolved (mg/L)	<0.0010				
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030				

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Nitrite (as N)	DLM	L1649931-11
Duplicate	Titanium (Ti)-Total	DLM	L1649931-15, -16
Duplicate	Bromide (Br)	DLM	L1649931-11
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1649931-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1649931-1, -10, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.
OR
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

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

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

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

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

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

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

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

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

Reference Information

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CL-L-IC-N-VA	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

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

CN-FREE-L-CFA-VA	Water	Low Level Free Cyanide in water by CFA	ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

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

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

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

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

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

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

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Reference Information

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

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

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

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

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

P-T-PRES-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-COL-VA Water Total Dissolved P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

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

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

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

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

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

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

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

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

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

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

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

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

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

SILICATE-COL-VA Water Silicate by Colourimetric analysis APHA 4500-SiO2 E.

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

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

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

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

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

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

Reference Information

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

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

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

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

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

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

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Canada Toll Free: 1
www.alsglob

L1649931-COFC

COC # ______

Page 1 of

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Azimuth Consulting Group	☐ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Eric Franz	☐ PDF ☐ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	218-2902 West Broadway	Email 1:	efranz@azimuthgroup.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TA
	Vancouver, BC V6K2G8	Email 2:	gmann@azimuthgroup.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-730-1220 Fax:	Email 3:	ryan.vanengen@agnicoeagle.com	**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Amaruq Surfacewater	
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:	Fax:	Quote #:	Q39503	
Lab Work Order # (lab use only)		ALS Contact:	Sampler:	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TOC, Ammonia, TKN, Total P	DOC	T-CN (Low), Free CN (Low)	Total mercury	Dissolved mercury	Total Metals	Dissolved Metals	Conventionals ** See Notes					
					P	F/P	P	P	F/P	P	F/P						
	WTN-1-S	17-Jul-15		Surface Water	X	X	X	X	X	X	X						
	WTN-2-S	17-Jul-15		Surface Water	X	X	X	X	X	X	X						
	WTS-1-S	17-Jul-15		Surface Water	X	X	X	X	X	X	X						
	WTS-2-S	17-Jul-15		Surface Water	X	X	X	X	X	X	X						
	NEM-1-S	18-Jul-15		Surface Water	X	X	X	X	X	X	X						
	NEM-2-S	18-Jul-15		Surface Water	X	X	X	X	X	X	X						
	MAM-1-S	18-Jul-15		Surface Water	X	X	X	X	X	X	X						
	MAM-2-S	18-Jul-15		Surface Water	X	X	X	X	X	X	X						
	DUP-JULY-AMARUQ			Surface Water	X	X	X	X	X	X	X						
	EB-JULY-AMARUQ	18-Jul-15		Surface Water	X	X	X	X	X	X	X						
	TRAVEL BLANK - JULY - AMARUQ			Surface Water	X		X	X		X		X					

Short Holding Time
Rush Processing

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

Included in this shipment is one complete travel blank set. "Converntionals" may not accurately describe the use of the 1 L bottle and is only to provide a place holder on this COC.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observatio Yes / No ? If Yes add
Morgan Finley	20-Jul-15	9:00				20 °C	Ek	July 29/15	12:05	

GENF 20.00 Front

ALS Environmental

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

COC # ______

Report To		**Report Format / Distribution**		**Service Requested** (Rush for routine analysis subject to availability)
Company:	Azimuth Consulting Group	☐ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Eric Franz	☐ PDF ☐ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	218-2902 West Broadway	Email 1:	efranz@azimuthgroup.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6K2G8	Email 2:	gmann@azimuthgroup.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-730-1220 Fax:	Email 3:	ryan.vanengen@agnicoeagle.com	**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Amaruq Surfacewater	
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:	Fax:	Quote #:	Q39503	
Lab Work Order # (lab use only)		ALS Contact:	Sampler:	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	P TOC, Ammonia, TKN, Total P	F/P DOC	P T-CN (Low), Free CN (Low)	P Total mercury	F/P Dissolved mercury	P Total Metals	F/P Dissolved Metals
	C2	19-Jul-15		Surface Water	X	X	X	X	X	X	X
	C14	19-Jul-15		Surface Water	X	X	X	X	X	X	X
	C17	19-Jul-15		Surface Water	X	X	X	X	X	X	X
	C20	19-Jul-15		Surface Water	X	X	X	X	X	X	X
	C41	19-Jul-15		Surface Water	X	X	X	X	X	X	X

Short Holding Time
Rush Processing

L1649931-COFC

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add
Morgan Finley	20-Jul-15	9:00				20 °C	Ex	July 24/15	12:05	

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 31-AUG-15
Report Date: 21-SEP-15 09:59 (MT)
Version: FINAL REV. 2

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1665542

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers:
Legal Site Desc:

Comments:

21-SEP-2015 This report replaces the previous version and contains updated Sampling Dates for 2 samples.

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1665542-1	L1665542-2	L1665542-3	L1665542-4	L1665542-5
	Description	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE
	Sampled Date	21-AUG-15	21-AUG-15	23-AUG-15	23-AUG-15	24-AUG-15
	Sampled Time	11:30	12:30	13:10	11:20	13:05
	Client ID	WTS-03-S	WTS-04-S	NEM-03-S	NEM-04-S	MAM-03-S
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	18.6	18.5	25.5	25.4	24.6
	pH (pH)	6.66	6.74	7.06	7.05	6.85
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	12.2	14.5	15.7	15.7	14.8
	Turbidity (NTU)	0.26	0.23	0.19	0.21	0.24
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	4.5	3.8	6.8	6.7	4.8
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	4.5	3.8	6.8	6.7	4.8
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	1.57	1.58	0.54	0.54	2.33
	Fluoride (F) (mg/L)	0.024	0.024	0.022	0.022	0.026
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0024	0.0022	0.0022	0.0023	0.0038
	Silicate (as SiO2) (mg/L)	0.59	0.60	<0.50	<0.50	0.63
	Sulfate (SO4) (mg/L)	1.30	1.31	3.24	3.24	2.23

ALS ENVIRONMENTAL ANALYTICAL REPORT

		L1665542-6	L1665542-7	L1665542-8	L1665542-9	L1665542-10
	Sample ID	L1665542-6	L1665542-7	L1665542-8	L1665542-9	L1665542-10
	Description	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE
	Sampled Date	24-AUG-15		25-AUG-15	25-AUG-15	25-AUG-15
	Sampled Time	12:30		12:20	11:55	11:25
	Client ID	MAM-04-S	AMARUQ AUG DUP-1	C2-AUG	C14-AUG	C17-AUG
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	24.4	19.5	22.7	23.5	23.0
	pH (pH)	6.83	6.70	6.83	7.08	7.01
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	1.1
	Total Dissolved Solids (mg/L)	15.3	14.2	15.9	17.0	17.8
	Turbidity (NTU)	0.27	0.24	0.24	0.35	0.82
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	4.5	4.3	5.2	7.7	7.9
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	4.5	4.3	5.2	7.7	7.9
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	2.32	1.84	0.51	0.56	0.59
	Fluoride (F) (mg/L)	0.025	0.026	0.072	0.034	0.049
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0243	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0023	0.0025	0.0021	0.0027	0.0031
	Silicate (as SiO2) (mg/L)	0.67	0.56	0.88	0.58	0.63
	Sulfate (SO4) (mg/L)	2.23	1.37	3.67	1.54	1.43

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1665542-11	L1665542-12	L1665542-13	L1665542-14	L1665542-15
	Description	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE
	Sampled Date	25-AUG-15	25-AUG-15	25-AUG-15	20-AUG-15	20-AUG-15
	Sampled Time	10:50	10:15		16:30	17:30
	Client ID	C20-AUG	C41-AUG	AMARUQ AUG EB-1	WTN-03-S	WTN-04-S
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	22.2	20.0	<2.0	18.8	19.8
	pH (pH)	7.08	6.96	5.40	6.83	6.82
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	15.9	15.4	<3.0	14.2	13.2
	Turbidity (NTU)	0.24	0.33	<0.10	0.23	0.28
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	7.1	5.8	<1.0	4.9	3.9
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	7.1	5.8	<1.0	4.9	3.9
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	0.64	0.58	<0.10	1.57	1.84
	Fluoride (F) (mg/L)	0.037	0.055	<0.020	0.025	0.025
	Nitrate (as N) (mg/L)	<0.0050	0.0097	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0021	0.0028	<0.0020	0.0025	0.0028
	Silicate (as SiO2) (mg/L)	<0.50	0.86	<0.50	0.56	0.57
	Sulfate (SO4) (mg/L)	1.63	2.05	<0.30	1.31	1.37

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1665542-16
	Description	SURFACE WATE
	Sampled Date	
	Sampled Time	
	Client ID	AMARUQ AUG TRAV-1
Grouping	**Analyte**	
WATER		
Physical Tests	Conductivity (uS/cm)	<2.0
	pH (pH)	5.34
	Total Suspended Solids (mg/L)	<1.0
	Total Dissolved Solids (mg/L)	<3.0
	Turbidity (NTU)	<0.10
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0
	Bromide (Br) (mg/L)	<0.050
	Chloride (Cl) (mg/L)	<0.10
	Fluoride (F) (mg/L)	<0.020
	Nitrate (as N) (mg/L)	<0.0050
	Nitrite (as N) (mg/L)	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020
	Silicate (as SiO2) (mg/L)	<0.50
	Sulfate (SO4) (mg/L)	<0.30

Reference Information

Test Method References:

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

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

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

CL-L-IC-N-VA	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

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

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

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

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

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

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

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

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

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

P-TD-COL-VA	Water	Total Dissolved P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

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

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

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

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

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

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

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SILICATE-COL-VA	Water	Silicate by Colourimetric analysis	APHA 4500-SiO2 E.

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

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

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

TDS-LOW-VA	Water	Low Level TDS (3.0mg/L) by Gravimetric	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA	Water	Total Suspended Solids by Grav. (1 mg/L)	APHA 2540D

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

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

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

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

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

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

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

Reference Information

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

Chain of Custody Numbers:

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

ALS

● *Rush Processing*

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

COC #

Report To		**Report Format / Distribution**		**Service Requested** (Rush for routine analysis subject to availability)
Company:	Azimuth Consulting Group	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Eric Franz	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	218-2902 West Broadway	Email 1:	efranz@azimuthgroup.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6K2G8	Email 2:	gmann@azimuthgroup.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-730-1220 Fax:	Email 3:	ryan.vanengen@agnicoeagle.com	**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Amaruq Surfacewater	
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:	Fax:	Quote #:	Q39503	
Lab Work Order # (lab use only)		ALS Contact: Brent Mack	Sampler: Eric Fra nz	

L1665542-COFC

Sample	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Conventionals** see notes	TSS-Low, TDS-Low	Number of Containers
	WTS-03-S	21-Aug-15	11:30	Surface Water	X	X	2
	WTS-04-S	21-Aug-15	12:30	Surface Water	X	X	2
	NEM-03-S	23-Aug-15	13:10	Surface Water	X	X	2
	NEM-04-S	23-Aug-15	11:20	Surface Water	X	X	2
	MAM-03-S	24-Aug-15	13:05	Surface Water	X	X	2
	MAM-04-S	24-Aug-15	12:30	Surface Water	X	X	2
	AMARUQ AUG DUP-1	-	-	Surface Water	X	X	2
	C2-AUG	25-Aug-15	12:20	Surface Water	X	X	2
	C14-AUG	25-Aug-15	11:55	Surface Water	X	X	2
	C17-AUG	25-Aug-15	11:25	Surface Water	X	X	2
	C20-AUG	25-Aug-15	10:50	Surface Water	X	X	2
	C41-AUG	25-Aug-15	10:15	Surface Water	X	X	2

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

**Conventionals includes: Alk Species, pH, EC, Turbidity, Conductivity, Anions (F, NO2, NO3, Br, SO4), low-level Chloride, Silicate, TD-P, and Ortho-PO4.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Eric Franz	Date (dd-mmm-yy) 26-Aug-15	Time (hh-mm) 8:00	Received by: Jeey	Date: 31/Aug	Time: 11:50	Temperature: 17.4 16.5 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

ALS Environmental

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

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Azimuth Consulting Group	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Eric Franz	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	218-2902 West Broadway	Email 1:	efranz@azimuthgroup.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6K2G8	Email 2:	gmann@azimuthgroup.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-730-1220 Fax:	Email 3:	ryan.vanengen@agnicoeagle.com	Analysis Request
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Amaruq Surfacewater	
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:	Fax:	Quote #:	Q39503	
Lab Work Order # (lab use only)		ALS Contact: Brent Mack	Sampler: Eric Fra nz	

Sample	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Conventionals** see notes	TSS-Low, TDS-Low											Number of Containers
	AMARUQ AUG EB-1	25-Aug-15		Surface Water	X	X											2
	WTN-03-S	20-Aug-15	16:30	Surface Water	X	X											2
	WTN-04-S	20-Aug-15	17:30	Surface Water	X	X											2
	AMARUQ AUG TRAV-1	-	-	Surface Water	X	X											1

L1665542-COFC

Short Holding Time

Rush Processing

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

**Conventionals includes: Alk Species, pH, EC, Turbidity, Conductivity, Anions (F, NO2, NO3, Br, SO4), low-level Chloride, Silicate, TD-P, and Ortho-PO4.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Eric Franz	Date (dd-mmm-yy) 26-Aug-15	Time (hh-mm)	Received by:	Date:	Time:	Temperature: °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 02-SEP-15
Report Date: 17-SEP-15 09:39 (MT)
Version: FINAL REV. 2

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1667195

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers:
Legal Site Desc:

Comments: 17-SEP-2015 This report replaces the previous version and contains a change to a Sampling Date for one sample.

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667195-1	L1667195-2	L1667195-3	L1667195-4	L1667195-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	21-AUG-15	21-AUG-15	23-AUG-15	23-AUG-15	24-AUG-15
	Sampled Time	11:30	12:30	13:10	11:20	13:05
	Client ID	WTS-03-S	WTS-04-S	NEM-03-S	NEM-04-S	MAM-03-S
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	6.66	6.65	9.80	10.0	9.11
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.128	0.111	0.084	0.107	0.095
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0028	<0.0020	<0.0020	<0.0020
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.92	1.85	1.38	1.55	1.57
	Total Organic Carbon (mg/L)	1.73	1.72	1.30	1.41	1.88
Total Metals	Aluminum (Al)-Total (mg/L)	0.0094	0.0077	0.0043	0.0050	0.0050
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	0.00011	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00017	0.00018	0.00033	0.00031	0.00043
	Barium (Ba)-Total (mg/L)	0.00323	0.00325	0.00408	0.00409	0.00440
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	0.0000122	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	1.62	1.63	2.23	2.22	2.32
	Chromium (Cr)-Total (mg/L)	<0.00010	0.00010	<0.00010	0.00011	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.020	0.017	0.013	0.011	0.014
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.62	0.62	1.01	1.01	0.77
	Manganese (Mn)-Total (mg/L)	0.00207	0.00202	0.00355	0.00340	0.00169
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00052	0.00054	0.00061	0.00060	0.00061
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.37	0.36	0.58	0.56	0.53
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.261	0.262	0.216	0.214	0.293
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.524	0.505	0.491	0.479	0.525
	Strontium (Sr)-Total (mg/L)	0.00988	0.0102	0.00953	0.00958	0.0126
	Sulfur (S)-Total (mg/L)	0.52	0.50	1.15	1.16	0.83

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667195-6	L1667195-7	L1667195-8	L1667195-9	L1667195-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	24-AUG-15		25-AUG-15	25-AUG-15	25-AUG-15
	Sampled Time	12:30		12:20	11:55	11:25
	Client ID	MAM-04-S	AMARUQ AUG DUP-1	C2-AUG	C14-AUG	C17-AUG
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	9.13	7.14	8.78	10.0	9.39
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	0.0073	0.0052	<0.0050	0.0053
	Total Kjeldahl Nitrogen (mg/L)	0.129	0.153	0.085	0.162	0.144
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0036	<0.0020	<0.0020	0.0032
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.61	1.79	1.29	2.34	2.73
	Total Organic Carbon (mg/L)	1.58	1.80	1.41	2.39	2.68
Total Metals	Aluminum (Al)-Total (mg/L)	0.0058	0.0083	0.0044	0.0064	0.0211
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00043	0.00021	0.00015	0.00031	0.00039
	Barium (Ba)-Total (mg/L)	0.00441	0.00355	0.00324	0.00304	0.00267
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	2.29	1.74	2.10	2.71	2.44
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00028
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00013
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	0.00082	0.00070	0.00080
	Iron (Fe)-Total (mg/L)	0.014	0.018	0.028	0.023	0.164
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.77	0.64	0.78	0.70	0.79
	Manganese (Mn)-Total (mg/L)	0.00173	0.00268	0.00031	0.00293	0.0169
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000055
	Nickel (Ni)-Total (mg/L)	0.00057	0.00061	<0.00050	<0.00050	0.00065
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.52	0.37	0.32	0.35	0.38
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.297	0.252	0.379	0.268	0.304
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.520	0.515	0.518	0.510	0.555
	Strontium (Sr)-Total (mg/L)	0.0126	0.0111	0.0113	0.0142	0.0127
	Sulfur (S)-Total (mg/L)	0.81	0.52	1.28	0.60	0.57

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667195-11	L1667195-12	L1667195-13	L1667195-14	L1667195-15
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	25-AUG-15	25-AUG-15	25-AUG-15	20-AUG-15	20-AUG-15
	Sampled Time	10:50	10:15	11:30	16:30	17:30
	Client ID	C20-AUG	C41-AUG	AMARUQ AUG EB-1	WTN-03-S	WTN-04-S
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	8.74	7.87	<0.50	6.70	7.18
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.090	0.100	<0.050	0.109	0.107
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	0.0023
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.39	1.91	<0.50	1.73	2.09
	Total Organic Carbon (mg/L)	1.35	1.44	<0.50	1.71	1.78
Total Metals	Aluminum (Al)-Total (mg/L)	0.0042	0.0081	0.0035 RRV	0.0083	0.0099
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00017	0.00015	<0.00010	0.00016	0.00018
	Barium (Ba)-Total (mg/L)	0.00183	0.00392	0.000088 RRV	0.00327	0.00345
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	0.0000087	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	2.26	1.64	<0.050	1.64	1.77
	Chromium (Cr)-Total (mg/L)	<0.00010	0.00019	<0.00010	<0.00010	0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	0.00066	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.014	0.059	<0.010	0.016	0.019
	Lead (Pb)-Total (mg/L)	<0.000050	0.000081	0.000708 RRV	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.77	0.87	<0.10	0.64	0.65
	Manganese (Mn)-Total (mg/L)	0.00104	0.00173	<0.00010	0.00198	0.00256
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000073	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00230	<0.00050	0.00058	0.00059
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.34	0.29	<0.10	0.39	0.37
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.140	0.369	<0.050	0.249	0.265
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.487	0.476	<0.050	0.500	0.492
	Strontium (Sr)-Total (mg/L)	0.00879	0.00817	<0.00020	0.00987	0.0111
	Sulfur (S)-Total (mg/L)	0.61	0.75	<0.50	0.50	<0.50

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667195-16				
	Description	Surface Water				
	Sampled Date	20-AUG-15				
	Sampled Time	11:30				
	Client ID	AMARUQ AUG TRAV-1				
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	<0.50				
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050				
	Total Kjeldahl Nitrogen (mg/L)	<0.050				
	Phosphorus (P)-Total (mg/L)	<0.0020				
Cyanides	Cyanide, Total (mg/L)	<0.0010				
	Cyanide, Free (mg/L)	<0.0010				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)					
	Total Organic Carbon (mg/L)	<0.50				
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030				
	Antimony (Sb)-Total (mg/L)	<0.00010				
	Arsenic (As)-Total (mg/L)	<0.00010				
	Barium (Ba)-Total (mg/L)	<0.000050				
	Beryllium (Be)-Total (mg/L)	<0.000020				
	Bismuth (Bi)-Total (mg/L)	<0.000050				
	Boron (B)-Total (mg/L)	<0.010				
	Cadmium (Cd)-Total (mg/L)	<0.0000050				
	Calcium (Ca)-Total (mg/L)	<0.050				
	Chromium (Cr)-Total (mg/L)	<0.00010				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	<0.00050				
	Iron (Fe)-Total (mg/L)	<0.010				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	<0.0010				
	Magnesium (Mg)-Total (mg/L)	<0.10				
	Manganese (Mn)-Total (mg/L)	<0.00010				
	Mercury (Hg)-Total (mg/L)	<0.0000050				
	Molybdenum (Mo)-Total (mg/L)	<0.000050				
	Nickel (Ni)-Total (mg/L)	<0.00050				
	Phosphorus (P)-Total (mg/L)	<0.050				
	Potassium (K)-Total (mg/L)	<0.10				
	Selenium (Se)-Total (mg/L)	<0.000050				
	Silicon (Si)-Total (mg/L)	<0.050				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	<0.050				
	Strontium (Sr)-Total (mg/L)	<0.00020				
	Sulfur (S)-Total (mg/L)	<0.50				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667195-1	L1667195-2	L1667195-3	L1667195-4	L1667195-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	21-AUG-15	21-AUG-15	23-AUG-15	23-AUG-15	24-AUG-15
	Sampled Time	11:30	12:30	13:10	11:20	13:05
	Client ID	WTS-03-S	WTS-04-S	NEM-03-S	NEM-04-S	MAM-03-S
Grouping	**Analyte**					
WATER						
Total Metals	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000037	0.000036	0.000014	<0.000010	0.000025
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0061	0.0053	0.0016	0.0012	0.0022
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00016	0.00016	0.00027	0.00029	0.00039
	Barium (Ba)-Dissolved (mg/L)	0.00315	0.00329	0.00387	0.00390	0.00433
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	1.62	1.63	2.25	2.29	2.34
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00036	0.00034	0.00023	0.00024	0.00036
	Iron (Fe)-Dissolved (mg/L)	0.011	0.011	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.63	0.63	1.02	1.04	0.79
	Manganese (Mn)-Dissolved (mg/L)	0.00123	0.00136	0.00061	0.00046	0.00034
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00050	0.00054	0.00052	0.00054
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.37	0.36	0.59	0.60	0.53
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.254	0.250	0.202	0.209	0.289
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.509	0.502	0.480	0.470	0.520
	Strontium (Sr)-Dissolved (mg/L)	0.00964	0.00984	0.00942	0.00937	0.0125
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	1.14	1.12	0.81

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667195-6	L1667195-7	L1667195-8	L1667195-9	L1667195-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	24-AUG-15		25-AUG-15	25-AUG-15	25-AUG-15
	Sampled Time	12:30		12:20	11:55	11:25
	Client ID	MAM-04-S	AMARUQ AUG DUP-1	C2-AUG	C14-AUG	C17-AUG
Grouping	**Analyte**					
WATER						
Total Metals	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	0.00036
	Uranium (U)-Total (mg/L)	0.000024	0.000034	0.000029	0.000028	0.000041
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0024	0.0048	0.0013	0.0027	0.0038
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00036	0.00020	0.00012	0.00026	0.00034
	Barium (Ba)-Dissolved (mg/L)	0.00429	0.00355	0.00318	0.00287	0.00241
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.35	1.78	2.18	2.79	2.47
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00042	0.00036	0.00069	0.00061	0.00067
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	0.072
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.79	0.65	0.81	0.74	0.78
	Manganese (Mn)-Dissolved (mg/L)	0.00032	0.00117	<0.00010	0.00120	0.0146
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00052	0.00054	<0.00050	<0.00050	0.00053
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.52	0.38	0.33	0.37	0.37
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.289	0.250	0.385	0.263	0.273
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.523	0.511	0.517	0.504	0.538
	Strontium (Sr)-Dissolved (mg/L)	0.0123	0.0111	0.0114	0.0139	0.0123
	Sulfur (S)-Dissolved (mg/L)	0.79	<0.50	1.27	0.57	0.52

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667195-11	L1667195-12	L1667195-13	L1667195-14	L1667195-15
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	25-AUG-15	25-AUG-15	25-AUG-15	20-AUG-15	20-AUG-15
	Sampled Time	10:50	10:15	11:30	16:30	17:30
	Client ID	C20-AUG	C41-AUG	AMARUQ AUG EB-1	WTN-03-S	WTN-04-S
Grouping	**Analyte**					
WATER						
Total Metals	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000020	0.000022	<0.000010	0.000037	0.000035
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0018	0.0026	<0.0010	0.0045	0.0048
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00013	0.00013	<0.00010	0.00014	0.00019
	Barium (Ba)-Dissolved (mg/L)	0.00174	0.00376	<0.000050	0.00316	0.00345
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.24	1.69	<0.050	1.65	1.80
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00041	0.00054	<0.00020	0.00037	0.00037
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.029	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.76	0.89	<0.10	0.63	0.66
	Manganese (Mn)-Dissolved (mg/L)	0.00045	0.00113	<0.00010	0.00057	0.00132
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000067	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00230	<0.00050	<0.00050	0.00053
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.33	0.30	<0.10	0.38	0.37
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.137	0.365	<0.050	0.249	0.256
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.476	0.483	<0.050	0.502	0.502
	Strontium (Sr)-Dissolved (mg/L)	0.00873	0.00795	<0.00020	0.00966	0.0110
	Sulfur (S)-Dissolved (mg/L)	0.57	0.72	<0.50	<0.50	<0.50

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667195-16				
	Description	Surface Water				
	Sampled Date	20-AUG-15				
	Sampled Time	11:30				
	Client ID	AMARUQ AUG TRAV-1				
Grouping	**Analyte**					
WATER						
Total Metals	Thallium (Tl)-Total (mg/L)	<0.000010				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.00030				
	Uranium (U)-Total (mg/L)	<0.000010				
	Vanadium (V)-Total (mg/L)	<0.00050				
	Zinc (Zn)-Total (mg/L)	<0.0030				
	Zirconium (Zr)-Total (mg/L)	<0.00030				
Dissolved Metals	Dissolved Mercury Filtration Location					
	Dissolved Metals Filtration Location					
	Aluminum (Al)-Dissolved (mg/L)					
	Antimony (Sb)-Dissolved (mg/L)					
	Arsenic (As)-Dissolved (mg/L)					
	Barium (Ba)-Dissolved (mg/L)					
	Beryllium (Be)-Dissolved (mg/L)					
	Bismuth (Bi)-Dissolved (mg/L)					
	Boron (B)-Dissolved (mg/L)					
	Cadmium (Cd)-Dissolved (mg/L)					
	Calcium (Ca)-Dissolved (mg/L)					
	Chromium (Cr)-Dissolved (mg/L)					
	Cobalt (Co)-Dissolved (mg/L)					
	Copper (Cu)-Dissolved (mg/L)					
	Iron (Fe)-Dissolved (mg/L)					
	Lead (Pb)-Dissolved (mg/L)					
	Lithium (Li)-Dissolved (mg/L)					
	Magnesium (Mg)-Dissolved (mg/L)					
	Manganese (Mn)-Dissolved (mg/L)					
	Mercury (Hg)-Dissolved (mg/L)					
	Molybdenum (Mo)-Dissolved (mg/L)					
	Nickel (Ni)-Dissolved (mg/L)					
	Phosphorus (P)-Dissolved (mg/L)					
	Potassium (K)-Dissolved (mg/L)					
	Selenium (Se)-Dissolved (mg/L)					
	Silicon (Si)-Dissolved (mg/L)					
	Silver (Ag)-Dissolved (mg/L)					
	Sodium (Na)-Dissolved (mg/L)					
	Strontium (Sr)-Dissolved (mg/L)					
	Sulfur (S)-Dissolved (mg/L)					

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667195-1	L1667195-2	L1667195-3	L1667195-4	L1667195-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	21-AUG-15	21-AUG-15	23-AUG-15	23-AUG-15	24-AUG-15
	Sampled Time	11:30	12:30	13:10	11:20	13:05
	Client ID	WTS-03-S	WTS-04-S	NEM-03-S	NEM-04-S	MAM-03-S
Grouping	**Analyte**					
WATER						
Dissolved Metals	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000031	0.000031	<0.000010	<0.000010	0.000018
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667195-6	L1667195-7	L1667195-8	L1667195-9	L1667195-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	24-AUG-15		25-AUG-15	25-AUG-15	25-AUG-15
	Sampled Time	12:30		12:20	11:55	11:25
	Client ID	MAM-04-S	AMARUQ AUG DUP-1	C2-AUG	C14-AUG	C17-AUG
Grouping	**Analyte**					
WATER						
Dissolved Metals	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000018	0.000030	0.000022	0.000022	0.000033
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667195-11	L1667195-12	L1667195-13	L1667195-14	L1667195-15
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	25-AUG-15	25-AUG-15	25-AUG-15	20-AUG-15	20-AUG-15
	Sampled Time	10:50	10:15	11:30	16:30	17:30
	Client ID	C20-AUG	C41-AUG	AMARUQ AUG EB-1	WTN-03-S	WTN-04-S
Grouping	**Analyte**					
WATER						
Dissolved Metals	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000017	0.000017	<0.000010	0.000030	0.000031
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667195-16				
	Description	Surface Water				
	Sampled Date	20-AUG-15				
	Sampled Time	11:30				
	Client ID	AMARUQ AUG TRAV-1				
Grouping	**Analyte**					
WATER						
Dissolved Metals	Thallium (Tl)-Dissolved (mg/L)					
	Tin (Sn)-Dissolved (mg/L)					
	Titanium (Ti)-Dissolved (mg/L)					
	Uranium (U)-Dissolved (mg/L)					
	Vanadium (V)-Dissolved (mg/L)					
	Zinc (Zn)-Dissolved (mg/L)					
	Zirconium (Zr)-Dissolved (mg/L)					

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Aluminum (Al)-Total	MS-B	L1667195-14, -15, -16
Matrix Spike	Barium (Ba)-Total	MS-B	L1667195-14, -15, -16
Matrix Spike	Manganese (Mn)-Total	MS-B	L1667195-14, -15, -16
Matrix Spike	Strontium (Sr)-Total	MS-B	L1667195-14, -15, -16
Matrix Spike	Titanium (Ti)-Total	MS-B	L1667195-14, -15, -16
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Aluminum (Al)-Dissolved	RRV	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Barium (Ba)-Dissolved	RRV	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)-Dissolved	RRV	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Manganese (Mn)-Dissolved	RRV	L1667195-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)

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

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

ALS Test Code	Matrix	Test Description	Method Reference**
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Reference Information

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

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

CARBONS-DOC-VA | Water | Dissolved organic carbon by combustion | APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA | Water | Total organic carbon by combustion | APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-FREE-L-CFA-VA | Water | Low Level Free Cyanide in water by CFA | ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-VA | Water | Low Level Total Cyanide in water by CFA | ISO 14403:2002

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

HARDNESS-CALC-VA | Water | Hardness | APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

P-T-PRES-COL-VA | Water | Total P in Water by Colour | APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

Reference Information

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

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

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

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

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

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

TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

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

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

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # ______

Report To	
Company:	Azimuth Consulting Group
Contact:	Eric Franz
Address:	218-2902 West Broadway Vancouver, BC V6K2G8
Phone:	604-730-1220 Fax:
Invoice To	Same as Report ? ☑ Yes ☐ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	
Contact:	
Address:	
Phone:	Fax:
Lab Work Order # (lab use only)	

Report Format / Distribution	
☑ Standard ☐ Other	
☑ PDF ☑ Excel ☐ Digital ☐ Fax	
Email 1:	efranz@azimuthgroup.ca
Email 2:	gmann@azimuthgroup.ca
Email 3:	ryan.vanengen@agnicoeagle.com
Client / Project Information	
Job #:	Amaruq Surfacewater
PO / AFE:	
LSD:	
Quote #:	Q39503
ALS Contact:	Brent Mack
Sampler:	Eric Franz

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

L1667195-COFC

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TOC, Ammonia, TKN, Total P (P)	DOC (F/P)	T-CN (Low), Free CN (Low) (P)	Total mercury (P)	Dissolved mercury (F/P)	Total Metals (P)	Dissolved Metals (F/P)	Number of Containers
1	WTS-03-S	21-Aug-15	11:30	Surface Water	X	X	X	X	X	X	X	7
2	WTS-04-S	21-Aug-15	12:30	Surface Water	X	X	X	X	X	X	X	7
3	NEM-03-S	23-Aug-15	13:10	Surface Water	X	X	X	X	X	X	X	7
4	NEM-04-S	23-Aug-15	11:20	Surface Water	X	X	X	X	X	X	X	7
5	MAM-03-S	24-Aug-15	13:05	Surface Water	X	X	X	X	X	X	X	7
6	MAM-04-S	24-Aug-15	12:30	Surface Water	X	X	X	X	X	X	X	7
7	AMARUQ AUG DUP-1	-	-	Surface Water	X	X	X	X	X	X	X	7
8	C2-AUG	25-Aug-15	12:20	Surface Water	X	X	X	X	X	X	X	7
9	C14-AUG	25-Aug-15	11:55	Surface Water	X	X	X	X	X	X	X	7
10	C17-AUG	25-Aug-15	11:25	Surface Water	X	X	X	X	X	X	X	7
11	C20-AUG	25-Aug-15	10:50	Surface Water	X	X	X	X	X	X	X	7
12	C41-AUG	25-Aug-15	10:15	Surface Water	X	X	X	X	X	X	X	7

~~Short Holding Time~~ ~~Rush Processing~~

Special Instructions / Regulations 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 provided on a separate Excel tab.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Eric Franz	Date (dd-mmm-yy) 26-Aug-15	Time (hh-mm) 09-00	Received by: lady	Date: Sept 2	Time: 11AM	Temperature: 15.2 °C 17.3 16.2/15.0	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #

Report To	
Company:	Azimuth Consulting Group
Contact:	Eric Franz
Address:	218-2902 West Broadway
	Vancouver, BC V6K2G8
Phone:	604-730-1220 Fax:
Invoice To	Same as Report ? ☑ Yes ☐ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	
Contact:	
Address:	
Phone:	Fax:
Lab Work Order # (lab use only)	

Report Format / Distribution	
☑ Standard ☐ Other	
☑ PDF ☑ Excel ☐ Digital ☐ Fax	
Email 1:	efranz@azimuthgroup.ca
Email 2:	gmann@azimuthgroup.ca
Email 3:	ryan.vanengen@agnicoeagle.com
Client / Project Information	
Job #:	Amaruq Surfacewater
PO / AFE:	
LSD:	
Quote #:	Q39503
ALS Contact:	Brent Mack
Sampler:	Eric Franz

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request — Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TOC, Ammonia, TKN, Total P (P)	DOC (F/P)	T-CN (Low), Free CN (Low) (P)	Total mercury (P)	Dissolved mercury (F/P)	Total Metals (P)	Dissolved Metals (F/P)	Number of Containers
13	AMARUQ AUG EB-1	25-Aug-15		Surface Water	X	X	X	X	X	X	X	7
14	WTN-03-S	20-Aug-15	16:30	Surface Water	X	X	X	X	X	X	X	7
15	WTN-04-S	20-Aug-15	17:30	Surface Water	X	X	X	X	X	X	X	7
16	AMARUQ AUG TRAV-1	-	-	Surface Water	X	X	X	X		X		4

L1667195-COFC

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Eric Franz	Date (dd-mmm-yy) 26-Aug-15	Time (hh-mm) 08-00	Received by: lady	Date: Sept. 2	Time: 11Am	Temperature: 15.2 / 17.3 °C / 16.2/15.0	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 03-SEP-15
Report Date: 16-SEP-15 16:25 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1667870

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667870-1	L1667870-2	L1667870-3	L1667870-4	L1667870-5
	Description	Other	Other	Other	Other	Other
	Sampled Date	21-AUG-15	21-AUG-15	23-AUG-15	23-AUG-15	24-AUG-15
	Sampled Time	11:30	12:30	13:10	11:20	13:05
	Client ID	WTS-03-S	WTS-04-S	NEM-03-S	NEM-04-S	MAM-03-S
Grouping	**Analyte**					
FILTER						
Plant Pigments	Chlorophyll a (ug/L)	0.665	0.640	0.324	0.390	0.392

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667870-6	L1667870-7	L1667870-8	L1667870-9	L1667870-10
	Description	Other	Other	Other	Other	Other
	Sampled Date	24-AUG-15		25-AUG-15	25-AUG-15	25-AUG-15
	Sampled Time	12:30		12:20	11:55	11:25
	Client ID	MAM-04-S	AMARUQ AUG DUP-1	C2-AUG	C14-AUG	C17-AUG
Grouping	**Analyte**					
FILTER						
Plant Pigments	Chlorophyll a (ug/L)	0.471	0.798	0.580	0.627	0.844

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667870-11	L1667870-12	L1667870-13	L1667870-14	
	Description	Other	Other	Other	Other	
	Sampled Date	25-AUG-15	25-AUG-15	20-AUG-15	20-AUG-15	
	Sampled Time	10:50	10:15	16:30	17:30	
	Client ID	C20-AUG	C41-AUG	WTN-03-S	WTN-04-S	
Grouping	**Analyte**					
FILTER						
Plant Pigments	Chlorophyll a (ug/L)	0.394	0.463	0.652	0.696	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CHLOROA-F-VA	Filter	Chlorophyll a by Fluorometer (Filter)	EPA 445.0

This analysis is done using procedures modified from EPA Method 445.0. Chlorophyll-a is determined by a routine acetone extraction followed with analysis by fluorometry using the non-acidification procedure. This method is not subject to interferences from chlorophyll b.

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

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

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

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

COC # ____

Report To	
Company:	Azimuth Consulting Group
Contact:	Eric Franz
Address:	218-2902 West Broadway
	Vancouver, BC V6K2G8
Phone:	604-730-1220 Fax:
Invoice To	Same as Report ? ☑ Yes ☐ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	
Contact:	
Address:	
Phone:	Fax:
Lab Work Order # (lab use only)	

Report Format / Distribution	
☑ Standard	☐ Other
☑ PDF ☑ Excel	☐ Digital ☐ Fax
Email 1:	efranz@azimuthgroup.ca
Email 2:	gmann@azimuthgroup.ca
Email 3:	ryan.vanengen@agnicoeagle.com
Client / Project Information	
Job #:	Amaruq Surfacewater
PO / AFE:	
LSD:	
Quote #:	Q39503
ALS Contact:	Brent Mack
Sampler:	Eric Franz

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

Short Holding Time

Rush Processing

L1667870-COFC

Sample #	Sample Identification (This description will appear on the r	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Chlorophyll 'a'	Number of Containers
	WTS-03-S	21-Aug-15	11:30	Other	X	1
	WTS-04-S	21-Aug-15	12:30	Other	X	1
	NEM-03-S	23-Aug-15	13:10	Other	X	1
	NEM-04-S	23-Aug-15	11:20	Other	X	1
	MAM-03-S	24-Aug-15	13:05	Other	X	1
	MAM-04-S	24-Aug-15	12:30	Other	X	1
	AMARUQ AUG DUP-1	-	-	Other	X	1
	C2-AUG	25-Aug-15	12:20	Other	X	1
	C14-AUG	25-Aug-15	11:55	Other	X	1
	C17-AUG	25-Aug-15	11:25	Other	X	1
	C20-AUG	25-Aug-15	10:50	Other	X	1
	C41-AUG	25-Aug-15	10:15	Other	X	1

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Eric Franz	Date (dd-mmm-yy) 31 Aug 015	Time (hh-mm) 9:00	Received by:	Date:	Time:	Temperature: 16 °C	Verified by: EC	Date: Sep 3/15	Time: 11:00	Observations: Yes / No ? If Yes add SIF

GENF 20.00 Front

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #

Report To	
Company:	Azimuth Consulting Group
Contact:	Eric Franz
Address:	218-2902 West Broadway
	Vancouver, BC V6K2G8
Phone:	604-730-1220 Fax:
Invoice To	Same as Report ? ☑ Yes ☐ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	
Contact:	
Address:	
Phone:	Fax:
Lab Work Order # (lab use only)	

Report Format / Distribution	
☑ Standard ☐ Other	
☑ PDF ☑ Excel ☐ Digital ☐ Fax	
Email 1:	efranz@azimuthgroup.ca
Email 2:	gmann@azimuthgroup.ca
Email 3:	ryan.vanengen@agnicoeagle.com
Client / Project Information	
Job #:	Amaruq Surfacewater
PO / AFE:	
LSD:	
Quote #:	Q39503
ALS Contact:	Brent Mack
Sampler:	Eric Franz

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Chlorophyl 'a'	Number of Containers
	WTN-03-S	20-Aug-15	16:30	Other	X	1
	WTN-04-S	20-Aug-15	17:30	Other	X	1

L1667870-COFC

Short Holding Time

Rush Processing

Special Instructions / Regulations 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 provided on a separate Excel tab.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Eric Franz	31-Aug-15	9:00				16 °C	Ez	Sep 3/15	1lu	

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 10-AUG-15
Report Date: 17-AUG-15 13:47 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1655097

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers: E-1
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1655097-1	L1655097-2	L1655097-3	L1655097-4
	Description	SURFACE WATE	SURFACE WATE	SURFACE WATE	SURFACE WATE
	Sampled Date	04-AUG-15	04-AUG-15	04-AUG-15	04-AUG-15
	Sampled Time	11:05	13:40	08:30	16:40
	Client ID	A12-A11	A17-A16	A1-DS1	C58 OUTLET
Grouping	**Analyte**				
WATER					
Physical Tests	Conductivity (uS/cm)	23.9	15.0	16.1	24.4
	pH (pH)	6.81	6.80	6.77	6.98
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	17.7	13.7	13.2	18.9
	Turbidity (NTU)	0.24	0.26	0.29	0.23
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	5.8	5.0	5.0	7.2
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	5.8	5.0	5.0	7.2
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	1.73	0.68	0.74	0.51
	Fluoride (F) (mg/L)	0.025	0.031	0.028	0.023
	Nitrate (as N) (mg/L)	0.0065	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020
	Silicate (as SiO2) (mg/L)	0.58	0.81	<0.50	<0.50
	Sulfate (SO4) (mg/L)	2.57	0.85	1.32	3.03

Reference Information

Test Method References:

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

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

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

CL-L-IC-N-VA	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

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

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

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

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

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

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

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

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

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

P-TD-COL-VA	Water	Total Dissolved P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

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

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

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

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

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

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

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SILICATE-COL-VA	Water	Silicate by Colourimetric analysis	APHA 4500-SiO2 E.

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

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

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

TDS-LOW-VA	Water	Low Level TDS (3.0mg/L) by Gravimetric	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA	Water	Total Suspended Solids by Grav. (1 mg/L)	APHA 2540D

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

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

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

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

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

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

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

Reference Information

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

Chain of Custody Numbers:

E-1

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

Express Shipping

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

COC # E-1

Page 1 of 1

Report To	
Company:	Azimuth Consulting Group
Contact:	Eric Franz
Address:	218-2902 West Broadway
	Vancouver, BC V6K2G8
Phone:	604-730-1220 Fax:
Invoice To	Same as Report ? ☑ Yes ☐ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	
Contact:	
Address:	
Phone:	Fax:
Lab Work Order # (lab use only)	

Report Format / Distribution	
☒ Standard ☐ Other	
☒ PDF ☒ Excel ☐ Digital ☐ Fax	
Email 1:	efranz@azimuthgroup.ca
Email 2:	gmann@azimuthgroup.ca
Email 3:	ryan.vanengen@agnicoeagle.com
Client / Project Information	
Job #:	Amaruq Surfacewater
PO / AFE:	
LSD:	
Quote #:	Q39503
ALS Contact:	Sampler: J. Nevill

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Conventionals** see notes	TSS-Low, TDS-Low	Number of Containers
	A12-A11	4-Aug-15	11:05	Surface Water	X	X	2
	A17-A16	4-Aug-15	13 40	Surface Water	X	X	
	A1-DS1	4-Aug-15	08 30	Surface Water	X	X	
	C58 Outlet	4-Aug-15	16 40	Surface Water	X	X	

Short Holding Time

● *Rush Processing*

L1655097-COFC

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

**Conventionals includes: Alk Species, pH, EC, Turbidity, Conductivity, Anions (F, NO2, NO3, Br, SO4), low-level Chloride, Silicate, TD-P, and Ortho-PO4.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: J Nevill	Date (dd-mmm-yy) 5-Aug-15	Time (hh-mm) 08 00	Received by: Slater	Date: August 10	Time: 1130	Temperature: 20 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 14-AUG-15
Report Date: 20-AUG-15 16:25 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1658117

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers: 2
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1658117-1 Surface Water 05-AUG-15 08:30 A8-A7	L1658117-2 Surface Water 05-AUG-15 12:30 D1	L1658117-3 Surface Water 06-AUG-15 08:40 B5-B4	L1658117-4 Surface Water 06-AUG-15 16:15 A20-A19	L1658117-5 Surface Water 07-AUG-15 10:45 A34-A16
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	23.2	22.0	21.6	13.8	14.7
	pH (pH)	6.95	7.02	6.92	6.84	6.79
	Total Suspended Solids (mg/L)	<1.0	<1.0	1.8	<1.0	1.7
	Total Dissolved Solids (mg/L)	19.1	20.0	17.9	15.8	16.4
	Turbidity (NTU)	0.24	0.37	0.30	0.35	0.57
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	6.4	7.1	5.8	4.8	5.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	6.4	7.1	5.8	4.8	5.0
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	0.94	0.95	1.11	0.59	0.56
	Fluoride (F) (mg/L)	0.025	0.038	0.028	0.029	0.039
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	0.0123	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	0.0043	<0.0020
	Silicate (as SiO2) (mg/L)	0.87	<0.50	0.76	1.25	0.72
	Sulfate (SO4) (mg/L)	2.64	1.23	2.39	0.73	1.12

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1658117-6	L1658117-7	L1658117-8		
	Description	Surface Water	Surface Water	Surface Water		
	Sampled Date	08-AUG-15	08-AUG-15	05-AUG-15		
	Sampled Time	09:00	11:50	08:40		
	Client ID	C8-C7	A101-A100	E3-E2		
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	26.4	12.6	23.0		
	pH (pH)	7.15	6.74	6.97		
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	21.5	13.8	19.5		
	Turbidity (NTU)	0.22	0.31	0.27		
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	9.4	3.9	6.3		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	9.4	3.9	6.3		
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050		
	Chloride (Cl) (mg/L)	0.49	0.65	0.94		
	Fluoride (F) (mg/L)	0.033	0.027	0.025		
	Nitrate (as N) (mg/L)	<0.0050	0.0055	<0.0050		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020		
	Silicate (as SiO2) (mg/L)	1.43	0.92	0.88		
	Sulfate (SO4) (mg/L)	2.26	0.71	2.64		

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	B	L1658117-1, -2, -3, -4, -5, -6, -8
Method Blank	Alkalinity, Total (as CaCO3)	B	L1658117-7
Method Blank	Alkalinity, Total (as CaCO3)	B	L1658117-7
Matrix Spike	Phosphorus (P)-Total Dissolved	MS-B	L1658117-1, -2, -3, -4, -5, -6, -7, -8

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

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

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

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

CL-L-IC-N-VA	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

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

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

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

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

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

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

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

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

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

P-TD-COL-VA	Water	Total Dissolved P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

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

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

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

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

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

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

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SILICATE-COL-VA	Water	Silicate by Colourimetric analysis	APHA 4500-SiO2 E.

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

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

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

TDS-LOW-VA	Water	Low Level TDS (3.0mg/L) by Gravimetric	APHA 2540C

Reference Information

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA	Water	Total Suspended Solids by Grav. (1 mg/L)	APHA 2540D

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

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

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

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

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

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

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

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

Chain of Custody Numbers:

2

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

Express Shipping

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # 2

Report To	
Company:	Azimuth Consulting Group
Contact:	Eric Franz
Address:	218-2902 West Broadway
	Vancouver, BC V6K2G8
Phone:	604-730-1220 Fax:
Invoice To	Same as Report ? [✓] Yes [ ] No
Hardcopy of Invoice with Report?	[ ] Yes [✓] No
Company:	
Contact:	
Address:	
Phone:	
Lab Work Order # (lab use only)	L1658117-COFC

Report Format / Distribution	
[X] Standard [ ] Other	
[X] PDF [X] Excel [ ] Digital [ ] Fax	
Email 1:	efranz@azimuthgroup.ca
Email 2:	gmann@azimuthgroup.ca
Email 3:	ryan.vanengen@agnicoeagle.com
Client / Project Information	
Job #:	Amaruq Surfacewater
PO / AFE:	
LSD:	
Quote #:	Q39503
ALS Contact:	Sampler: J Nevill

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

Analysis Request

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Conventionals** see notes	TSS-Low, TDS-Low	Number of Containers
	A8-A7	5-Aug-15	0830	Surface Water	X	X	2
	D1	5-Aug-15	12:30	↓	X	X	2
	B5-B4	6-Aug-15	0840	↓	X	X	2
	A20-A19	6-Aug-15	16:15	↓	X	X	2
	A34-A16	7-Aug-15	10:45	↓	X	X	2
	C8-C7	8-Aug-15	9:00	↓	X	X	2
	A101-A100	8-Aug-15	11:50	↓	X	X	2
	E3-E2	5-Aug-15	0840	↓	X	X	2

Short Holding Time
Rush Processing

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

**Conventionals includes: Alk Species, pH, EC, Turbidity, Conductivity, Anions (F, NO2, NO3, Br, SO4), low-level Chloride, Silicate, TD-P, and Ortho-PO4.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: J Nevill	Date (dd-mmm-yy): 10-Aug-15	Time (hh-mm): 0900	Received by: Jean	Date: 14 Aug	Time: 10:15	Temperature: 6.5 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 18-AUG-15
Report Date: 27-AUG-15 17:42 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1659270

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers: 3
Legal Site Desc:

Comments: ADDITIONAL 27-AUG-15 17:31

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1659270-1	L1659270-2	L1659270-3	L1659270-4	L1659270-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	04-AUG-15	04-AUG-15	04-AUG-15	04-AUG-15	06-AUG-15
	Sampled Time	08:00	10:30	13:10	16:28	08:40
	Client ID	A1-D51	A12-A11	A17-A16	C58 OUTLET	B5-B4
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	5.77	8.98	5.31	9.68	7.84
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	0.0050	0.0073	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.144	0.144	0.152	0.124	0.143
	Phosphorus (P)-Total (mg/L)	0.0026	<0.0020	0.0023	<0.0020	<0.0020
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.92	1.84	1.88	1.60	1.57
	Total Organic Carbon (mg/L)	1.90	1.70	1.63	1.47	1.56
Total Metals	Aluminum (Al)-Total (mg/L)	0.0090	0.0084	0.0085	0.0049	0.0088
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00010	0.00035	0.00011	0.00030	0.00020
	Barium (Ba)-Total (mg/L)	0.00301	0.00473	0.00371	0.00389	0.00457
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	0.000051	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	1.51	2.30	1.33	2.26	1.94
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.051	0.017	0.057	0.015	0.035
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.46	0.79	0.50	1.02	0.71
	Manganese (Mn)-Total (mg/L)	0.00162	0.00075	0.00080	0.00386	0.00097
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00066	<0.00050	0.00052	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.37	0.57	0.41	0.63	0.59
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.265	0.354	0.464	0.219	0.344
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.620	0.577	0.656	0.506	0.542
	Strontium (Sr)-Total (mg/L)	0.00727	0.0115	0.00714	0.00961	0.00825
	Sulfur (S)-Total (mg/L)	0.56	0.94	<0.50	1.10	0.82

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1659270-6				
	Description	QA				
	Sampled Date	04-AUG-15				
	Sampled Time	08:00				
	Client ID	TRAVEL BLANK				
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	<0.50				
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050				
	Total Kjeldahl Nitrogen (mg/L)	<0.050				
	Phosphorus (P)-Total (mg/L)	<0.0020				
Cyanides	Cyanide, Total (mg/L)	<0.0010				
	Cyanide, Free (mg/L)	<0.0010				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)					
	Total Organic Carbon (mg/L)	<0.50				
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030				
	Antimony (Sb)-Total (mg/L)	<0.00010				
	Arsenic (As)-Total (mg/L)	<0.00010				
	Barium (Ba)-Total (mg/L)	<0.000050				
	Beryllium (Be)-Total (mg/L)	<0.000020				
	Bismuth (Bi)-Total (mg/L)	<0.000050				
	Boron (B)-Total (mg/L)	<0.010				
	Cadmium (Cd)-Total (mg/L)	<0.0000050				
	Calcium (Ca)-Total (mg/L)	<0.050				
	Chromium (Cr)-Total (mg/L)	<0.00010				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	<0.00050				
	Iron (Fe)-Total (mg/L)	<0.010				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	<0.0010				
	Magnesium (Mg)-Total (mg/L)	<0.10				
	Manganese (Mn)-Total (mg/L)	<0.00010				
	Mercury (Hg)-Total (mg/L)	<0.0000050				
	Molybdenum (Mo)-Total (mg/L)	<0.000050				
	Nickel (Ni)-Total (mg/L)	<0.00050				
	Phosphorus (P)-Total (mg/L)	<0.050				
	Potassium (K)-Total (mg/L)	<0.10				
	Selenium (Se)-Total (mg/L)	<0.000050				
	Silicon (Si)-Total (mg/L)	<0.050				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	<0.050				
	Strontium (Sr)-Total (mg/L)	<0.00020				
	Sulfur (S)-Total (mg/L)	<0.50				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1659270-1	L1659270-2	L1659270-3	L1659270-4	L1659270-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	04-AUG-15	04-AUG-15	04-AUG-15	04-AUG-15	06-AUG-15
	Sampled Time	08:00	10:30	13:10	16:28	08:40
	Client ID	A1-D51	A12-A11	A17-A16	C58 OUTLET	B5-B4
Grouping	**Analyte**					
WATER						
Total Metals	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000035	0.000028	0.000027	<0.000010	0.000025
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0040	0.0022	0.0040	0.0018	0.0033
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00032	<0.00010	0.00029	0.00016
	Barium (Ba)-Dissolved (mg/L)	0.00353	DTC 0.00614	DTC 0.00483	0.00410	DTC 0.00742
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000063
	Calcium (Ca)-Dissolved (mg/L)	1.54	2.29	1.33	2.23	1.97
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00032	0.00080	0.00032	0.00026	0.00082
	Iron (Fe)-Dissolved (mg/L)	0.014	<0.010	0.025	<0.010	0.012
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000137
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.47	0.79	0.49	1.00	0.71
	Manganese (Mn)-Dissolved (mg/L)	0.00065	0.00059	0.00041	0.00042	0.00055
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00061	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.37	0.57	0.40	0.59	0.60
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.253	0.358	0.447	0.209	0.340
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.555	0.676	0.672	0.511	0.649
	Strontium (Sr)-Dissolved (mg/L)	0.00663	0.0110	0.00701	0.00930	0.00824
	Sulfur (S)-Dissolved (mg/L)	<0.50	0.93	<0.50	1.07	0.83

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1659270-6				
	Sample ID	L1659270-6				
	Description	QA				
	Sampled Date	04-AUG-15				
	Sampled Time	08:00				
	Client ID	TRAVEL BLANK				
WATER						
Total Metals	Thallium (Tl)-Total (mg/L)	<0.000010				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.00030				
	Uranium (U)-Total (mg/L)	<0.000010				
	Vanadium (V)-Total (mg/L)	<0.00050				
	Zinc (Zn)-Total (mg/L)	<0.0030				
	Zirconium (Zr)-Total (mg/L)	<0.00030				
Dissolved Metals	Dissolved Mercury Filtration Location					
	Dissolved Metals Filtration Location					
	Aluminum (Al)-Dissolved (mg/L)					
	Antimony (Sb)-Dissolved (mg/L)					
	Arsenic (As)-Dissolved (mg/L)					
	Barium (Ba)-Dissolved (mg/L)					
	Beryllium (Be)-Dissolved (mg/L)					
	Bismuth (Bi)-Dissolved (mg/L)					
	Boron (B)-Dissolved (mg/L)					
	Cadmium (Cd)-Dissolved (mg/L)					
	Calcium (Ca)-Dissolved (mg/L)					
	Chromium (Cr)-Dissolved (mg/L)					
	Cobalt (Co)-Dissolved (mg/L)					
	Copper (Cu)-Dissolved (mg/L)					
	Iron (Fe)-Dissolved (mg/L)					
	Lead (Pb)-Dissolved (mg/L)					
	Lithium (Li)-Dissolved (mg/L)					
	Magnesium (Mg)-Dissolved (mg/L)					
	Manganese (Mn)-Dissolved (mg/L)					
	Mercury (Hg)-Dissolved (mg/L)					
	Molybdenum (Mo)-Dissolved (mg/L)					
	Nickel (Ni)-Dissolved (mg/L)					
	Phosphorus (P)-Dissolved (mg/L)					
	Potassium (K)-Dissolved (mg/L)					
	Selenium (Se)-Dissolved (mg/L)					
	Silicon (Si)-Dissolved (mg/L)					
	Silver (Ag)-Dissolved (mg/L)					
	Sodium (Na)-Dissolved (mg/L)					
	Strontium (Sr)-Dissolved (mg/L)					
	Sulfur (S)-Dissolved (mg/L)					

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1659270-1	L1659270-2	L1659270-3	L1659270-4	L1659270-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	04-AUG-15	04-AUG-15	04-AUG-15	04-AUG-15	06-AUG-15
	Sampled Time	08:00	10:30	13:10	16:28	08:40
	Client ID	A1-D51	A12-A11	A17-A16	C58 OUTLET	B5-B4
Grouping	**Analyte**					
WATER						
Dissolved Metals	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010	<0.00010	0.00027
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000028	0.000023	0.000021	<0.000010	0.000025
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1659270-6 QA 04-AUG-15 08:00 TRAVEL BLANK				
Grouping	**Analyte**					
WATER						
Dissolved Metals	Thallium (Tl)-Dissolved (mg/L)					
	Tin (Sn)-Dissolved (mg/L)					
	Titanium (Ti)-Dissolved (mg/L)					
	Uranium (U)-Dissolved (mg/L)					
	Vanadium (V)-Dissolved (mg/L)					
	Zinc (Zn)-Dissolved (mg/L)					
	Zirconium (Zr)-Dissolved (mg/L)					

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bismuth (Bi)-Total	DLA	L1659270-6
Duplicate	Cadmium (Cd)-Total	DLA	L1659270-6
Duplicate	Lead (Pb)-Total	DLA	L1659270-6
Duplicate	Silver (Ag)-Total	DLA	L1659270-6
Duplicate	Thallium (Tl)-Total	DLA	L1659270-6
Duplicate	Tin (Sn)-Total	DLA	L1659270-6
Duplicate	Titanium (Ti)-Total	DLA	L1659270-6
Duplicate	Vanadium (V)-Total	DLA	L1659270-6
Duplicate	Zinc (Zn)-Total	DLA	L1659270-6
Duplicate	Zirconium (Zr)-Total	DLA	L1659270-6
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Duplicate	Cadmium (Cd)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Duplicate	Chromium (Cr)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Duplicate	Cobalt (Co)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Duplicate	Lead (Pb)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Duplicate	Silver (Ag)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Duplicate	Thallium (Tl)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Duplicate	Titanium (Ti)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Duplicate	Vanadium (V)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Duplicate	Zirconium (Zr)-Dissolved	DLA	L1659270-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Total Organic Carbon	MS-B	L1659270-3
Matrix Spike	Total Organic Carbon	MS-B	L1659270-3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659270-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Reference Information

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

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

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

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

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

CARBONS-DOC-VA | Water | Dissolved organic carbon by combustion | APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA | Water | Total organic carbon by combustion | APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-FREE-L-CFA-VA | Water | Low Level Free Cyanide in water by CFA | ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-VA | Water | Low Level Total Cyanide in water by CFA | ISO 14403:2002

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

HARDNESS-CALC-VA | Water | Hardness | APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society

Reference Information

of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-PRES-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

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

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

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

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

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

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

TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

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

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

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

3

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

Ground Shipping

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

COC # 3

Page 1 of 1

Report To	
Company:	Azimuth Consulting Group
Contact:	Eric Franz
Address:	218-2902 West Broadway
	Vancouver, BC V6K2G8
Phone:	604-730-1220 Fax:
Invoice To	Same as Report ? ☑ Yes ☐ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	
Contact:	
Address:	
Phone:	Fax:
Lab Work Order # (lab use only)	

Report Format / Distribution	
☒ Standard ☐ Other	
☒ PDF ☒ Excel ☐ Digital ☐ Fax	
Email 1:	efranz@azimuthgroup.ca
Email 2:	gmann@azimuthgroup.ca
Email 3:	ryan.vanengen@agnicoeagle.com
Client / Project Information	
Job #:	Amaruq Surfacewater
PO / AFE:	
LSD:	
Quote #:	Q39503
ALS Contact:	Sampler: J Nevill

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TOC, Ammonia, TKN, Total P (P)	DOC (F/P)	T-CN (Low), Free CN (Low) (P)	Total mercury (P)	Dissolved mercury (F/P)	Total Metals (P)	Dissolved Metals (F/P)	Number of Containers
	A1-D51	4-Aug-15	0800	Surface Water	X	X	X	X	X	X	X	7
	A12-A11	4-Aug-15	10:30	Surface Water	X	X	X	X	X	X	X	7
	A17-A16	4-Aug-15	13:10	↓	X	X	X	X	X	X	X	7
	C58 Outlet	4-Aug-15	16:28	↓	X	X	X	X	X	X	X	7
	B5-B4	6-Aug-15	0840	↓	X	X	X	X	X	X	X	7
	Travel blank	—	—	QA	X	X	X	X	X	X	X	5

Short Holding Time

Rush Processing

L1659270-COFC

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: J Nevill	Date (dd-mmm-yy): 10-Aug-15	Time (hh-mm): 0900	Received by: Shafee	Date: Aug18	Time: 1215	Temperature: 20/20 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 18-AUG-15
Report Date: 26-AUG-15 17:33 (MT)
Version: FINAL REV. 2

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1659279

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers: 4
Legal Site Desc:

Comments: Please note Dissolved S data has been removed from this report, as requested, for sample D1 only, due to the possibility of improper preservation and, therefore, field contamination.

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1659279-1	L1659279-2	L1659279-3	L1659279-4	L1659279-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	06-AUG-15	05-AUG-15	05-AUG-15	05-AUG-15	08-AUG-15
	Sampled Time	16:15	08:40	13:00	08:40	11:50
	Client ID	A20-A19	A8-A7	D1	E3-E2	A101-A100
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	4.45	8.22	8.43	8.40	4.17
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	0.0057	0.0061	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.142	0.150	0.157	0.132	0.123
	Phosphorus (P)-Total (mg/L)	0.0026	<0.0020	0.0028	0.0048	0.0026
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.96	1.74	2.24	1.86	1.75
	Total Organic Carbon (mg/L)	2.08	1.63	2.30	1.46	1.86
Total Metals	Aluminum (Al)-Total (mg/L)	0.0170	0.0064	0.0144	0.0060	0.0102
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	<0.00010	0.00023	0.00014	0.00023	<0.00010
	Barium (Ba)-Total (mg/L)	0.00355	0.00473	0.00275	0.00475	0.00173
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	1.21	2.09	1.95	2.21	1.24
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.038	0.017	0.028	0.016	0.031
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.41	0.72	0.85	0.80	0.29
	Manganese (Mn)-Total (mg/L)	0.00077	0.00225	0.00238	0.00179	0.00240
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000060
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00054	<0.00050	0.00052	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.38	0.53	0.34	0.61	0.27
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.571	0.372	0.195	0.401	0.412
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.632	0.541	0.727	0.537	0.580
	Strontium (Sr)-Total (mg/L)	0.00699	0.00899	0.00610	0.00903	0.00556
	Sulfur (S)-Total (mg/L)	<0.50	0.91	<0.50	1.00	<0.50

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1659279-6	L1659279-7			
	Description	Surface Water	Surface Water			
	Sampled Date	08-AUG-15	07-AUG-15			
	Sampled Time	09:00	10:45			
	Client ID	C8-C7	A34-A16			
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	10.6	5.19			
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050			
	Total Kjeldahl Nitrogen (mg/L)	0.095	0.193			
	Phosphorus (P)-Total (mg/L)	<0.020 DLM	0.0038			
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010			
	Cyanide, Free (mg/L)	<0.0010	<0.0010			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.35	2.33			
	Total Organic Carbon (mg/L)	1.41	2.43			
Total Metals	Aluminum (Al)-Total (mg/L)	0.0051	0.0211			
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00036	0.00018			
	Barium (Ba)-Total (mg/L)	0.00991	0.00218			
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020			
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050			
	Boron (B)-Total (mg/L)	<0.010	<0.010			
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050			
	Calcium (Ca)-Total (mg/L)	2.47	0.906			
	Chromium (Cr)-Total (mg/L)	<0.00010	0.00015			
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010			
	Copper (Cu)-Total (mg/L)	<0.00050	0.00072			
	Iron (Fe)-Total (mg/L)	<0.010	0.161			
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010			
	Magnesium (Mg)-Total (mg/L)	1.09	0.69			
	Manganese (Mn)-Total (mg/L)	0.00269	0.00257			
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.000966	0.000083			
	Nickel (Ni)-Total (mg/L)	0.00056	0.00076			
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050			
	Potassium (K)-Total (mg/L)	0.50	0.37			
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050			
	Silicon (Si)-Total (mg/L)	0.634	0.335			
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Total (mg/L)	0.625	0.614			
	Strontium (Sr)-Total (mg/L)	0.0119	0.00523			
	Sulfur (S)-Total (mg/L)	0.83	<0.50			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		L1659279-1	L1659279-2	L1659279-3	L1659279-4	L1659279-5
	Sample ID	L1659279-1	L1659279-2	L1659279-3	L1659279-4	L1659279-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	06-AUG-15	05-AUG-15	05-AUG-15	05-AUG-15	08-AUG-15
	Sampled Time	16:15	08:40	13:00	08:40	11:50
	Client ID	A20-A19	A8-A7	D1	E3-E2	A101-A100
Grouping	**Analyte**					
WATER						
Total Metals	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00033	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000048	0.000021	0.000045	0.000021	0.000052
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0060	0.0027	0.0054	0.0033	0.0034
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00020	0.00015	0.00020	<0.00010
	Barium (Ba)-Dissolved (mg/L)	DTC 0.00655	DTC 0.00748	0.00313	DTC 0.00802	DTC 0.00256
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	1.16	2.11	1.98	2.15	1.20
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00069	0.00063	0.00064	0.00059	0.00053
	Iron (Fe)-Dissolved (mg/L)	0.014	<0.010	0.011	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.38	0.72	0.85	0.74	0.28
	Manganese (Mn)-Dissolved (mg/L)	0.00046	0.00096	0.00068	0.00094	0.00062
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000054
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00052	<0.00050	0.00052	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.34	0.54	0.32	0.55	0.27
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.536	0.369	0.191	0.390	0.386
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.767	0.629	0.820	DTC 0.658	0.649
	Strontium (Sr)-Dissolved (mg/L)	0.00669	0.00870	0.00618	0.00868	0.00533
	Sulfur (S)-Dissolved (mg/L)	<0.50	0.89		0.89	<0.50

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1659279-6	L1659279-7			
	Description	Surface Water	Surface Water			
	Sampled Date	08-AUG-15	07-AUG-15			
	Sampled Time	09:00	10:45			
	Client ID	C8-C7	A34-A16			
Grouping	**Analyte**					
WATER						
Total Metals	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.00030	0.00048			
	Uranium (U)-Total (mg/L)	0.000020	0.000069			
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030			
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0026	0.0073			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00034	0.00015			
	Barium (Ba)-Dissolved (mg/L)	0.0115	DTC 0.00376			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	2.47	0.922			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	0.00047	0.00074			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.080			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	1.08	0.70			
	Manganese (Mn)-Dissolved (mg/L)	0.00108	0.00179			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000126	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00069			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	0.53	0.44			
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	0.636	0.324			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	0.698	0.701			
	Strontium (Sr)-Dissolved (mg/L)	0.0124	0.00483			
	Sulfur (S)-Dissolved (mg/L)	0.80	<0.50			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1659279-1	L1659279-2	L1659279-3	L1659279-4	L1659279-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	06-AUG-15	05-AUG-15	05-AUG-15	05-AUG-15	08-AUG-15
	Sampled Time	16:15	08:40	13:00	08:40	11:50
	Client ID	A20-A19	A8-A7	D1	E3-E2	A101-A100
Grouping	**Analyte**					
WATER						
Dissolved Metals	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	0.00016	0.00012	0.00013	0.00013	0.00013
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000044	0.000017	0.000043	0.000018	0.000045
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1659279-6	L1659279-7			
	Description	Surface Water	Surface Water			
	Sampled Date	08-AUG-15	07-AUG-15			
	Sampled Time	09:00	10:45			
	Client ID	C8-C7	A34-A16			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	0.00011	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.000018	0.000054			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030			

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Cadmium (Cd)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Chromium (Cr)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Cobalt (Co)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Lead (Pb)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Silver (Ag)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Thallium (Tl)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Titanium (Ti)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Vanadium (V)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Duplicate	Zirconium (Zr)-Dissolved	DLA	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Phosphorus (P)-Total	MS-B	L1659279-1, -2, -3, -4, -5, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Total Organic Carbon	MS-B	L1659279-4
Matrix Spike	Total Organic Carbon	MS-B	L1659279-4
Matrix Spike	Phosphorus (P)-Total	MS-B	L1659279-6
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1659279-1, -2, -3, -4, -5, -6, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)

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

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

ALS Test Code	Matrix	Test Description	Method Reference**
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)

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

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

ALS Test Code	Matrix	Test Description	Method Reference**
		Dissolved organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)

Reference Information

CARBONS-DOC-VA Water

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-FREE-L-CFA-VA Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

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

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

HARDNESS-CALC-VA Water Hardness APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

P-T-PRES-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

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

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or

Reference Information

microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

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

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

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

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

TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

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

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

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

4

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

Ground Shipping

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

COC # 4

Page 1 of 1

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Azimuth Consulting Group	☒ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Eric Franz	☒ PDF ☒ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	218-2902 West Broadway	Email 1:	efranz@azimuthgroup.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6K2G8	Email 2:	gmann@azimuthgroup.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-730-1220 Fax:	Email 3:	ryan.vanengen@agnicoeagle.com	**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Amaruq Surfacewater	
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:	Fax:	Quote #:	Q39503	
Lab Work Order # (lab use only)		ALS Contact:	Sampler: J. Nevill	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TOC, Ammonia, TKN, Total P (P)	DOC (F/P)	T-CN (Low), Free CN (Low) (P)	Total mercury (P)	Dissolved mercury (F/P)	Total Metals (P)	Dissolved Metals (F/P)						Number of Containers
	A20-A19	6-Aug-15	16:15	Surface Water	X	X	X	X	X	X	X						7
	AB-A7	5-Aug-15	08:40		X	X	X	X	X	X	X						7
	D1	5-Aug-15	13:00		X	X	X	X	X	X	X						7
	E3-E2	5-Aug-15	08:40		X	X	X	X	X	X	X						7
	A101-A100	8-Aug-15	11:50		X	X	X	X	X	X	X						7
	C8-C7	8-Aug-15	09:00		X	X	X	X	X	X	X						7
	A34-A16	7-Aug-15	10:45		X	X	X	X	X	X	X						7

Short Holding Time
• Rush Processing

L1659279-COFC

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: J. Nevill	Date (dd-mmm-yy) 10 Aug 15	Time (hh-mm) 0900	Received by: Shafer	Date: Aug 18	Time: 1215	Temperature: 20/20 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

GENF 20.00 Front

AZIMUTH CONSULTING GROUP INC.
ATTN: Maggie McConnell
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 09-SEP-15
Report Date: 22-SEP-15 14:32 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1669874

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SEDIMENT
C of C Numbers: 2, 3, OL-1767
Legal Site Desc:

Comments: Please note that Silver (Ag) results for Filter samples are denoted with 'RRR' qualifiers due to a failing Laboratory Control Standard associated with those results. Due to the destructive nature of Filter analysis the testing could not be repeated and the results for Silver (Ag) should be considered approximate values.

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1669874-34	L1669874-35	L1669874-36	L1669874-37
		Description	Filter	Filter	Filter	Filter
		Sampled Date	22-AUG-15	21-AUG-15	24-AUG-15	24-AUG-15
		Sampled Time				
		Client ID	AMARUQ SWIPE-1	AMARUQ SWIPE-2	AMARUQ SWIPE-3	AMARUQ SWIPE-4
Grouping	**Analyte**					
FILTER						
Metals	Aluminum (Al)-Total (mg)		0.011	0.018	0.015	<0.010
	Antimony (Sb)-Total (mg)		<0.010	<0.010	<0.010	<0.010
	Arsenic (As)-Total (mg)		<0.010	<0.010	<0.010	<0.010
	Barium (Ba)-Total (mg)		0.00135	0.00147	0.00084	<0.00050
	Beryllium (Be)-Total (mg)		<0.00030	<0.00030	<0.00030	<0.00030
	Bismuth (Bi)-Total (mg)		<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg)		<0.00050	<0.00050	<0.00050	<0.00050
	Calcium (Ca)-Total (mg)		<0.050	<0.050	<0.050	<0.050
	Chromium (Cr)-Total (mg)		0.0021	0.0083	0.0042	0.0054
	Cobalt (Co)-Total (mg)		<0.00050	<0.00050	<0.00050	<0.00050
	Copper (Cu)-Total (mg)		<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg)		0.0312	0.0696	0.0452	0.0395
	Lead (Pb)-Total (mg)		<0.0030	0.0038	<0.0030	<0.0030
	Lithium (Li)-Total (mg)		<0.00050	<0.00050	<0.00050	<0.00050
	Magnesium (Mg)-Total (mg)		0.0084	0.0170	0.0154	0.0094
	Manganese (Mn)-Total (mg)		0.00147	0.00107	0.00077	0.00060
	Molybdenum (Mo)-Total (mg)		<0.0020	<0.0020	<0.0020	<0.0020
	Nickel (Ni)-Total (mg)		<0.0030	0.0038	<0.0030	<0.0030
	Phosphorus (P)-Total (mg)		<0.020	<0.020	<0.020	<0.020
	Potassium (K)-Total (mg)		<0.10	<0.10	<0.10	<0.10
	Selenium (Se)-Total (mg)		<0.010	<0.010	<0.010	<0.010
	Silver (Ag)-Total (mg)		RRR <0.00050	RRR <0.00050	RRR <0.00050	RRR <0.00050
	Sodium (Na)-Total (mg)		0.10	<0.10	<0.10	<0.10
	Strontium (Sr)-Total (mg)		<0.00030	<0.00030	<0.00030	<0.00030
	Thallium (Tl)-Total (mg)		<0.010	<0.010	<0.010	<0.010
	Tin (Sn)-Total (mg)		<0.0020	0.0023	<0.0020	<0.0020
	Titanium (Ti)-Total (mg)		0.00059	0.00089	0.00055	<0.00050
	Vanadium (V)-Total (mg)		<0.0020	<0.0020	<0.0020	<0.0020
	Zinc (Zn)-Total (mg)		0.00031	0.00113	0.00095	0.00047

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1669874-1	L1669874-2	L1669874-3	L1669874-4	L1669874-5
	Description	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste
	Sampled Date	22-AUG-15	22-AUG-15	22-AUG-15	22-AUG-15	22-AUG-15
	Sampled Time					
	Client ID	WTN-EX-1	WTN-EX-2	WTN-EX-3	WTN-EX-4	WTN-EX-5
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	86.3	86.9	87.9	86.6	89.0
	pH (1:2 soil:water) (pH)	6.03	5.80	6.40	6.02	6.16
Particle Size	% Gravel (>2mm) (%)	<0.10	<0.10	<0.10	0.15	<0.10
	% Sand (2.0mm - 0.063mm) (%)	24.0	9.19	21.7	21.9	9.37
	% Silt (0.063mm - 4um) (%)	66.1	79.3	71.1	69.9	82.5
	% Clay (<4um) (%)	9.92	11.5	7.16	8.00	8.11
	Texture	Silt loam	Silt	Silt loam	Silt loam	Silt
Organic / Inorganic Carbon	Total Organic Carbon (%)	6.65	7.08	7.80	7.36	8.66
Metals	Aluminum (Al) (mg/kg)	14700	18400	13500	15200	16000
	Antimony (Sb) (mg/kg)	0.27	0.29	0.29	0.29	0.35
	Arsenic (As) (mg/kg)	69.4	147	79.5	81.7	139
	Barium (Ba) (mg/kg)	98.0	129	102	107	106
	Beryllium (Be) (mg/kg)	1.12	1.53	1.06	1.14	1.32
	Bismuth (Bi) (mg/kg)	0.33	0.47	0.33	0.34	0.40
	Boron (B) (mg/kg)	10.0	10.3	10.0	10.1	12.5
	Cadmium (Cd) (mg/kg)	0.297	0.481	0.304	0.334	0.375
	Calcium (Ca) (mg/kg)	3310	2950	3220	3340	3710
	Chromium (Cr) (mg/kg)	162	197	169	176	176
	Cobalt (Co) (mg/kg)	13.6	17.0	15.0	15.8	14.9
	Copper (Cu) (mg/kg)	32.6	50.8	33.5	34.7	40.9
	Iron (Fe) (mg/kg)	35200	51700	38600	39000	50900
	Lead (Pb) (mg/kg)	10.0	13.3	9.90	10.1	11.4
	Lithium (Li) (mg/kg)	16.2	17.6	14.7	16.7	15.4
	Magnesium (Mg) (mg/kg)	8770	9750	8870	9440	9030
	Manganese (Mn) (mg/kg)	916	816	1170	1230	744
	Mercury (Hg) (mg/kg)	0.0597	0.0764	0.0675	0.0667	0.0788
	Molybdenum (Mo) (mg/kg)	2.29	4.57	2.39	2.32	3.79
	Nickel (Ni) (mg/kg)	90.7	117	91.8	98.9	95.6
	Phosphorus (P) (mg/kg)	662	794	716	795	864
	Potassium (K) (mg/kg)	1940	2340	1760	2030	2150
	Selenium (Se) (mg/kg)	0.40	0.70	0.47	0.48	0.59
	Silver (Ag) (mg/kg)	0.21	0.31	0.21	0.23	0.27
	Sodium (Na) (mg/kg)	293	339	327	390	506
	Strontium (Sr) (mg/kg)	24.4	22.7	21.6	25.6	24.8
	Thallium (Tl) (mg/kg)	0.129	0.189	0.130	0.142	0.158
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	485	537	393	507	500

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1669874-6	L1669874-7	L1669874-8	L1669874-9	L1669874-10
	Sample ID	L1669874-6	L1669874-7	L1669874-8	L1669874-9	L1669874-10
	Description	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste
	Sampled Date	22-AUG-15	22-AUG-15	22-AUG-15	22-AUG-15	22-AUG-15
	Sampled Time					
	Client ID	WTN-1	WTN-2	WTN-3	WTN-4	WTN-5
SOIL						
Physical Tests	Moisture (%)	85.0	86.8	80.9	87.2	87.2
	pH (1:2 soil:water) (pH)	6.29	6.17	5.71	5.67	5.76
Particle Size	% Gravel (>2mm) (%)	<0.10	0.41	<0.10	<0.10	0.12
	% Sand (2.0mm - 0.063mm) (%)	4.08	4.09	4.68	3.18	4.75
	% Silt (0.063mm - 4um) (%)	87.0	86.0	82.6	84.6	83.6
	% Clay (<4um) (%)	8.95	9.53	12.6	12.2	11.6
	Texture	Silt	Silt	Silt	Silt	Silt
Organic / Inorganic Carbon	Total Organic Carbon (%)	4.91	5.20	4.65	5.72	5.20
Metals	Aluminum (Al) (mg/kg)	13900	12700	14800	14200	13400
	Antimony (Sb) (mg/kg)	0.25	0.27	0.25	0.34	0.27
	Arsenic (As) (mg/kg)	897	1000	568	1760	809
	Barium (Ba) (mg/kg)	212	586	97.4	180	179
	Beryllium (Be) (mg/kg)	1.22	1.18	1.27	1.28	1.18
	Bismuth (Bi) (mg/kg)	0.45	0.42	0.47	0.49	0.46
	Boron (B) (mg/kg)	7.3	7.2	6.9	7.7	6.4
	Cadmium (Cd) (mg/kg)	0.315	0.483	0.151	0.363	0.407
	Calcium (Ca) (mg/kg)	1950	2150	2050	2260	1660
	Chromium (Cr) (mg/kg)	84.4	80.5	94.5	95.4	87.5
	Cobalt (Co) (mg/kg)	24.0	20.0	20.5	25.3	24.0
	Copper (Cu) (mg/kg)	37.3	38.4	35.5	41.7	38.6
	Iron (Fe) (mg/kg)	151000	146000	127000	179000	139000
	Lead (Pb) (mg/kg)	10.9	11.0	11.7	12.8	11.5
	Lithium (Li) (mg/kg)	13.4	11.8	14.0	13.1	12.5
	Magnesium (Mg) (mg/kg)	5800	5410	6300	6110	5880
	Manganese (Mn) (mg/kg)	6660	23500	2200	5430	3900
	Mercury (Hg) (mg/kg)	0.0742	0.0827	0.0612	0.0939	0.0795
	Molybdenum (Mo) (mg/kg)	6.27	6.91	5.33	8.63	5.81
	Nickel (Ni) (mg/kg)	92.0	126	59.9	92.7	108
	Phosphorus (P) (mg/kg)	1830	2250	1770	2750	2020
	Potassium (K) (mg/kg)	2040	2060	2150	2110	1840
	Selenium (Se) (mg/kg)	0.78	0.78	0.75	0.96	0.76
	Silver (Ag) (mg/kg)	0.26	0.28	0.23	0.32	0.25
	Sodium (Na) (mg/kg)	292	302	257	355	328
	Strontium (Sr) (mg/kg)	22.0	29.5	21.6	25.0	19.0
	Thallium (Tl) (mg/kg)	0.219	0.240	0.154	0.210	0.236
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	379	370	413	393	308

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-11 Soil/Sed/Waste 22-AUG-15 WTN-COMP	L1669874-12 Soil/Sed/Waste 21-AUG-15 WTS-1	L1669874-13 Soil/Sed/Waste 21-AUG-15 WTS-2	L1669874-14 Soil/Sed/Waste 21-AUG-15 WTS-3	L1669874-15 Soil/Sed/Waste 21-AUG-15 WTS-4
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	88.1	85.5	85.2	87.0	87.0
	pH (1:2 soil:water) (pH)		5.48	5.46	5.53	5.76
Particle Size	% Gravel (>2mm) (%)		<0.10	<0.10	<0.10	<0.10
	% Sand (2.0mm - 0.063mm) (%)		5.41	3.07	2.77	2.75
	% Silt (0.063mm - 4um) (%)		82.0	82.4	82.2	84.7
	% Clay (<4um) (%)		12.6	14.5	15.0	12.6
	Texture		Silt	Silt	Silt	Silt
Organic / Inorganic Carbon	Total Organic Carbon (%)		5.29	5.50	6.24	6.41
Metals	Aluminum (Al) (mg/kg)		14700	16800	17100	16200
	Antimony (Sb) (mg/kg)		0.23	0.26	0.22	0.23
	Arsenic (As) (mg/kg)		102	152	80.3	112
	Barium (Ba) (mg/kg)		113	120	122	133
	Beryllium (Be) (mg/kg)		1.35	1.67	1.47	1.42
	Bismuth (Bi) (mg/kg)		0.52	0.58	0.55	0.56
	Boron (B) (mg/kg)		6.9	7.9	9.4	8.9
	Cadmium (Cd) (mg/kg)		0.410	0.181	0.177	0.299
	Calcium (Ca) (mg/kg)		2300	2340	2630	2530
	Chromium (Cr) (mg/kg)		63.3	70.0	70.6	68.6
	Cobalt (Co) (mg/kg)		16.1	15.9	10.4	13.4
	Copper (Cu) (mg/kg)		37.9	45.0	41.4	42.0
	Iron (Fe) (mg/kg)		69000	94100	54800	77400
	Lead (Pb) (mg/kg)		13.7	13.7	13.0	13.8
	Lithium (Li) (mg/kg)		13.1	14.1	15.0	13.7
	Magnesium (Mg) (mg/kg)		5690	5720	6250	5900
	Manganese (Mn) (mg/kg)		2010	1890	1040	2180
	Mercury (Hg) (mg/kg)		0.0764	0.0789	0.0752	0.0952
	Molybdenum (Mo) (mg/kg)		3.26	5.57	3.87	3.97
	Nickel (Ni) (mg/kg)		73.9	63.6	54.4	67.0
	Phosphorus (P) (mg/kg)		1680	1380	1050	1330
	Potassium (K) (mg/kg)		2170	2420	2580	2450
	Selenium (Se) (mg/kg)		0.67	0.78	0.68	0.82
	Silver (Ag) (mg/kg)		0.26	0.29	0.33	0.34
	Sodium (Na) (mg/kg)		282	276	344	409
	Strontium (Sr) (mg/kg)		22.1	23.2	25.4	24.5
	Thallium (Tl) (mg/kg)		0.195	0.181	0.171	0.188
	Tin (Sn) (mg/kg)		<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)		407	437	456	425

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID / Description / Sampled Date / Sampled Time / Client ID	L1669874-16 Soil/Sed/Waste 21-AUG-15 WTS-5	L1669874-17 Soil/Sed/Waste 21-AUG-15 WTS-COMP	L1669874-18 Soil/Sed/Waste 24-AUG-15 MAM-1	L1669874-19 Soil/Sed/Waste 24-AUG-15 MAM-2	L1669874-20 Soil/Sed/Waste 24-AUG-15 MAM-3
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	84.4	85.9	89.7	90.7	91.0
	pH (1:2 soil:water) (pH)	5.94		5.85	5.98	5.72
Particle Size	% Gravel (>2mm) (%)	0.82		<0.10	<0.10	<0.10
	% Sand (2.0mm - 0.063mm) (%)	4.49		0.92	2.45	0.72
	% Silt (0.063mm - 4um) (%)	82.2		93.9	92.4	94.0
	% Clay (<4um) (%)	12.5		5.20	5.13	5.33
	Texture	Silt		Silt	Silt	Silt
Organic / Inorganic Carbon	Total Organic Carbon (%)	4.58		11.4	11.7	10.7
Metals	Aluminum (Al) (mg/kg)	16400		19100	18600	19500
	Antimony (Sb) (mg/kg)	0.22		0.29	0.32	0.37
	Arsenic (As) (mg/kg)	118		75.7	143	277
	Barium (Ba) (mg/kg)	104		142	142	153
	Beryllium (Be) (mg/kg)	1.28		1.34	1.29	1.55
	Bismuth (Bi) (mg/kg)	0.53		0.47	0.45	0.53
	Boron (B) (mg/kg)	6.7		19.5	20.8	20.6
	Cadmium (Cd) (mg/kg)	0.224		0.267	0.255	0.300
	Calcium (Ca) (mg/kg)	2030		3620	3370	3310
	Chromium (Cr) (mg/kg)	66.1		161	162	168
	Cobalt (Co) (mg/kg)	23.7		11.4	11.5	13.6
	Copper (Cu) (mg/kg)	39.1		62.5	63.9	75.7
	Iron (Fe) (mg/kg)	89500		34100	43400	61200
	Lead (Pb) (mg/kg)	12.5		17.4	16.5	19.1
	Lithium (Li) (mg/kg)	13.2		18.4	17.1	15.7
	Magnesium (Mg) (mg/kg)	5750		9260	9010	8660
	Manganese (Mn) (mg/kg)	2760		349	414	468
	Mercury (Hg) (mg/kg)	0.0657		0.0987	0.0991	0.0972
	Molybdenum (Mo) (mg/kg)	4.09		3.24	3.73	5.96
	Nickel (Ni) (mg/kg)	60.0		105	102	109
	Phosphorus (P) (mg/kg)	1070		868	911	951
	Potassium (K) (mg/kg)	2340		3090	2950	2990
	Selenium (Se) (mg/kg)	0.75		0.63	0.63	0.84
	Silver (Ag) (mg/kg)	0.24		0.42	0.42	0.48
	Sodium (Na) (mg/kg)	330		424	442	520
	Strontium (Sr) (mg/kg)	21.3		24.8	24.3	24.4
	Thallium (Tl) (mg/kg)	0.199		0.246	0.223	0.245
	Tin (Sn) (mg/kg)	<2.0		<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	447		528	510	565

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1669874-21	L1669874-22	L1669874-23	L1669874-24	L1669874-25
	Description	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste
	Sampled Date	24-AUG-15	24-AUG-15	24-AUG-15	23-AUG-15	23-AUG-15
	Sampled Time					
	Client ID	MAM-4	MAM-5	MAM-COMP	NEM-1	NEM-2
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	89.9	89.8	90.9	91.7	85.6
	pH (1:2 soil:water) (pH)	5.54	5.40		6.20	6.53
Particle Size	% Gravel (>2mm) (%)	<0.10	<0.10		<0.10	0.26
	% Sand (2.0mm - 0.063mm) (%)	0.85	1.08		12.5	50.3
	% Silt (0.063mm - 4um) (%)	93.1	92.3		77.9	47.1
	% Clay (<4um) (%)	6.09	6.60		9.56	2.35
	Texture	Silt	Silt		Silt	Sandy loam
Organic / Inorganic Carbon	Total Organic Carbon (%)	11.5	10.6		8.19	6.02
Metals	Aluminum (Al) (mg/kg)	17000	18400		10800	9250
	Antimony (Sb) (mg/kg)	0.25	0.26		0.40	0.22
	Arsenic (As) (mg/kg)	68.6	70.0		52.0	13.4
	Barium (Ba) (mg/kg)	125	136		98.5	63.1
	Beryllium (Be) (mg/kg)	1.14	1.20		0.64	0.46
	Bismuth (Bi) (mg/kg)	0.39	0.43		0.23	<0.20
	Boron (B) (mg/kg)	17.0	15.3		14.1	9.1
	Cadmium (Cd) (mg/kg)	0.269	0.296		0.248	0.180
	Calcium (Ca) (mg/kg)	2770	2780		3490	3030
	Chromium (Cr) (mg/kg)	141	158		113	96.5
	Cobalt (Co) (mg/kg)	11.7	13.3		8.59	6.86
	Copper (Cu) (mg/kg)	57.4	60.5		40.0	21.9
	Iron (Fe) (mg/kg)	30200	33000		25800	14600
	Lead (Pb) (mg/kg)	15.9	16.8		9.33	6.40
	Lithium (Li) (mg/kg)	14.7	15.1		9.8	9.9
	Magnesium (Mg) (mg/kg)	8380	8900		6450	6640
	Manganese (Mn) (mg/kg)	357	408		407	236
	Mercury (Hg) (mg/kg)	0.0960	0.0955		0.0299	0.0180
	Molybdenum (Mo) (mg/kg)	2.83	2.89		3.84	1.42
	Nickel (Ni) (mg/kg)	98.7	107		88.0	64.1
	Phosphorus (P) (mg/kg)	764	796		697	518
	Potassium (K) (mg/kg)	2710	2990		1470	1210
	Selenium (Se) (mg/kg)	0.61	0.67		0.56	0.34
	Silver (Ag) (mg/kg)	0.43	0.44		0.18	<0.10
	Sodium (Na) (mg/kg)	304	338		430	390
	Strontium (Sr) (mg/kg)	20.2	20.6		25.9	25.9
	Thallium (Tl) (mg/kg)	0.224	0.249		0.093	0.060
	Tin (Sn) (mg/kg)	<2.0	<2.0		<2.0	<2.0
	Titanium (Ti) (mg/kg)	451	481		269	333

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1669874-26	L1669874-27	L1669874-28	L1669874-29	L1669874-30
	Description	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste
	Sampled Date	23-AUG-15	23-AUG-15	23-AUG-15	23-AUG-15	
	Sampled Time					
	Client ID	NEM-3	NEM-4	NEM-5	NEM-COMP	AMARUQ DUP-1
SOIL						
Physical Tests	Moisture (%)	90.9	91.3	86.8	90.0	84.3
	pH (1:2 soil:water) (pH)	6.32	6.45	6.49		5.47
Particle Size	% Gravel (>2mm) (%)	<0.10	<0.10	<0.10		0.34
	% Sand (2.0mm - 0.063mm) (%)	19.2	19.0	44.0		4.54
	% Silt (0.063mm - 4um) (%)	76.4	77.4	53.3		82.8
	% Clay (<4um) (%)	4.42	3.60	2.63		12.3
	Texture	Silt loam	Silt loam	Silt loam		Silt
Organic / Inorganic Carbon	Total Organic Carbon (%)	11.1	10.9	5.49		4.61
Metals	Aluminum (Al) (mg/kg)	10800	9990	9610		14300
	Antimony (Sb) (mg/kg)	0.35	0.36	0.20		0.22
	Arsenic (As) (mg/kg)	46.4	79.9	26.1		557
	Barium (Ba) (mg/kg)	91.3	99.3	64.3		92.2
	Beryllium (Be) (mg/kg)	0.59	0.55	0.47		1.09
	Bismuth (Bi) (mg/kg)	0.21	0.22	<0.20		0.40
	Boron (B) (mg/kg)	12.5	13.5	7.7		5.3
	Cadmium (Cd) (mg/kg)	0.221	0.201	0.144		0.137
	Calcium (Ca) (mg/kg)	3690	3160	2280		1720
	Chromium (Cr) (mg/kg)	110	104	106		92.4
	Cobalt (Co) (mg/kg)	7.96	10.2	6.77		19.7
	Copper (Cu) (mg/kg)	36.4	33.1	27.5		33.6
	Iron (Fe) (mg/kg)	23800	32500	18000		122000
	Lead (Pb) (mg/kg)	8.35	8.60	7.16		10.4
	Lithium (Li) (mg/kg)	10.0	8.5	8.5		10.5
	Magnesium (Mg) (mg/kg)	6590	6130	6480		6000
	Manganese (Mn) (mg/kg)	302	861	301		1960
	Mercury (Hg) (mg/kg)	0.0289	0.0320	0.0213		0.0542
	Molybdenum (Mo) (mg/kg)	2.50	3.17	2.99		4.88
	Nickel (Ni) (mg/kg)	78.4	85.5	66.1		57.8
	Phosphorus (P) (mg/kg)	664	736	498		1680
	Potassium (K) (mg/kg)	1460	1380	1230		1950
	Selenium (Se) (mg/kg)	0.51	0.56	0.36		0.71
	Silver (Ag) (mg/kg)	0.16	0.13	0.11		0.20
	Sodium (Na) (mg/kg)	555	522	297		222
	Strontium (Sr) (mg/kg)	26.7	24.1	20.4		18.1
	Thallium (Tl) (mg/kg)	0.079	0.081	0.064		0.130
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0		<2.0
	Titanium (Ti) (mg/kg)	258	241	261		363

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1669874-31	L1669874-32	L1669874-33	L1669874-38	
	Description	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	
	Sampled Date					
	Sampled Time					
	Client ID	AMARUQ DUP-2	AMARUQ DUP-3	AMARUQ DUP-4	AMARUQ-COMP-DUP	
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	85.6	91.3	90.4	91.2	
	pH (1:2 soil:water) (pH)	5.83	6.37	6.27		
Particle Size	% Gravel (>2mm) (%)	<0.10	<0.10	<0.10		
	% Sand (2.0mm - 0.063mm) (%)	5.12	17.2	0.50		
	% Silt (0.063mm - 4um) (%)	82.8	78.7	86.1		
	% Clay (<4um) (%)	12.0	4.18	13.4		
	Texture	Silt	Silt loam	Silt		
Organic / Inorganic Carbon	Total Organic Carbon (%)	5.33	9.18	11.7		
Metals	Aluminum (Al) (mg/kg)	14500	10300	17200		
	Antimony (Sb) (mg/kg)	0.21	0.38	0.33		
	Arsenic (As) (mg/kg)	96.7	47.2	138		
	Barium (Ba) (mg/kg)	112	92.2	138		
	Beryllium (Be) (mg/kg)	1.26	0.68	1.34		
	Bismuth (Bi) (mg/kg)	0.49	0.25	0.45		
	Boron (B) (mg/kg)	7.0	13.0	19.8		
	Cadmium (Cd) (mg/kg)	0.383	0.273	0.258		
	Calcium (Ca) (mg/kg)	2270	3620	3370		
	Chromium (Cr) (mg/kg)	62.5	113	158		
	Cobalt (Co) (mg/kg)	15.8	8.06	11.4		
	Copper (Cu) (mg/kg)	36.5	39.7	63.1		
	Iron (Fe) (mg/kg)	64300	24500	43800		
	Lead (Pb) (mg/kg)	13.3	9.41	16.2		
	Lithium (Li) (mg/kg)	11.2	12.4	18.0		
	Magnesium (Mg) (mg/kg)	5620	6610	8570		
	Manganese (Mn) (mg/kg)	1850	304	389		
	Mercury (Hg) (mg/kg)	0.0746	0.0304	0.0874		
	Molybdenum (Mo) (mg/kg)	3.21	2.70	3.64		
	Nickel (Ni) (mg/kg)	71.5	83.7	99.8		
	Phosphorus (P) (mg/kg)	1560	656	876		
	Potassium (K) (mg/kg)	2100	1440	2780		
	Selenium (Se) (mg/kg)	0.67	0.57	0.66		
	Silver (Ag) (mg/kg)	0.24	0.20	0.42		
	Sodium (Na) (mg/kg)	284	503	342		
	Strontium (Sr) (mg/kg)	22.1	27.1	23.7		
	Thallium (Tl) (mg/kg)	0.190	0.090	0.215		
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0		
	Titanium (Ti) (mg/kg)	403	247	457		

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1669874-1	L1669874-2	L1669874-3	L1669874-4	L1669874-5
	Description	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste
	Sampled Date	22-AUG-15	22-AUG-15	22-AUG-15	22-AUG-15	22-AUG-15
	Sampled Time					
	Client ID	WTN-EX-1	WTN-EX-2	WTN-EX-3	WTN-EX-4	WTN-EX-5
SOIL						
Metals	Uranium (U) (mg/kg)	8.05	12.3	7.72	8.27	10.2
	Vanadium (V) (mg/kg)	30.5	38.4	29.3	32.3	34.3
	Zinc (Zn) (mg/kg)	85.4	112	86.1	90.1	107
	Zirconium (Zr) (mg/kg)	1.3	1.7	1.6	1.4	1.6
Aggregate Organics	Mineral Oil and Grease (mg/kg)					
Hydrocarbons	EPH10-19 (mg/kg)					
	EPH19-32 (mg/kg)					
	LEPH (mg/kg)					
	HEPH (mg/kg)					
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)					
	Acenaphthylene (mg/kg)					
	Anthracene (mg/kg)					
	Benz(a)anthracene (mg/kg)					
	Benzo(a)pyrene (mg/kg)					
	Benzo(b)fluoranthene (mg/kg)					
	Benzo(b+j+k)fluoranthene (mg/kg)					
	Benzo(g,h,i)perylene (mg/kg)					
	Benzo(k)fluoranthene (mg/kg)					
	Chrysene (mg/kg)					
	Dibenz(a,h)anthracene (mg/kg)					
	Fluoranthene (mg/kg)					
	Fluorene (mg/kg)					
	Indeno(1,2,3-c,d)pyrene (mg/kg)					
	2-Methylnaphthalene (mg/kg)					
	Naphthalene (mg/kg)					
	Phenanthrene (mg/kg)					
	Pyrene (mg/kg)					
	Surrogate: Acenaphthene d10 (%)					
	Surrogate: Chrysene d12 (%)					
	Surrogate: Naphthalene d8 (%)					
	Surrogate: Phenanthrene d10 (%)					
	B(a)P Total Potency Equivalent (mg/kg)					
	IACR (CCME) (mg/kg)					

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-6 Soil/Sed/Waste 22-AUG-15 WTN-1	L1669874-7 Soil/Sed/Waste 22-AUG-15 WTN-2	L1669874-8 Soil/Sed/Waste 22-AUG-15 WTN-3	L1669874-9 Soil/Sed/Waste 22-AUG-15 WTN-4	L1669874-10 Soil/Sed/Waste 22-AUG-15 WTN-5
Grouping	**Analyte**					
SOIL						
Metals	Uranium (U) (mg/kg)	8.78	8.47	9.22	9.64	9.21
	Vanadium (V) (mg/kg)	23.7	22.4	25.9	25.3	23.5
	Zinc (Zn) (mg/kg)	88.1	99.3	79.1	96.2	92.8
	Zirconium (Zr) (mg/kg)	<1.0	1.3	1.2	1.3	1.2
Aggregate Organics	Mineral Oil and Grease (mg/kg)					
Hydrocarbons	EPH10-19 (mg/kg)					
	EPH19-32 (mg/kg)					
	LEPH (mg/kg)					
	HEPH (mg/kg)					
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)					
	Acenaphthylene (mg/kg)					
	Anthracene (mg/kg)					
	Benz(a)anthracene (mg/kg)					
	Benzo(a)pyrene (mg/kg)					
	Benzo(b)fluoranthene (mg/kg)					
	Benzo(b+j+k)fluoranthene (mg/kg)					
	Benzo(g,h,i)perylene (mg/kg)					
	Benzo(k)fluoranthene (mg/kg)					
	Chrysene (mg/kg)					
	Dibenz(a,h)anthracene (mg/kg)					
	Fluoranthene (mg/kg)					
	Fluorene (mg/kg)					
	Indeno(1,2,3-c,d)pyrene (mg/kg)					
	2-Methylnaphthalene (mg/kg)					
	Naphthalene (mg/kg)					
	Phenanthrene (mg/kg)					
	Pyrene (mg/kg)					
	Surrogate: Acenaphthene d10 (%)					
	Surrogate: Chrysene d12 (%)					
	Surrogate: Naphthalene d8 (%)					
	Surrogate: Phenanthrene d10 (%)					
	B(a)P Total Potency Equivalent (mg/kg)					
	IACR (CCME) (mg/kg)					

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		L1669874-11	L1669874-12	L1669874-13	L1669874-14	L1669874-15
	Sample ID	L1669874-11	L1669874-12	L1669874-13	L1669874-14	L1669874-15
	Description	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste
	Sampled Date	22-AUG-15	21-AUG-15	21-AUG-15	21-AUG-15	21-AUG-15
	Sampled Time					
	Client ID	WTN-COMP	WTS-1	WTS-2	WTS-3	WTS-4
Grouping	**Analyte**					
SOIL						
Metals	Uranium (U) (mg/kg)		9.53	12.3	11.2	11.1
	Vanadium (V) (mg/kg)		24.3	26.9	26.5	25.6
	Zinc (Zn) (mg/kg)		86.7	99.2	87.9	89.8
	Zirconium (Zr) (mg/kg)		1.2	1.4	1.9	1.3
Aggregate Organics	Mineral Oil and Grease (mg/kg)	DLHM <525				
Hydrocarbons	EPH10-19 (mg/kg)	DLHM <820				
	EPH19-32 (mg/kg)	DLHM <820				
	LEPH (mg/kg)	<820				
	HEPH (mg/kg)	<820				
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	DLHM <0.010				
	Acenaphthylene (mg/kg)	DLHM <0.010				
	Anthracene (mg/kg)	DLHM <0.0080				
	Benz(a)anthracene (mg/kg)	DLHM <0.020				
	Benzo(a)pyrene (mg/kg)	DLHM <0.020				
	Benzo(b)fluoranthene (mg/kg)	DLHM <0.020				
	Benzo(b+j+k)fluoranthene (mg/kg)	<0.028				
	Benzo(g,h,i)perylene (mg/kg)	DLHM <0.020				
	Benzo(k)fluoranthene (mg/kg)	DLHM <0.020				
	Chrysene (mg/kg)	DLHM <0.020				
	Dibenz(a,h)anthracene (mg/kg)	DLHM <0.010				
	Fluoranthene (mg/kg)	DLHM <0.020				
	Fluorene (mg/kg)	DLHM <0.020				
	Indeno(1,2,3-c,d)pyrene (mg/kg)	DLHM <0.020				
	2-Methylnaphthalene (mg/kg)	DLHM <0.020				
	Naphthalene (mg/kg)	DLHM <0.020				
	Phenanthrene (mg/kg)	DLHM <0.020				
	Pyrene (mg/kg)	DLHM <0.020				
	Surrogate: Acenaphthene d10 (%)	95.2				
	Surrogate: Chrysene d12 (%)	113.5				
	Surrogate: Naphthalene d8 (%)	90.2				
	Surrogate: Phenanthrene d10 (%)	108.6				
	B(a)P Total Potency Equivalent (mg/kg)	<0.020				
	IACR (CCME) (mg/kg)	<0.21				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1669874-16	L1669874-17	L1669874-18	L1669874-19	L1669874-20
	Description	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste
	Sampled Date	21-AUG-15	21-AUG-15	24-AUG-15	24-AUG-15	24-AUG-15
	Sampled Time					
	Client ID	WTS-5	WTS-COMP	MAM-1	MAM-2	MAM-3
SOIL						
Metals	Uranium (U) (mg/kg)	10.3		11.5	11.8	13.8
	Vanadium (V) (mg/kg)	25.6		39.5	39.6	43.3
	Zinc (Zn) (mg/kg)	84.4		110	109	129
	Zirconium (Zr) (mg/kg)	1.1		4.2	3.7	3.5
Aggregate Organics	Mineral Oil and Grease (mg/kg)		1690			
Hydrocarbons	EPH10-19 (mg/kg)		<680 DLHM			
	EPH19-32 (mg/kg)		<680 DLHM			
	LEPH (mg/kg)		<680			
	HEPH (mg/kg)		<680			
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)		<0.0050			
	Acenaphthylene (mg/kg)		<0.0050			
	Anthracene (mg/kg)		<0.0040			
	Benz(a)anthracene (mg/kg)		<0.010			
	Benzo(a)pyrene (mg/kg)		<0.010			
	Benzo(b)fluoranthene (mg/kg)		<0.010			
	Benzo(b+j+k)fluoranthene (mg/kg)		<0.015			
	Benzo(g,h,i)perylene (mg/kg)		<0.010			
	Benzo(k)fluoranthene (mg/kg)		<0.010			
	Chrysene (mg/kg)		<0.010			
	Dibenz(a,h)anthracene (mg/kg)		<0.0050			
	Fluoranthene (mg/kg)		<0.010			
	Fluorene (mg/kg)		<0.010			
	Indeno(1,2,3-c,d)pyrene (mg/kg)		<0.010			
	2-Methylnaphthalene (mg/kg)		<0.010			
	Naphthalene (mg/kg)		<0.010			
	Phenanthrene (mg/kg)		<0.010			
	Pyrene (mg/kg)		<0.010			
	Surrogate: Acenaphthene d10 (%)		97.0			
	Surrogate: Chrysene d12 (%)		121.5			
	Surrogate: Naphthalene d8 (%)		92.2			
	Surrogate: Phenanthrene d10 (%)		114.2			
	B(a)P Total Potency Equivalent (mg/kg)		<0.020			
	IACR (CCME) (mg/kg)		<0.15			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1669874-21 Soil/Sed/Waste 24-AUG-15 MAM-4	L1669874-22 Soil/Sed/Waste 24-AUG-15 MAM-5	L1669874-23 Soil/Sed/Waste 24-AUG-15 MAM-COMP	L1669874-24 Soil/Sed/Waste 23-AUG-15 NEM-1	L1669874-25 Soil/Sed/Waste 23-AUG-15 NEM-2
Grouping	**Analyte**					
SOIL						
Metals	Uranium (U) (mg/kg)	10.6	11.1		4.08	2.46
	Vanadium (V) (mg/kg)	35.5	38.4		24.1	19.4
	Zinc (Zn) (mg/kg)	99.0	110		59.7	44.3
	Zirconium (Zr) (mg/kg)	4.2	4.4		<1.0	<1.0
Aggregate Organics	Mineral Oil and Grease (mg/kg)			1960		
Hydrocarbons	EPH10-19 (mg/kg)			DLHM <1100		
	EPH19-32 (mg/kg)			DLHM <1100		
	LEPH (mg/kg)			<1100		
	HEPH (mg/kg)			<1100		
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)			DLHM <0.015		
	Acenaphthylene (mg/kg)			DLHM <0.015		
	Anthracene (mg/kg)			DLHM <0.012		
	Benz(a)anthracene (mg/kg)			DLHM <0.030		
	Benzo(a)pyrene (mg/kg)			DLHM <0.030		
	Benzo(b)fluoranthene (mg/kg)			DLHM <0.030		
	Benzo(b+j+k)fluoranthene (mg/kg)			<0.042		
	Benzo(g,h,i)perylene (mg/kg)			DLHM <0.030		
	Benzo(k)fluoranthene (mg/kg)			DLHM <0.030		
	Chrysene (mg/kg)			DLHM <0.030		
	Dibenz(a,h)anthracene (mg/kg)			DLHM <0.015		
	Fluoranthene (mg/kg)			DLHM <0.030		
	Fluorene (mg/kg)			DLHM <0.030		
	Indeno(1,2,3-c,d)pyrene (mg/kg)			DLHM <0.030		
	2-Methylnaphthalene (mg/kg)			DLHM <0.030		
	Naphthalene (mg/kg)			DLHM <0.030		
	Phenanthrene (mg/kg)			DLHM <0.030		
	Pyrene (mg/kg)			DLHM <0.030		
	Surrogate: Acenaphthene d10 (%)			87.7		
	Surrogate: Chrysene d12 (%)			115.7		
	Surrogate: Naphthalene d8 (%)			78.1		
	Surrogate: Phenanthrene d10 (%)			108.1		
	B(a)P Total Potency Equivalent (mg/kg)			<0.029		
	IACR (CCME) (mg/kg)			<0.32		

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID / Description / Sampled Date / Sampled Time / Client ID	L1669874-26 Soil/Sed/Waste 23-AUG-15 NEM-3	L1669874-27 Soil/Sed/Waste 23-AUG-15 NEM-4	L1669874-28 Soil/Sed/Waste 23-AUG-15 NEM-5	L1669874-29 Soil/Sed/Waste 23-AUG-15 NEM-COMP	L1669874-30 Soil/Sed/Waste AMARUQ DUP-1
Grouping	**Analyte**					
SOIL						
Metals	Uranium (U) (mg/kg)	3.61	3.52	3.00		8.06
	Vanadium (V) (mg/kg)	23.1	21.9	21.2		24.7
	Zinc (Zn) (mg/kg)	54.2	54.7	44.6		75.2
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0		<1.0
Aggregate Organics	Mineral Oil and Grease (mg/kg)				2990	
Hydrocarbons	EPH10-19 (mg/kg)				DLHM <880	
	EPH19-32 (mg/kg)				DLHM <880	
	LEPH (mg/kg)				<880	
	HEPH (mg/kg)				<880	
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)				DLHM <0.010	
	Acenaphthylene (mg/kg)				DLHM <0.010	
	Anthracene (mg/kg)				DLHM <0.0080	
	Benz(a)anthracene (mg/kg)				DLHM <0.020	
	Benzo(a)pyrene (mg/kg)				DLHM <0.020	
	Benzo(b)fluoranthene (mg/kg)				DLHM <0.020	
	Benzo(b+j+k)fluoranthene (mg/kg)				<0.028	
	Benzo(g,h,i)perylene (mg/kg)				DLHM <0.020	
	Benzo(k)fluoranthene (mg/kg)				DLHM <0.020	
	Chrysene (mg/kg)				DLHM <0.020	
	Dibenz(a,h)anthracene (mg/kg)				DLHM <0.010	
	Fluoranthene (mg/kg)				DLHM <0.020	
	Fluorene (mg/kg)				DLHM <0.020	
	Indeno(1,2,3-c,d)pyrene (mg/kg)				DLHM <0.020	
	2-Methylnaphthalene (mg/kg)				DLHM <0.020	
	Naphthalene (mg/kg)				DLHM <0.020	
	Phenanthrene (mg/kg)				DLHM <0.020	
	Pyrene (mg/kg)				DLHM <0.020	
	Surrogate: Acenaphthene d10 (%)				94.4	
	Surrogate: Chrysene d12 (%)				122.1	
	Surrogate: Naphthalene d8 (%)				85.3	
	Surrogate: Phenanthrene d10 (%)				115.2	
	B(a)P Total Potency Equivalent (mg/kg)				<0.020	
	IACR (CCME) (mg/kg)				<0.21	

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1669874-31	L1669874-32	L1669874-33	L1669874-38	
	Description	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	Soil/Sed/Waste	
	Sampled Date					
	Sampled Time					
	Client ID	AMARUQ DUP-2	AMARUQ DUP-3	AMARUQ DUP-4	AMARUQ-COMP-DUP	
Grouping	**Analyte**					
SOIL						
Metals	Uranium (U) (mg/kg)	9.31	4.18	11.9		
	Vanadium (V) (mg/kg)	23.6	23.4	38.6		
	Zinc (Zn) (mg/kg)	82.7	57.7	106		
	Zirconium (Zr) (mg/kg)	<1.0	1.6	4.0		
Aggregate Organics	Mineral Oil and Grease (mg/kg)				1010	
Hydrocarbons	EPH10-19 (mg/kg)				DLHM <1000	
	EPH19-32 (mg/kg)				DLHM <1000	
	LEPH (mg/kg)				<1000	
	HEPH (mg/kg)				<1000	
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)				DLHM <0.015	
	Acenaphthylene (mg/kg)				DLHM <0.015	
	Anthracene (mg/kg)				DLHM <0.012	
	Benz(a)anthracene (mg/kg)				DLHM <0.030	
	Benzo(a)pyrene (mg/kg)				DLHM <0.030	
	Benzo(b)fluoranthene (mg/kg)				DLHM <0.030	
	Benzo(b+j+k)fluoranthene (mg/kg)				<0.042	
	Benzo(g,h,i)perylene (mg/kg)				DLHM <0.030	
	Benzo(k)fluoranthene (mg/kg)				DLHM <0.030	
	Chrysene (mg/kg)				DLHM <0.030	
	Dibenz(a,h)anthracene (mg/kg)				DLHM <0.015	
	Fluoranthene (mg/kg)				DLHM <0.030	
	Fluorene (mg/kg)				DLHM <0.030	
	Indeno(1,2,3-c,d)pyrene (mg/kg)				DLHM <0.030	
	2-Methylnaphthalene (mg/kg)				DLHM <0.030	
	Naphthalene (mg/kg)				DLHM <0.030	
	Phenanthrene (mg/kg)				DLHM <0.030	
	Pyrene (mg/kg)				DLHM <0.030	
	Surrogate: Acenaphthene d10 (%)				90.8	
	Surrogate: Chrysene d12 (%)				115.6	
	Surrogate: Naphthalene d8 (%)				85.0	
	Surrogate: Phenanthrene d10 (%)				108.4	
	B(a)P Total Potency Equivalent (mg/kg)				<0.029	
	IACR (CCME) (mg/kg)				<0.32	

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	EPH10-19	DLHM	L1669874-11, -17, -23, -29, -38
Duplicate	EPH19-32	DLHM	L1669874-11, -17, -23, -29, -38
Laboratory Control Sample	Silver (Ag)-Total	LCS-L	L1669874-34, -35, -36, -37

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHM	Detection Limit Adjusted: Sample has High Moisture Content
LCS-L	Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
RRR	Refer to Report Remarks for issues regarding this analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AIR VOLUME-VA	Misc.	Air volume (L)	HYGIENE METHOD
C-TOT-ORG-LECO-SK	Soil	Organic Carbon by combustion method	SSSA (1996) p. 973

Total Organic Carbon (C-TOT-ORG-LECO-SK, C-TOT-ORG-SK)

Total C and inorganic C are determined on separate samples. The total C is determined by combustion and thermal conductivity detection, while inorganic C is determined by weight lass after addition of hydrochloric acid. Organic C is calculated by the difference between these two determinations.

Reference for Total C:
Nelson, D.W. and Sommers, L.E. 1996. Total Carbon, organic carbon and organic matter. P. 961-1010 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5

Reference for Inorganic C:
Loeppert, R.H. and Suarez, D.L. 1996. Gravimetric Method for Loss of Carbon Dioxide. P. 455-456 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5

EPH-TUMB-FID-VA	Soil	EPH in Solids by Tumbler and GCFID	BC MOE EPH GCFID

Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Solids by GC/FID", v2.1, July 1999. Soil samples are extracted with a 1:1 mixture of hexane and acetone using a rotary extraction technique modified from EPA 3570 prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

LEPH/HEPH-CALC-VA	Soil	LEPHs and HEPHs	BC MOE LABORATORY MANUAL (2005)

Light and Heavy Extractable Petroleum Hydrocarbons in Solids. These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Light and Heavy Extractable Petroleum Hydrocarbons in Solids or Water". According to this method, LEPH and HEPH are calculated
by subtracting selected Polycyclic Aromatic Hydrocarbon results from Extractable Petroleum Hydrocarbon results. To calculate LEPH, the individual results for Naphthalene and Phenanthrene are subtracted from EPH(C10-19). To calculate HEPH, the individual results for Benz(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, and Pyrene
are subtracted from EPH(C19-32). Analysis of Extractable Petroleum Hydrocarbons adheres to all prescribed elements of the BCMELP method "Extractable Petroleum Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

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

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

MET-AR-MG-ICP-VA	Filter	Metals in Filter by ICPOES	NIOSH 7303/EPA 6010B

This analysis is carried out using procedures adapted from Method 7303 in the NIOSH Manual of Analytcial Methods (NMAM). The procedure involves a hot block digestion of the filter media, using a combination of nitric acid and hydrochloric acid. Instrumental analysis of the filter extract is by inductively coupled plasma - optical emission spectrophotometry (EPA 6010B).

MOISTURE-VA	Soil	Moisture content	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

OGG-TUMB-SG-VA	Soil	CWS MOG with Silica Gel	CCME PETROLEUM HYDROCARBONS-

Reference Information

GRAVIMETRIC

This analysis is carried out in accordance with the "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method, Canadian Council of Ministers of the Environment, December 2000." A subsample of the sediment/soil is extracted with 1:1 hexane:acetone using a rotary extraction apparatus. The extract undergoes a silica-gel clean-up to remove polar compounds, and is analyzed gravimetrically. Mineral Oil and Grease is equivalent to fraction F4G of the Canada-wide Standard for Petroleum Hydrocarbons.

Accuracy target values for Reference Materials used in this method are derived from averages of long-term method performance, as certified values do not exist for the reported parameters.

PAH-TMB-H/A-MS-VA	Soil	PAH - Rotary Extraction (Hexane/Acetone)	EPA 3570/8270

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3570 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses a mechanical shaking technique to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is then solvent exchanged to toluene. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS). Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation. Because the two isomers cannot be readily chromatographically separated, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PSA-PIPET+GRAVEL-SK	Soil	Particle size - Sieve and Pipette	SSIR-51 METHOD 3.2.1

Particle size distribution is determined by a combination of techniques. Dry sieving is performed for coarse particles, wet sieving for sand particles and the pipette sedimentation method for clay particles.

Reference:

Burt, R. (2009). Soil Survey Field and Laboratory Methods Manual. Soil Survey Investigations Report No. 5. Method 3.2.1.2.2. United States Department of Agriculture Natural Resources Conservation Service.

** 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, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

2	3	OL-1767

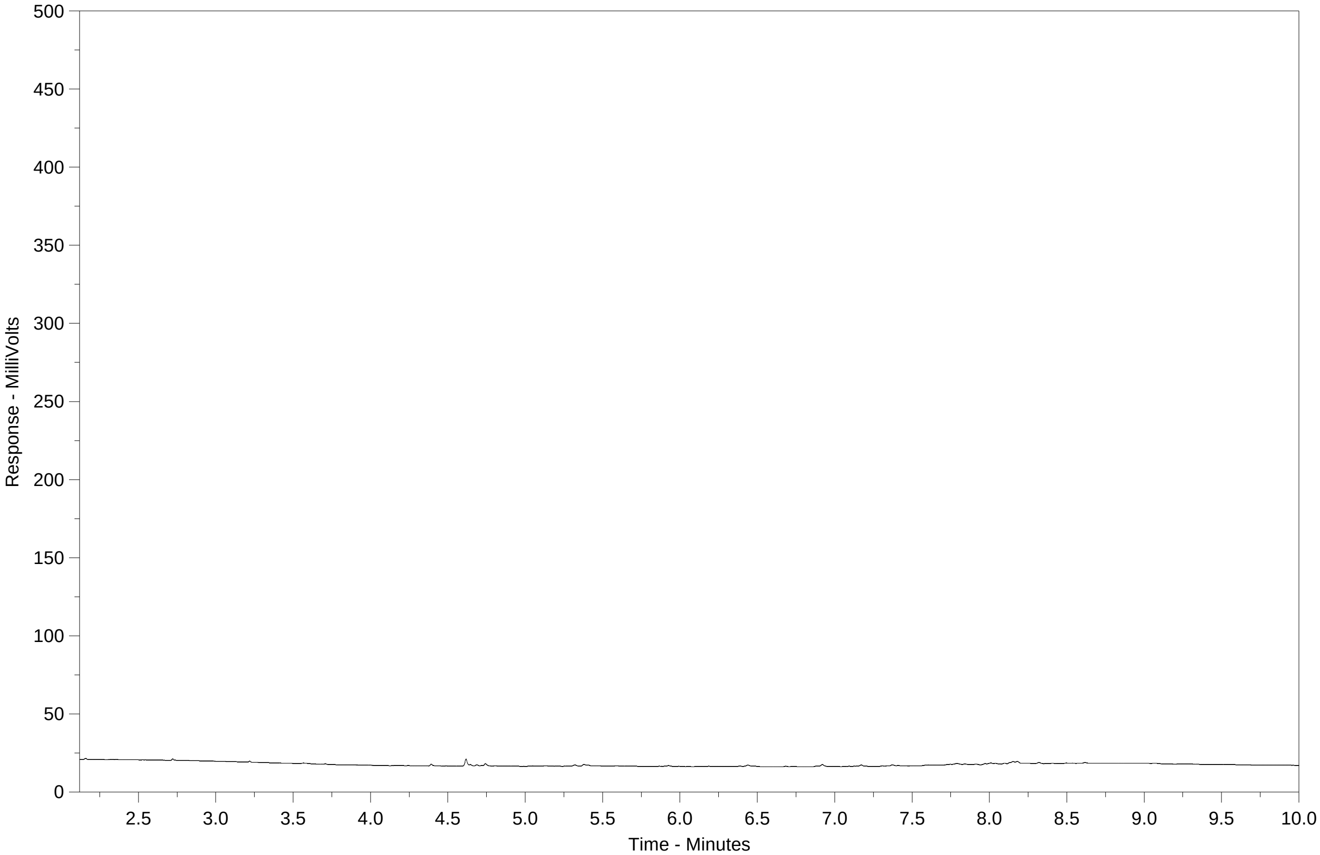
GLOSSARY OF REPORT TERMS

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.

Hydrocarbon Distribution Report

ALS Sample ID: L1669874-11
Client Sample ID: WTN-COMP



nC10	nC19	nC32
174°C 346°F	330°C 626°F	467°C 873°F

← Gasoline →
← Motor Oils / Lube Oils / Grease →
← Diesel / Jet Fuels →

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

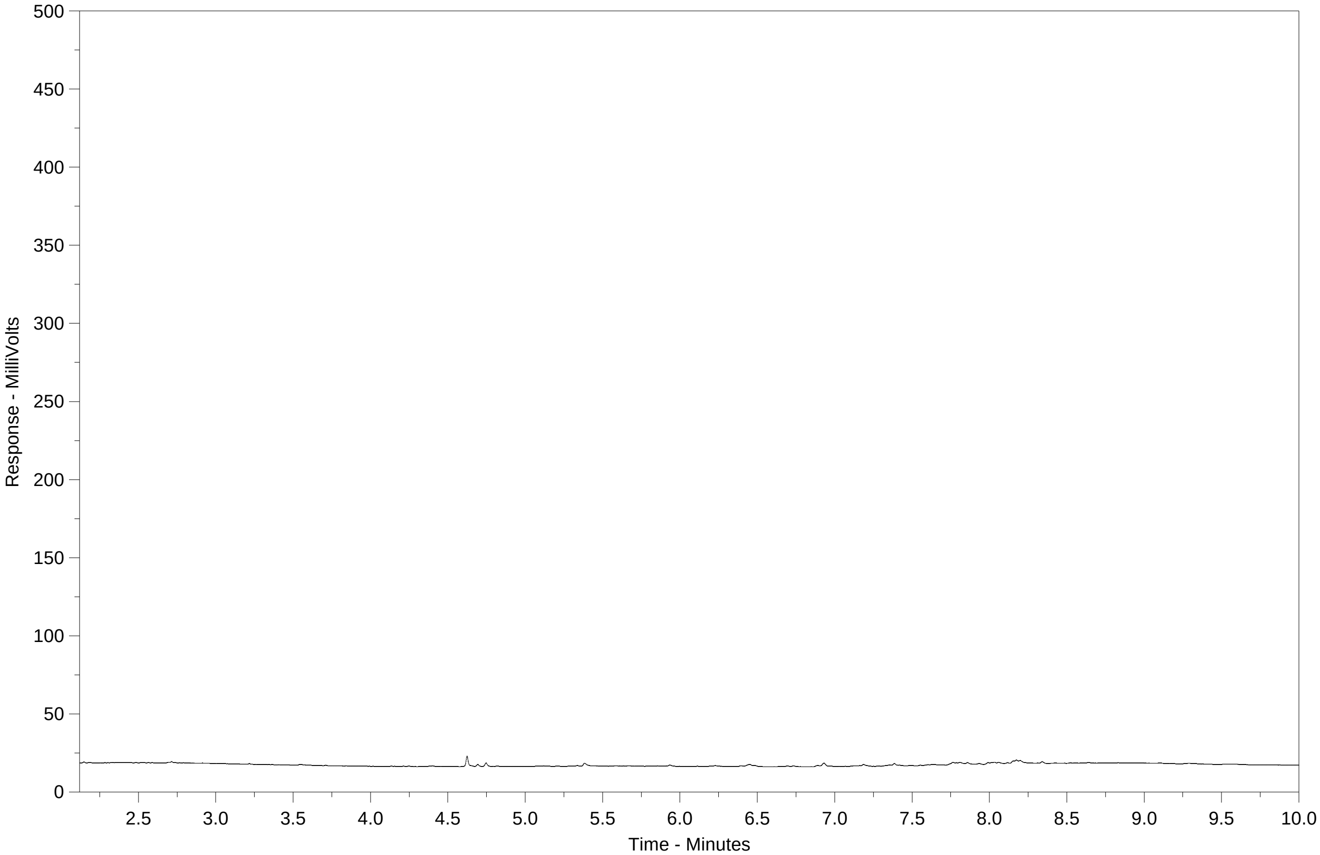
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

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

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

Hydrocarbon Distribution Report

ALS Sample ID: L1669874-17
Client Sample ID: WTS-COMP



nC10	nC19	nC32
174°C 346°F	330°C 626°F	467°C 873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

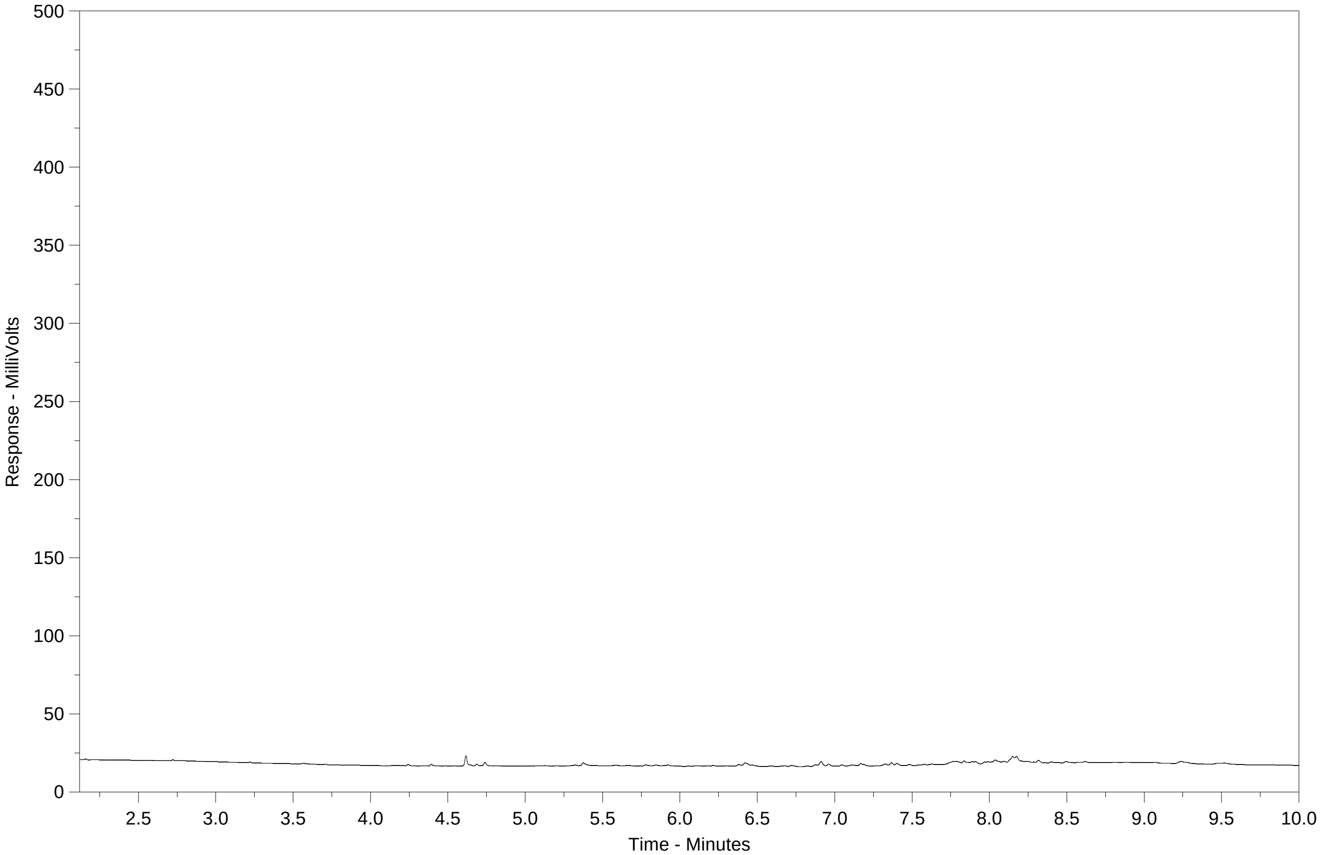
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

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

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

Hydrocarbon Distribution Report

ALS Sample ID: L1669874-23
Client Sample ID: MAM-COMP



nC10	nC19	nC32
174°C 346°F	330°C 626°F	467°C 873°F

← Gasoline →   ← Motor Oils / Lube Oils / Grease →
← Diesel / Jet Fuels →

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

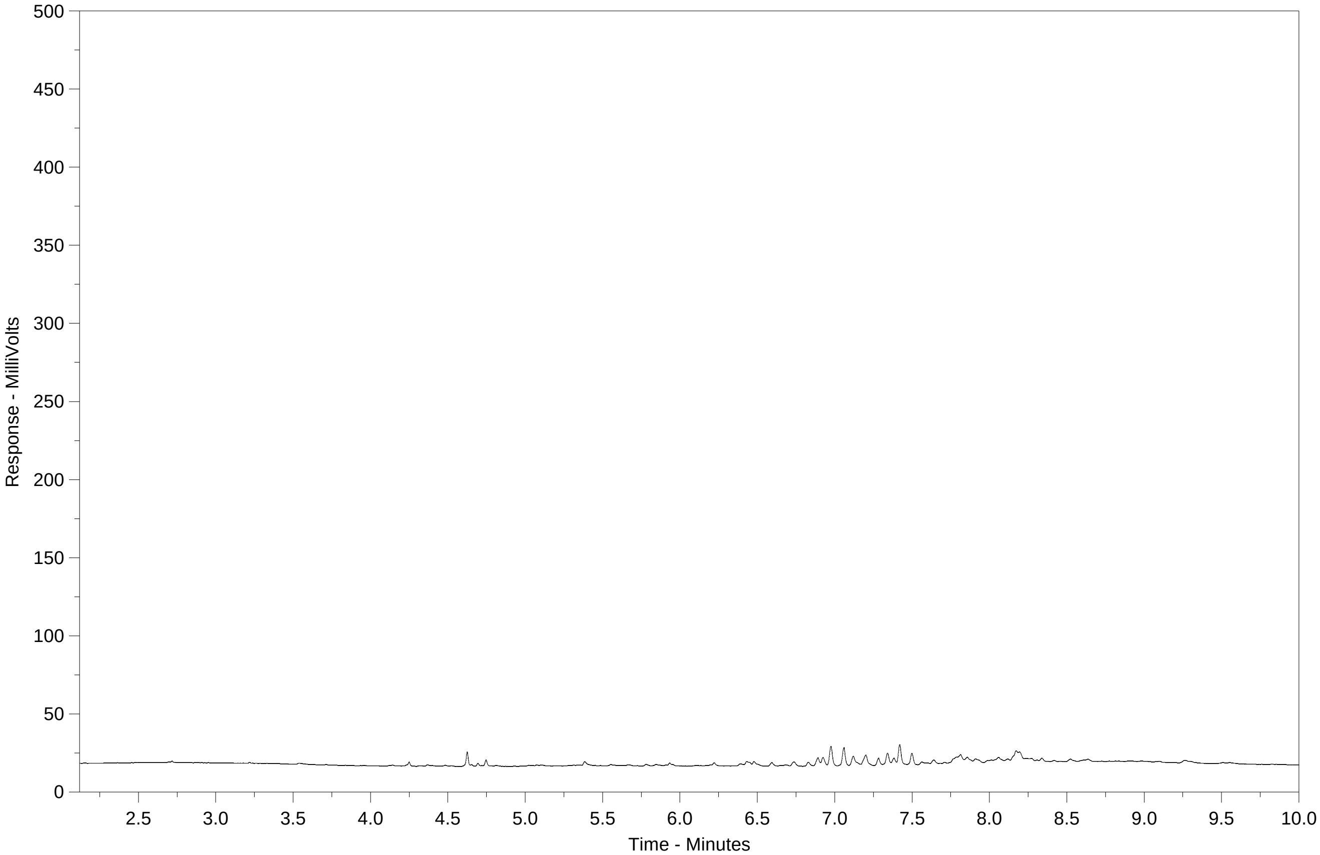
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

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

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

Hydrocarbon Distribution Report

ALS Sample ID: L1669874-29
Client Sample ID: NEM-COMP



nC10	nC19	nC32
174°C 346°F	330°C 626°F	467°C 873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

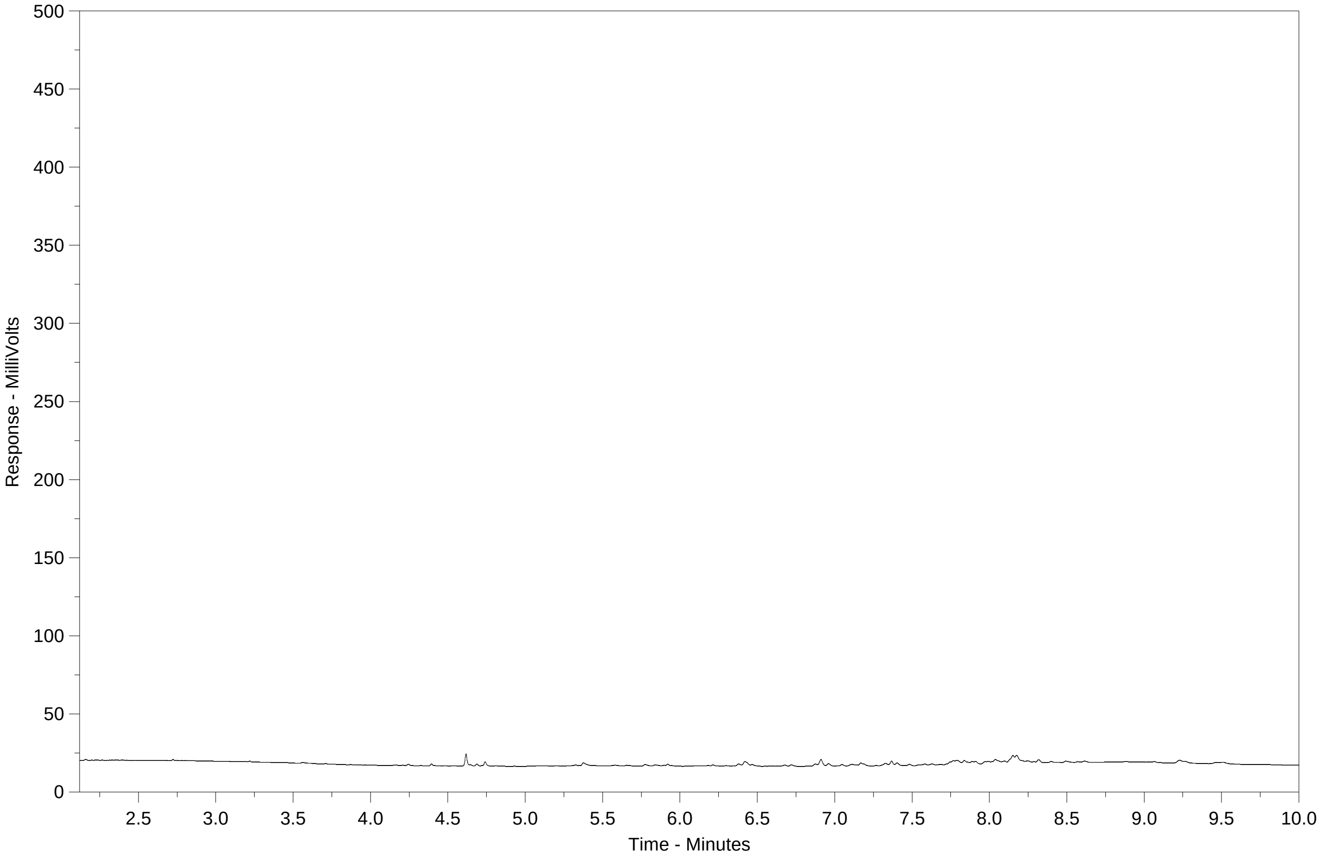
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

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

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

Hydrocarbon Distribution Report

ALS Sample ID: L1669874-38
Client Sample ID: AMARUQ-COMP-DUP



nC10	nC19	nC32
174°C 346°F	330°C 626°F	467°C 873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

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

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

ALS Environmental

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

COC #: OL-1767

Report To
Company: Azimuth Consulting Group
Contact: Maggie McConnell
Address: #218 - 2902 West Broadway, Vancouver, BC, Canada, V6K 2G8
Phone: 604-730-1220 Fax: 604-739-8511

Invoice To ☑Email ☐Mail
Company: Azimuth Consulting Group
Contact: Maggie McConnell
Address: #218 - 2902 West Broadway, Vancouver, BC, Canada, V6K 2G8
Email: mmcconnell@azimuthgroup.ca
Phone: 604-730-1220

Lab Work Order # (lab use only): L1669874

Reporting
Distribution: ☐Fax ☐Mail ☑Email
☐Ciriteria on Report (select from Guidelines below)
Report Type: ☑Excel ☐Digital
Report Format:
Report Email(s): gmann@azimuthgroup.ca, efranz@azimuthgroup.ca, mmcconnell@azimuthgroup.ca
EDD Format:
EDD Email(s):

Project Info
Job #: Amaruq Sediment
PO/AFE:
LSD:
Quote #: Q38011
ALS Contact: Brent Mack
Sampler:

Service Requested
◉ Regular (Standard Turnaround Times - Business Days) - R
○ Priority (3 Days) - surcharge will apply - P
○ Priority (2 Days) - surcharge will apply - P2
○ Emergency (1-2 day) – surcharge will apply - E
○ Same Day or Weekend Emergency - surcharge will apply - E2
○ Specify date required - X

Analysis Requests

Please indicate below Filtered ... F/P)

L1669874-COFC

Sample #	Sample Identification (This will appear on the report)	Longitude	Latitude	Date	Time	Sample Type	Number of Containers	Total metals, pH, Moisture	TOC, Grain size	PAHs, LEPHs, HEPHs, MOG	Total Metals
1	WTN-Ex-1			22 Aug 15		Soil/Sed/Waste	2	R	R		
2	WTN-Ex-2			"		Soil/Sed/Waste	2	R	R		
3	WTN-Ex-3			"		Soil/Sed/Waste	2	R	R		
4	WTN-Ex-4			"		Soil/Sed/Waste	2	R	R		
5	WTN-Ex-5			"		Soil/Sed/Waste	2	R	R		
6	WTN-1			"		Soil/Sed/Waste	2	R	R		
7	WTN-2			"		Soil/Sed/Waste	2	R	R		
8	WTN-3			"		Soil/Sed/Waste	2	R	R		

(See page 2 for further samples)

Special Instructions/Comments

The questions below must be answered for water samples (check Yes or No)
Are any sample taken from a regulated DW system? ☐Yes ☐No
If yes, please use an authorized drinking water COC
Is the water sampled intended to be potable for human consumption? ☐Yes ☐No

Guidelines

SAMPLE CONDITION (lab use only)
☐Frozen ☐Cold ☐Ambient ☐Cooling Initiated

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Eric Franz	Date: 31-Aug-15	Time: 10:26am	Received by: lady	Date: Sept. 9	Time: 9AM	Temperature: 17.9 16.1 16.8 17.8 °C	Verified by:	Date:	Time:	Observations: ☐Yes If Yes add SIF

ALS Environmental

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

COC #: OL-1767

Sample #	Sample Identification (This will appear on the report)	Coordinates Longitude	Coordinates Latitude	Date	Time	Sample Type	Number of Containers	Total metals, pH, Moisture	TOC, Grain size	PAHs, LEPHs, HEPHs, MOG	Total Metals
9	WTN-4			22-Aug-15		Soil/Sed/Waste	2	R	R		
10	WTN-5			"		Soil/Sed/Waste	2	R	R		
11	WTN-COMP			"		Soil/Sed/Waste	1			R	
12	WTS-1			21-Aug-15		Soil/Sed/Waste	2	R	R		
13	WTS-2			"		Soil/Sed/Waste	2	R	R		
14	WTS-3			"		Soil/Sed/Waste	2	R	R		
15	WTS-4			"		Soil/Sed/Waste	2	R	R		
16	WTS-5			"		Soil/Sed/Waste	2	R	R		
17	WTS-COMP			"		Soil/Sed/Waste	1			R	
18	MAM-1			24-Aug-15		Soil/Sed/Waste	2	R	R		
19	MAM-2			"		Soil/Sed/Waste	2	R	R		
20	MAM-3			"		Soil/Sed/Waste	2	R	R		
21	MAM-4			"		Soil/Sed/Waste	2	R	R		
22	MAM-5			"		Soil/Sed/Waste	2	R	R		
23	MAM-COMP			"		Soil/Sed/Waste	1			R	
24	NEM-1			23-Aug-15		Soil/Sed/Waste	2	R	R		
25	NEM-2			"		Soil/Sed/Waste	2	R	R		
26	NEM-3			"		Soil/Sed/Waste	2	R	R		
27	NEM-4			"		Soil/Sed/Waste	2	R	R		
28	NEM-5			"		Soil/Sed/Waste	2	R	R		
29	NEM-COMP			"		Soil/Sed/Waste	1			R	
30	AMARUQ DUP-1			N/A		Soil/Sed/Waste	2	R	R		
31	AMARUQ DUP-2			N/A		Soil/Sed/Waste	2	R	R		
32	AMARUQ DUP-3			N/A		Soil/Sed/Waste	2	R	R		
33	AMARUQ DUP-4			N/A		Soil/Sed/Waste	2	R	R		
34	AMARUQ SWPE-1			22-Aug-15		Filter	1				R
35	AMARUQ SWPE-2			21-Aug-15		Filter	1				R

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

L1669874-COFC

(See page 3 for further samples)

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free : 1 800 668 9878

www.alsglobal.com

Sample #	Sample Identification (This will appear on the report)	Coordinates: Longitude	Coordinates: Latitude	Date	Time	Sample Type	Number of Containers	Total metals, pH, Moisture	TOC, Grain size	PAHs, LEPHs, HEPHs, MOG	Total Metals													
								Please indicate below Filtered, Preserved or both(F, P, F/P)																
36	AMARUQ SWPE-3			24-Aug-15		Filter	1				R													
37	AMARUQ SWPE-4			24-Aug-15		Filter	1				R													
38	AMARUQ-COMP-DUP			N/A		Soil/Sed/Waste	1			R														

L1669874-COFC

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 28-SEP-15
Report Date: 05-OCT-15 12:21 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1679754

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACE WATER
C of C Numbers: 14-490824
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1679754-1	L1679754-2	L1679754-3	L1679754-4	L1679754-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	17-SEP-15	17-SEP-15	19-SEP-15	19-SEP-15	19-SEP-15
	Sampled Time	14:47	15:45	12:20	14:55	16:10
	Client ID	A34-A16	A16-A14	C58 OUTLET	A1-DS1	A17-A16
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	18.6	34.1	28.3	21.2	17.1
	pH (pH)	6.74	6.70	7.04	6.85	6.84
	Total Suspended Solids (mg/L)	10.5	3.2	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	14.8	23.5	15.9	14.0	10.2
	Turbidity (NTU)	14.9	0.31	0.25	0.81	0.22
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	5.4	4.3	6.6	6.3	5.7
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	5.4	4.3	6.6	6.3	5.7
	Bromide (Br) (mg/L)	<0.050	0.063	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	0.64	5.66	0.53	0.95	0.73
	Fluoride (F) (mg/L)	0.032	0.026	0.024	0.028	0.032
	Nitrate (as N) (mg/L)	0.0138	<0.0050	<0.0050	0.0107	0.0068
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0014	0.0012	0.0011	0.0014
	Phosphorus (P)-Total Dissolved (mg/L)	0.0026	<0.0020	<0.0020	0.0026	<0.0020
	Silicate (as SiO2) (mg/L)	1.38	0.65	<0.50	1.01	1.15
	Sulfate (SO4) (mg/L)	1.36	1.73	3.20	2.02	1.06

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1679754-6	L1679754-8			
	Description	Surface Water	Surface Water			
	Sampled Date	21-SEP-15	19-SEP-15			
	Sampled Time	12:38	14:56			
	Client ID	A13-A12	E5-E4			
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	27.6	20.8			
	pH (pH)	6.78	6.87			
	Total Suspended Solids (mg/L)	<1.0	1.1			
	Total Dissolved Solids (mg/L)	14.7	15.5			
	Turbidity (NTU)	0.36	0.77			
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	5.9	5.8			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	5.9	5.8			
	Bromide (Br) (mg/L)	<0.050	<0.050			
	Chloride (Cl) (mg/L)	2.08	0.96			
	Fluoride (F) (mg/L)	0.025	0.027			
	Nitrate (as N) (mg/L)	0.0139	0.0112			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0012	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020			
	Silicate (as SiO2) (mg/L)	0.99	0.89			
	Sulfate (SO4) (mg/L)	3.33	2.06			

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Nitrite (as N)	DLM	L1679754-1, -2, -3, -4, -5, -6
Duplicate	Nitrite (as N)	DLM	L1679754-1, -2, -3, -4, -5, -6
Duplicate	Fluoride (F)	DLM	L1679754-8
Duplicate	Nitrite (as N)	DLM	L1679754-8
Duplicate	Nitrite (as N)	DLM	L1679754-8
Matrix Spike	Orthophosphate-Dissolved (as P)	MS-B	L1679754-8

Qualifiers for Individual Parameters Listed:

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

Test Method References:

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

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

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

CL-L-IC-N-VA	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

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

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

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

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

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

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

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

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

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

P-TD-COL-VA	Water	Total Dissolved P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

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

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

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

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

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

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

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SILICATE-COL-VA	Water	Silicate by Colourimetric analysis	APHA 4500-SiO2 E.

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

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

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

Reference Information

TDS-LOW-VA	Water	Low Level TDS (3.0mg/L) by Gravimetric	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA	Water	Total Suspended Solids by Grav. (1 mg/L)	APHA 2540D

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

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

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

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

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

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

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

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

Chain of Custody Numbers:

14-490824

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1679754-COFC

COC Number: 14 - 490824

Page 1 of 1

Report To	
Company:	AZIMUTH CONSULTING GROUP
Contact:	ERIC FRANZ
Address:	218 - 2902 WEST BROADWAY, VANCOUVER, BC V6K 2G8
Phone:	~~(604) 730-1220~~ (604) 730-1220

Report Format / Distribution	
Select Report Format:	☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☐ Yes ☐ No
☐ Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	efranz@azimuthgroup.ca
Email 2	ryan.vanengen@agnicoeagle.com

Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)

R	☒	Regular (Standard TAT if received by 3pm)
P	☐	Priority (2-4 business days if received by 3pm)
E	☐	Emergency (1-2 business days if received by 3pm)
E2	☐	Same day or weekend emergency if received by 10am ~ contact ALS for surcharge.

Specify Date Required for E2,E or P:

Invoice To	
Same as Report To	☑ Yes ☐ No
Copy of Invoice with Report	☐ Yes ☑ No
Company:	
Contact:	

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Project Information	
ALS Quote #:	
Job #:	[redacted] AMARUQ SURFACE WATER
PO / AFE:	
LSD:	
ALS Lab Work Order # (lab use only)	L1679754

Oil and Gas Required Fields (client use)	
Approver ID:	Cost Center:
GL Account:	Routing Code:
Activity Code:	
Location:	
ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

Short Holding Time

● Rush Processing

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Conventionals ** (see note)	TSS-LOW, TDS-LOW											Number of Containers
	A34 - A16	17-Sep-15	14:47	SURFACE WATER	X	X											2
	A16 - A14	17-Sep-15	15:45	↓	X	X											
	C58 OUTLET	19-Sep-15	12:20	↓	X	X											
	A1 - DS1	19-Sep-15	14:55	↓	X	X											
	A17 - A16	19-Sep-15	16:10	↓	X	X											
	A13 - A12	21-Sep-15	12:38	↓	X	X											
	E5 - E4	21-Sep-15	13:00	↓	X	X											

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

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

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

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

** CONVENTIONALS INCLUDE: ALK SPECIES, pH, EC, TURBIDITY, CONDUCTIVITY, ANIONS (F, NO_2, NO_3, Br, SO_4), LOW-LEVEL CHLORIDE, TD-P, SILICATE, AND ORTHO-PO_4

SAMPLE CONDITION AS RECEIVED (lab use only)

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

INITIAL COOLER TEMPERATURES °C:

FINAL COOLER TEMPERATURES °C: 14 / 14 / 13

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by: Shafee	Date: Sept. 28	Time: 1110

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY   YELLOW - CLIENT COPY

GA-FM-0326e v09 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 30-SEP-15
Report Date: 09-OCT-15 13:10 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1681194

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUA SURFACE WATER
C of C Numbers: 14-490825
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1681194-1	L1681194-2	L1681194-3	L1681194-4	L1681194-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	17-SEP-15	17-SEP-15	19-SEP-15	19-SEP-15	19-SEP-15
	Sampled Time	14:47	15:45	12:20	14:55	16:10
	Client ID	A34-A16	A16-A14	C58 OUTLET	A1-DS1	A17-A16
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	6.18	12.6	9.61	7.34	5.85
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	0.0064	<0.0050	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.173	0.150	0.129	0.179	0.293
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.76	13.2 RRV	1.83	1.94	1.84
	Total Organic Carbon (mg/L)	2.76	2.45 RRV	1.65	1.79	3.03
Total Metals	Aluminum (Al)-Total (mg/L)	0.491	0.0087	0.0039	0.0304	0.0053
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00035	0.00027	0.00026	0.00011	<0.00010
	Barium (Ba)-Total (mg/L)	0.00613	0.00508	0.00362	0.00377	0.00342
	Beryllium (Be)-Total (mg/L)	0.000038	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	1.04	3.07	2.18	1.85	1.37
	Chromium (Cr)-Total (mg/L)	0.00199	0.00014	<0.00010	0.00014	<0.00010
	Cobalt (Co)-Total (mg/L)	0.00028	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	0.00164	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.793	0.020	<0.010	0.070	0.030
	Lead (Pb)-Total (mg/L)	0.000536	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.97	0.92	0.99	0.59	0.52
	Manganese (Mn)-Total (mg/L)	0.00943	0.00313	0.00258	0.00154	0.00039
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	0.000065	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00201	0.00103	0.00480	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.49	0.40	0.56	0.45	0.34
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	1.41	0.266	0.211	0.486	0.522
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.605	0.574	0.489	0.607	0.644
	Strontium (Sr)-Total (mg/L)	0.00626	0.0223	0.00932	0.00811	0.00695
	Sulfur (S)-Total (mg/L)	<0.50	0.61	1.12	0.67	<0.50
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1681194-6	L1681194-7			
	Description	Surface Water	Surface Water			
	Sampled Date	21-SEP-15	21-SEP-15			
	Sampled Time	12:38	13:00			
	Client ID	A13-A12	E5-E4			
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	10.0	7.37			
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050			
	Total Kjeldahl Nitrogen (mg/L)	0.126	0.115			
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010			
	Cyanide, Free (mg/L)	<0.0010	<0.0010			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	3.45 RRV	2.23			
	Total Organic Carbon (mg/L)	1.57 RRV	1.87			
Total Metals	Aluminum (Al)-Total (mg/L)	0.0086	0.0238			
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00030	0.00011			
	Barium (Ba)-Total (mg/L)	0.00487	0.00364			
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020			
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050			
	Boron (B)-Total (mg/L)	<0.010	<0.010			
	Cadmium (Cd)-Total (mg/L)	0.0000107	<0.0000050			
	Calcium (Ca)-Total (mg/L)	2.53	1.86			
	Chromium (Cr)-Total (mg/L)	0.00015	0.00011			
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010			
	Copper (Cu)-Total (mg/L)	0.00063	<0.00050			
	Iron (Fe)-Total (mg/L)	0.022	0.062			
	Lead (Pb)-Total (mg/L)	0.000263	0.000059			
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010			
	Magnesium (Mg)-Total (mg/L)	0.86	0.61			
	Manganese (Mn)-Total (mg/L)	0.00081	0.00125			
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050			
	Nickel (Ni)-Total (mg/L)	0.00072	<0.00050			
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050			
	Potassium (K)-Total (mg/L)	0.57	0.47			
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050			
	Silicon (Si)-Total (mg/L)	0.434	0.473			
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Total (mg/L)	0.583	0.662			
	Strontium (Sr)-Total (mg/L)	0.0112	0.00807			
	Sulfur (S)-Total (mg/L)	1.15	0.68			
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte					
	Sample ID	L1681194-1	L1681194-2	L1681194-3	L1681194-4	L1681194-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	17-SEP-15	17-SEP-15	19-SEP-15	19-SEP-15	19-SEP-15
	Sampled Time	14:47	15:45	12:20	14:55	16:10
	Client ID	A34-A16	A16-A14	C58 OUTLET	A1-DS1	A17-A16
WATER						
Total Metals	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.0156	<0.00030	<0.00030	0.00081	<0.00030
	Uranium (U)-Total (mg/L)	0.000318	0.000027	<0.000010	0.000033	0.000017
	Vanadium (V)-Total (mg/L)	0.00081	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	0.0033	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	0.00039	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0452	0.0039	0.0021	0.0072	0.0023
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00019	0.00023	0.00026	0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.00339	DTC 0.00728	0.00387	DTC 0.00577	DTC 0.00418
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	1.08	3.40	2.22	1.93	1.46
	Chromium (Cr)-Dissolved (mg/L)	0.00040	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00090	0.00043	0.00025	0.00056	0.00034
	Iron (Fe)-Dissolved (mg/L)	0.085	<0.010	<0.010	0.021	0.012
	Lead (Pb)-Dissolved (mg/L)	0.000142	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.84	1.00	0.99	0.62	0.54
	Manganese (Mn)-Dissolved (mg/L)	0.00279	0.00180	0.00059	0.00083	0.00040
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000051	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00114	0.00104	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.38	0.45	0.59	0.45	0.38
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.675	0.285	0.208	0.458	0.543
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.687	0.625	0.491	0.735	DTC 0.801
	Strontium (Sr)-Dissolved (mg/L)	0.00591	0.0225	0.00909	0.00804	0.00690
	Sulfur (S)-Dissolved (mg/L)	<0.50	0.60	1.25	0.71	<0.50
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1681194-6	L1681194-7			
	Description	Surface Water	Surface Water			
	Sampled Date	21-SEP-15	21-SEP-15			
	Sampled Time	12:38	13:00			
	Client ID	A13-A12	E5-E4			
Grouping	**Analyte**					
WATER						
Total Metals	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)	0.00030	0.00068			
	Uranium (U)-Total (mg/L)	0.000017	0.000029			
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030			
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0032	0.0076			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00024	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.00548	0.00436			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	2.54	1.93			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	0.00055	0.00048			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.021			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	0.89	0.62			
	Manganese (Mn)-Dissolved (mg/L)	0.00043	0.00088			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	0.00065	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	0.58	0.48			
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	0.439	0.457			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	0.623	0.747			
	Strontium (Sr)-Dissolved (mg/L)	0.0112	0.00805			
	Sulfur (S)-Dissolved (mg/L)	1.11	0.69			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1681194-1	L1681194-2	L1681194-3	L1681194-4	L1681194-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	17-SEP-15	17-SEP-15	19-SEP-15	19-SEP-15	19-SEP-15
	Sampled Time	14:47	15:45	12:20	14:55	16:10
	Client ID	A34-A16	A16-A14	C58 OUTLET	A1-DS1	A17-A16
Grouping	**Analyte**					
WATER						
Dissolved Metals	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00011	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00109	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000143	0.000024	<0.000010	0.000024	0.000014
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0015	<0.0010	<0.0010	0.0012	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1681194-6	L1681194-7			
	Description	Surface Water	Surface Water			
	Sampled Date	21-SEP-15	21-SEP-15			
	Sampled Time	12:38	13:00			
	Client ID	A13-A12	E5-E4			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.000014	0.000023			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0012	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030			

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Total	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Total	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Total	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1681194-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Total Organic Carbon	MS-B	L1681194-1, -3, -4, -5, -7
Matrix Spike	Total Organic Carbon	MS-B	L1681194-2, -6
Matrix Spike	Dissolved Organic Carbon	MS-B	L1681194-2, -6

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)

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

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

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

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

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

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-FREE-L-CFA-VA	Water	Low Level Free Cyanide in water by CFA	ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

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

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

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents.

Reference Information

Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

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

Reference Information

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

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

14-490825

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

Canadian Locations (Toll Free 1-800-668-9878)

EMERGENCY SPILL RESPONSE: +1 855 838 LABS (5227)

...uver, BC		**Fort St. John, BC**	
... Lougheed Hwy		10345A Dogwood Street	
...aby, BC,	Ph: 604-253-4188	Fort St. John, BC	Ph: 250-261-5517
...A 1W9	Fax: 604-253-6700	V1J 6W7	Fax: 250-261-5587
		After Hours / Emergency	Ph: 250-261-4947
Kamloops, BC		**Fort Nelson, BC**	
1445 McGill Rd. Unit 2B		Airport Terminal Building	
Kamloops, BC	Ph: 250-372-3538	No.1 Cessna Way, Rm 108	Ph: 250-775-0929
V2C 6K7	Ph: 250-372-3670	Fort Nelson, BC	
After Hours / Emergency	Ph: 250-572-1458	V0C 1R0	
Edmonton, AB		**Calgary, AB**	
9936-67 Avenue NW		2559-29th Street NE	
Edmonton, AB	Ph: 780-413-5227	Calgary, AB	
T6E 0P5	Fax: 780-437-2311	T1Y 7B5	Fax: 403-291-0298
After Hours / Emergency	Ph: 780-913-2289	After Hours / Emergency	Ph: 403-651-1471
Fort McMurray, AB		**Grande Prairie, AB**	
Bay 1, 245 MacDonald Crescent		9505-111th Street	
Fort McMurray, AB	Ph: 780-791-1524	T8V 5W1	Fax: 780-513-2191
T9H 4B5	Fax: 780-791-1586	After Hours / Emergency	Ph: 780-512-4343
After Hours / Emergency	Ph: 780-714-8482		
Winnipeg, MB		**Regina, SK**	
1329 Niakwa Road East, Unit 12		1119 Osler Street	
Winnipeg, MB	Ph: 204-255-9720	Regina, SK	
R2J 3T4	Fax: 204-255-9721	S4R 8R4	
After Hours / Emergency	Ph: 204-764-6677	After Hours / Emergency	Ph: 306-221-7147
Saskatoon, SK		**Thunder Bay, ON**	
819 - 58 Street East		1081 Barton Street	
Saskatoon, SK	Ph: 306-668-8370	Thunder Bay, ON	Ph: 807-623-6463
S7K 6X5	Fax: 306-668-8383	P7B 5N3	Fax: 807-623-7598
After Hours / Emergency	Ph: 306-221-7147	After Hours / Emergency	Ph: 807-624-4482
Waterloo, ON		**Burlington, ON**	
60 Northland Drive, Unit 1		5420 Mainway Drive, Unit 5	
Waterloo, ON	Ph: 519-886-6910	Burlington, ON	Ph: 905-331-3111
N2V 2B8	Fax: 519-886-9047	L7L 6A4	Fax: 905-331-4567
After Hours / Emergency	Ph: 519-589-0044		
Mississauga, ON		**London, ON**	
6730 Coopers Avenue, Unit 30		309 Exeter Road, Unit #29	
Mississauga, ON	Ph: 905-507-6910	London, ON	Ph: 519-652-6044
L4Z 2E9	Fax: 905-507-6927	N6L 1C1	Fax: 519-652-0671
Richmond Hill, ON		**Ottawa, ON**	
95 West Beaver Creek Road, Unit 1		190 Colonnade Road, Unit 7	
Richmond Hill, ON	Ph: 905-881-9887	Nepean, ON	Ph: 613-225-8279
L4B 1H2	Fax: 905-881-8062	K2E 7J5	Fax: 613-225-2801
Yellowknife, NT		**Whitehorse, YT**	
116 - 314 Old Airport Road		12 - 151 Industrial Road	
Yellowknife, NT	Ph: 867-873-5593	Whitehorse, YT	Ph: 867-668-6689
X1A 3T3	Fax: 867-920-4238	Y1A 2V3	Fax: 867-668-6684
After Hours / Emergency	Ph: 867-446-5593	After Hours / Emergency	Ph: 867-335-5416

Sample Container, Preservation and Holding Time Table Keep samples cool (4°C) and ship to an ALS location as soon as possible.

Note: Specific container, preservation and holding times may vary based on regulatory requirements - consult your local ALS laboratory for assistance prior to sampling.

Inorganics	Analysis [1]	Water Container	Water Preservation	Additional Notes	Soil Container	Water / Soil Hold Time
ROUTINE INORGANICS AND MISC	Acidity and Alkalinity	0.5-1 L Plastic			125-250 mL Jar or Bag	14 Days / NA
	Anions (Br, Cl, SO4, F) and Electrical Conductivity	0.5-1 L Plastic			125-250 mL Jar or Bag	28 Days [7] / 6 Months
	Bromate, Chlorate and Chlorite	125 mL Plastic	EDA (Ethylenediamine)		NA	28 Days (Chlorite 14 Days)
	BOD, Colour and Turbidity	0.5-1 L Plastic			NA	2-4 Days [8] / NA
	COD and Phenols (4AAP)	125-250 mL Glass	1:1 Sulfuric Acid (H_2SO_4)		NA	28 Days / NA
	Cyanide, Total, Weak Acid Dissociable, Free	145 mL Plastic	6N NaOH		125-250 mL Jar or Bag	14 Days / 14 Days
	Dissolved Oxygen	300 mL BOD bottle	1 each; $MnSO_4$ & alkaline iodide azide pillows		NA	8 Hours / NA
	Dissolved or Total Inorganic Carbon (DIC or TIC)	125-250 mL Glass		Field Filter for Dissolved	125-250 mL Jar or Bag	14 Days / 28 Days
	Dissolved or Total Organic Carbon (DOC or TOC)	125-250 mL Glass	1:1 Sulfuric Acid (H_2SO_4)	Field Filter for Dissolved	125-250 mL Jar or Bag	28 Days / 28 Days
	Flashpoint	2 x 100mL Amber Glass		Zero Headspace	125-250 mL Jar	7 Days / 7 Days
	pH	0.5-1 L Plastic			125-250 mL Jar or Bag	0.25 Hours / 30 Days [9]
	Solids (TS, TSS, TDS)	0.5-1 L Plastic			NA	7 Days / NA
	Sulfide	125 mL Plastic	Zinc Acetate & 6N NaOH		125-250 mL Jar or Bag	7 Days / 7 Days
	Sulfite	125 mL Plastic			NA	0.25 Hours / NA
NUTRIENTS	Ammonia Nitrogen	250 mL Glass or Plastic	1:1 Sulfuric Acid (H_2SO_4)		125-250 mL Jar or Bag	28 Days / 72 Hours
	Nitrate or Nitrite Nitrogen (and Ammonia unpreserved)	0.5-1 L Plastic			NA	2-7 Days [10] / NA
	Nitrogen, Kjeldahl, Organic, Total or Dissolved	250 mL Glass or Plastic	1:1 Sulfuric Acid (H_2SO_4)	Field Filter for Dissolved	NA	28 Days / NA
	Nutrients Available (N,P,K,S)	NA			125-250 mL Jar or Bag	NA / 3 Days [11]
	Phosphorus, Reactive (orthophosphate)	0.5-1 L Plastic			NA	2-7 Days [12] / NA
	Phosphorus, Total Dissolved	250 mL Glass or Plastic	1:1 Sulfuric Acid (H_2SO_4)	Field Filter for Dissolved	NA	28 Days / NA
	Phosphorus, Total	250 mL Glass or Plastic	1:1 Sulfuric Acid (H_2SO_4)		NA	28 Days / NA
METALS	Chromium VI (Hexavalent)	125 mL Plastic	50 % NaOH (BC MoE) or 6N NaOH + Ammonium Buffer (OMoE)		125-250 mL Jar or Bag	28 Days / 30 Days
	Mercury, Methyl	250 mL pre-cleaned Glass or TFE	Contact Lab	Contact Lab	125-250 mL Jar or Bag	6 Months / 28 Days
	Mercury, Total or Dissolved	40 mL Glass Vial or 120 mL Glass	1:1 Hydrochloric Acid (HCl)	Field Filter for Dissolved	125-250 mL Jar or Bag	28 Days / 28 Days
	Metals, Total or Dissolved	125-250 mL Plastic	1:3 Nitric Acid (HNO_3) to pH<2	Field Filter for Dissolved	125-250 mL Jar or Bag	6 Months / 6 Months
Organics						
HYDRO-CARBONS	BTEX / F1 or VPH	2 or 3 x 40 mL Glass Vials [2]	Sodium Bisulfate	Zero Headspace	125 mL Jar, Encore or Terra Core sampling kit [6]	14 Days / 7 Days [13]
	Volatile Organics (THM, Perchloroethylene)	2 or 3 x 40 mL Glass Vials [2]	Sodium Bisulfate [4]	Zero Headspace		14 Days / 7 Days [13]
	CWS F2-F4	2 x 60 mL Amber Glass Vials or 500 mL Amber Glass [3]	Sodium Bisulfate		125 - 500 mL Jar	14 Days [14] / 14 Days
	EPH or LEPH/HEPH	2 x 500 mL Amber Glass	Sodium Bisulfate		125 - 500 mL Jar	14 Days / 14 Days
	Polycyclic Aromatic Hydrocarbons (PAHs)	2 x 0.5 - 1 L Amber Glass	Sodium Bisulfate [5]		125 - 500 mL Jar	14 Days / 14 Days
	Oil & Grease or Mineral Oil & Grease	2 x 0.5 - 1 L Glass	1:1 HCl or H_2SO_4		125 - 500 mL Jar	28 Days / 28 Days
TRACE ORGANICS	Alcohols	2 x 40 mL Glass Vials		Zero Headspace	125 - 500 mL Jar	7 Days / 14 Days
	Alkanolamines (MEA, DEA, DIPA)	125 mL Amber Glass			125 - 500 mL Jar	7 Days / 14 Days
	Dioxins and Furans	2 x 1 L Amber Glass			125 - 500 mL Jar	Unlimited / Unlimited
	AOX	40 - 250 mL Amber Glass	1:3 Nitric Acid (HNO_3) to pH<2		125 - 500 mL Jar	6 months [15] / 28 Days
	Formaldehyde	2 x 40 mL Amber Glass Vials [4]	Ammonium Chloride+Copper Sulfate	Zero Headspace	125 - 500 mL Jar	7 Days / 5 Days
	Glycols	2 x 40 mL Amber Glass Vials			125 - 500 mL Jar	7 Days / 14 Days
	Naphthenic Acids	2 x 250 mL Amber Glass			125 - 500 mL Jar	14 Days / 14 Days
	PCB	2 x 0.5 - 1 L Amber Glass			125 - 500 mL Jar	Unlimited / Unlimited
	Phenolics, Chlorinated and Non-Chlorinated	2 x 0.5 - 1 L Amber Glass	Ascorbic Acid & Sodium Bisulfate [5]		125 - 500 mL Jar	14 Days / 14 Days
	Priority Pollutants (EPA 625 list) or SVOCs	2 x 1 L Amber Glass			125 - 500 mL Jar	7 Days / 14 Days [17]
	Resin Acids & Fatty Acids	2 x 0.5 - 1 L Amber Glass	Ascorbic Acid & NaOH		125 mL Jar	14 Days / 14 Days
	Sulfolane	2 x 0.5 - 1 L Amber Glass			125 mL Jar	7 Days / 14 Days
PESTICIDE RESIDUES	Carbamate Pesticides	2 x 1 L Amber Glass	Potassium Dihydrogen Citrate or ChlorAC buffer		125 - 500 mL Jar	28 Days / 14 Days
	Glyphosate / AMPA	2 x 1 L Amber Glass	Use Sodium Thiosulfate if chlorinated		125 - 500 mL Jar	14 Days / 14 Days
	Herbicides, Acidic	2 x 1 L Amber Glass	Sodium Bisulfate		125 - 500 mL Jar	14 Days / 14 Days
	Nonylphenol & Ethoxylates	2 x 0.5 - 1 L Amber Glass	Sodium Bisulfate		125 - 500 mL Jar	28 Days / 14 Days
	Organochlorine or Organophosphate Pesticides	2 x 1 L Amber Glass			125 - 500 mL Jar	7 Days / 14 Days
	Soil Sterilant Scan	2 x 1 L Amber Glass			250 g Poly Bag	7 Days / 14 Days
Micro						
MICRO-BIOLOGICAL	Coliforms-Fecal, Total, E-coli & HPC	100 - 300 mL Sterilized Plastic	Sodium Thiosulfate		500 mL Sterilized Jar	24-48 Hours [18] (24 - 1...
	Microtox	1 L Amber Glass			125-250 mL Jar or Bag	3 Days / 3 Days

NA FM 032...

1. Additional analyses with the same container and preservation may be possible - consult the lab for details.
2. The number of 40 mL glass vials required (2 or 3) for BTEX & VOC varies by lab based on instrumentation. Consult the lab for details.
3. If CWS F2-F4 is required in addition to EPH or LEPH/HEPH, only 2 x 500 mL Amber Glass containers are required. For Ontario Ministry of Environment (OMoE) CWS PHC F2-F4 + F4G, ALS requires 2 x 500 mL Amber Glass.
4. Use Sodium Thiosulfate instead of Sodium Bisulfate if sample is chlorinated.
5. No preservative is required for these analyses in Ontario.
6. Soil sampling options depend on soil location and condition of soil. Terra Core® sampling kit consists of Terra Core® sampler, two pre-weighted 40mL glass vials with methanol preservative and a 125 mL soil jar for moisture. Encore samplers and 125 mL soil jars with zero headspace are other options - consult the lab for details.
7. 4 Days hold time for Electrical Conductivity only as per Ontario MISA.
8. 3 Days hold time for British Columbia as per BC Ministry of Environment (BC MoE), 4 Days hold time as per OMoE.
9. pH in water should be taken in the field as per BC MoE, 4 Days hold time for Ontario MISA and 28 Days hold time for OMoE. 30 Days hold time as received for pH in soil as per OMoE. Unlimited hold time once soil is dried.
10. 3 Days hold time as per BC MoE, 5 Days hold time as per Ontario MISA and 7 Days hold time as per OMoE.
11. 3 Days hold time until received. Unlimited hold time once soil is dried.
12. 3 Days hold time as per BC MoE and 7 Days hold time as per OMoE.
13. 40 Days hold time for field methanol preserved samples, 7 Days hold time for CCME CWS PHC F1 and 2 Days hold time for Enc...
14. 40 Days hold time as per OMoE.
15. 14 Days hold time as per Ontario MISA
16. 14 Days hold time as per OMoE.
17. 14 Days hold time for water and 60 Days hold time for soil as per OMoE.
18. 30 Hours hold time as per BC Drinking Water Regulation and 48 Hours as per OMoE

White Paper Co. 604 951-3900

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1681194-COFC

COC Number: 14 - 490825

Page 1 of 1

Report To	
Company:	AZIMUTH CONSULTING GROUP
Contact:	ERIC FRANZ
Address:	218-2902 WEST BROADWAY VANCOUVER, BC V6K 2G8
Phone:	(604) 730-1220

Report Format / Distribution

Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ Yes ☐ No
☐ Criteria on Report - provide details below if box checked
Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: efranz@azimuthgroup.ca
Email 2: ryan.vanengen@agnicoeagle.com

Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)

- R ☒ Regular (Standard TAT if received by 3pm)
- P ☐ Priority (2-4 business days if received by 3pm)
- E ☐ Emergency (1-2 business days if received by 3pm)
- E2 ☐ Same day or weekend emergency if received by 10am – contact ALS for surcharge.

Specify Date Required for E2,E or P:

Invoice To
Same as Report To ☑ Yes ☐ No
Copy of Invoice with Report ☐ Yes ☑ No
Company:
Contact:

Invoice Distribution
Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax
Email 2

Project Information
ALS Quote #:
Job #: [redacted] - AMARUQ SURFACE WATER
PO / AFE:
LSD:

Oil and Gas Required Fields (client use)
Approver ID: | Cost Center:
GL Account: | Routing Code:
Activity Code:
Location:

ALS Lab Work Order # (lab use only)

ALS Contact: | Sampler:

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TOC, Ammonia, TKN (P)	DOC (F/P)	T-CN (Low), Free CN (Low) (P)	Total Mercury (P)	Dissolved Mercury (F/P)	Total Metals (P)	Dissolved Metals (F/P)	Number of Containers
	A34 - A16	17-sep-15	14:47	Surface water	X	X	X	X	X	X	X	7
	A16 - A14	17-sep-15	15:45	↓	X	X	X	X	X	X	X	7
	C58 OUTLET	19-sep-15	12:20	↓	X	X	X	X	X	X	X	7
	A1 - DS1	19-sep-15	14:55	↓	X	X	X	X	X	X	X	7
	A17 - A16	19-sep-15	16:10	↓	X	X	X	X	X	X	X	7
	A13 - A12	21-sep-15	12:38	↓	X	X	X	X	X	X	X	7
	E5 - E4	21-sep-15	13:00	↓	X	X	X	X	X	X	X	7

Drinking Water (DW) Samples[1] (client use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No
Are samples for human drinking water use? ☐ Yes ☐ No

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

SAMPLE CONDITION AS RECEIVED (lab use only)
Frozen ☐ | SIF Observations Yes ☐ No ☐
Ice packs Yes ☐ No ☐ | Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐
INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C: 12

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by: Shofel	Date: Sept 30	Time: 1130

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA FM-0320e v09 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 24-SEP-15
Report Date: 30-SEP-15 14:08 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1678136

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers: 1, 2
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1678136-1 Surface Water 18-SEP-15 WTN-05-S	L1678136-2 Surface Water 18-SEP-15 WTN-06-S	L1678136-3 Surface Water 18-SEP-15 WTS-05-S	L1678136-4 Surface Water 18-SEP-15 WTS-06-S	L1678136-5 Surface Water 19-SEP-15 NEM-05-S
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	25.2	21.8	20.3	20.5	25.3
	pH (pH)	6.81	6.75	6.75	6.76	7.05
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	18.0	17.7	16.0	15.5	17.4
	Turbidity (NTU)	0.32	0.35	0.34	0.35	0.21
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	5.3	4.6	4.4	4.3	7.5
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	5.3	4.6	4.4	4.3	7.5
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	2.99	2.38	2.11	2.10	0.53
	Fluoride (F) (mg/L)	0.026	0.026	0.026	0.026	0.023
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Silicate (as SiO2) (mg/L)	0.69	0.67	0.68	0.65	0.62
	Sulfate (SO4) (mg/L)	1.49	1.37	1.32	1.32	3.22

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1678136-6	L1678136-7	L1678136-8	L1678136-9	L1678136-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	19-SEP-15	19-SEP-15	19-SEP-15	20-SEP-15	20-SEP-15
	Sampled Time					
	Client ID	NEM-06-S	MAM-05-S	MAM-06-S	C2-SEP	C14-SEP
WATER						
Physical Tests	Conductivity (uS/cm)	25.4	25.7	25.5	23.8	24.4
	pH (pH)	7.04	6.86	6.83	6.87	7.08
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	1.5
	Total Dissolved Solids (mg/L)	16.5	17.8	18.1	17.4	19.4
	Turbidity (NTU)	0.20	0.26	0.30	0.31	0.72
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	7.2	5.2	5.1	5.7	8.9
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	7.2	5.2	5.1	5.7	8.9
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	0.54	2.59	2.58	0.51	0.55
	Fluoride (F) (mg/L)	0.023	0.025	0.025	0.073	0.034
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Silicate (as SiO2) (mg/L)	0.60	0.79	0.76	1.14	0.74
	Sulfate (SO4) (mg/L)	3.19	2.24	2.24	3.97	1.55

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1678136-11	L1678136-12	L1678136-13	L1678136-14	L1678136-15
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15	19-SEP-15
	Sampled Time					
	Client ID	C17-SEP	C20-SEP	C41-SEP	AMARUQ SEP DUP-1	AMARUQ SEP EB-1
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	22.9	21.7	25.2	21.4	<2.0
	pH (pH)	7.00	7.04	6.93	6.76	5.54
	Total Suspended Solids (mg/L)	<1.0	<1.0	9.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	18.6	14.4	20.4	17.0	<3.0
	Turbidity (NTU)	0.50	0.45	1.53	0.32	<0.10
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	7.7	7.5	6.7	4.3	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	7.7	7.5	6.7	4.3	<1.0
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	0.58	0.63	0.62	2.36	<0.10
	Fluoride (F) (mg/L)	0.048	0.037	0.054	0.026	<0.020
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0148	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0022	<0.0020	0.0022	<0.0020	<0.0020
	Silicate (as SiO2) (mg/L)	0.97	<0.50	1.39	0.67	<0.50
	Sulfate (SO4) (mg/L)	1.52	1.63	3.26	1.37	<0.30

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	B	L1678136-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Fluoride (F)	DLM	L1678136-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nitrite (as N)	DLM	L1678136-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nitrate (as N)	DLM	L1678136-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Orthophosphate-Dissolved (as P)	MS-B	L1678136-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
DLM	Detection Limit Adjusted due to sample matrix effects.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

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

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

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

CL-L-IC-N-VA	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

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

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

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

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

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

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

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

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

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

P-TD-COL-VA	Water	Total Dissolved P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

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

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

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

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

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

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

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SILICATE-COL-VA	Water	Silicate by Colourimetric analysis	APHA 4500-SiO2 E.

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-SiO2 E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.

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

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

TDS-LOW-VA	Water	Low Level TDS (3.0mg/L) by Gravimetric	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-LOW-VA	Water	Total Suspended Solids by Grav. (1 mg/L)	APHA 2540D

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

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

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

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

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

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

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

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

Chain of Custody Numbers:

1 2

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

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

COC #

Page 1 of 2

Report To	
Company:	Azimuth Consulting Group
Contact:	Eric Franz
Address:	218-2902 West Broadway
	Vancouver, BC V6K2G8
Phone:	604-730-1220 Fax:
Invoice To	Same as Report ? ☑ Yes ☐ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	
Contact:	
Address:	
Phone:	Fax:
Lab Work Order # (lab use only)	L1678136

Report Format / Distribution	
☑ Standard ☐ Other	
☑ PDF ☑ Excel ☐ Digital ☐ Fax	
Email 1:	efranz@azimuthgroup.ca
Email 2:	gmann@azimuthgroup.ca
Email 3:	ryan.vanengen@agnicoeagle.com
Client / Project Information	
Job #:	Amaruq Surfacewater
PO / AFE:	
LSD:	
Quote #:	Q39503
ALS Contact:	Brent Mack
Sampler:	Morgan Finley

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

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

Short Holding Time
Rush Processing
L1678136-COFC

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Conventionals** see notes	TSS-Low, TDS-Low	Number of Containers
	WTN-05-S	18-Sept-15		Surface Water	X	X	2
	WTN-06-S	↓		Surface Water	X	X	2
	WTS-05-S	↓		Surface Water	X	X	2
	WTS-06-S	↓		Surface Water	X	X	2
	NEM-05-S	19-Sept-15		Surface Water	X	X	2
	NEM-06-S	↓		Surface Water	X	X	2
	MAM-05-S	↓		Surface Water	X	X	2
	MAM-06-S	↓		Surface Water	X	X	2
	C2-SEP	20-Sept-15		Surface Water	X	X	2
	C14-SEP	↓		Surface Water	X	X	2
	C17-SEP	↓		Surface Water	X	X	2
	C20-SEP	↓		Surface Water	X	X	2

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

**Conventionals includes: Alk Species, pH, EC, Turbidity, Conductivity, Anions (F, NO2, NO3, Br, SO4), low-level Chloride, Silicate, TD-P, and Ortho-PO4.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Morgan Finley	Date (dd-mmm-yy) 21-Sept-15	Time (hh-mm)	Received by: lady	Date: Sept.24	Time: 9AM	Temperature: 14.3 14.8 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

GENF 20.00 Front

ALS Environmental

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

COC # ______

Page ___ of ___

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Azimuth Consulting Group	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Eric Franz	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	218-2902 West Broadway	Email 1:	efranz@azimuthgroup.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6K2G8	Email 2:	gmann@azimuthgroup.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-730-1220 Fax:	Email 3:	ryan.vanengen@agnicoeagle.com	Analysis Request
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Amaruq Surfacewater	
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:	Fax:	Quote #:	Q39503	
Lab Work Order # (lab use only)		ALS Contact:	Brent Mack	Sampler: Morgan Finley

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Conventionals** see notes	TSS-Low, TDS-Low	Number of Containers
	C41-SEP	20-Sept-15		Surface Water	X	X	2
	AMARUQ SEP DUP-1			Surface Water	X	X	2
	AMARUQ SEP EB-1	19-Sept-15		Surface Water	X	X	2

Short Holding Time • Rush Processing

L1678136-COFC

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

**Conventionals includes: Alk Species, pH, EC, Turbidity, Conductivity, Anions (F, NO2, NO3, Br, SO4), low-level Chloride, Silicate, TD-P, and Ortho-PO4.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Morgan Finley	Date (dd-mmm-yy) 21-Sept-15	Time (hh-mm)	Received by: [signature]	Date: Sept-24	Time: 9Am	Temperature: 14.3 14.8 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

GENF 20.00 Front

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 24-SEP-15
Report Date: 05-OCT-15 15:12 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1678156

Project P.O. #: NOT SUBMITTED
Job Reference: AMARUQ SURFACEWATER
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1678156-1 Other 18-SEP-15 WTN-05-S	L1678156-2 Other 18-SEP-15 WTN-06-S	L1678156-3 Other 18-SEP-15 WTS-05-S	L1678156-4 Other 18-SEP-15 WTS-06-S	L1678156-5 Other 18-SEP-15 NEM-05-S
Grouping	**Analyte**					
FILTER						
Plant Pigments	Chlorophyll a (ug/L)	0.769	0.934	0.822	0.884	0.526

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID		L1678156-6	L1678156-7	L1678156-8	L1678156-9	L1678156-10
Description		Other	Other	Other	Other	Other
Sampled Date		18-SEP-15	18-SEP-15	18-SEP-15	18-SEP-15	18-SEP-15
Sampled Time						
Client ID		NEM-06-S	MAM-05-S	MAM-06-S	C2-SEP	C14-SEP
Grouping	**Analyte**					
FILTER						
Plant Pigments	Chlorophyll a (ug/L)	0.500	0.801	0.704	0.608	1.50

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1678156-11	L1678156-12	L1678156-13	L1678156-14	
	Description	Other	Other	Other	Other	
	Sampled Date	18-SEP-15	18-SEP-15	18-SEP-15	18-SEP-15	
	Sampled Time					
	Client ID	C17-SEP	C20-SEP	C41-SEP	AMARUQ SEP DUP-1	
Grouping	**Analyte**					
FILTER						
Plant Pigments	Chlorophyll a (ug/L)	0.791	0.556	2.30	0.847	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CHLOROA-F-VA	Filter	Chlorophyll a by Fluorometer (Filter)	EPA 445.0

This analysis is done using procedures modified from EPA Method 445.0. Chlorophyll-a is determined by a routine acetone extraction followed with analysis by fluorometry using the non-acidification procedure. This method is not subject to interferences from chlorophyll b.

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

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

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

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

ALS Envir

Chain of Custody / Analytic
Canada Toll Free: 1 80
www.alsglobal.c

L1678156-COFC

COC #

Report To			
Company:	Azimuth Consulting Group		
Contact:	Eric Franz		
Address:	218-2902 West Broadway		
	Vancouver, BC V6K2G8		
Phone:	604-730-1220	Fax:	
Invoice To	Same as Report ?	☑ Yes	☐ No
Hardcopy of Invoice with Report?		☐ Yes	☑ No
Company:			
Contact:			
Address:			
Phone:		Fax:	
Lab Work Order # (lab use only)			

Report Format / Distribution	
☑ Standard ☐ Other	
☑ PDF ☑ Excel ☐ Digital ☐ Fax	
Email 1:	efranz@azimuthgroup.ca
Email 2:	gmann@azimuthgroup.ca
Email 3:	ryan.vanengen@agnicoeagle.com
Client / Project Information	
Job #:	Amaruq Surfacewater
PO / AFE:	
LSD:	
Quote #:	Q39503
ALS Contact:	Brent Mack
Sampler:	Morgan Finley

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Chlorophyl 'a'	Number of Containers
	WTN-05-S	18-Sept-15		Other	X	1
	WTN-06-S	↓		Other	X	1
	WTS-05-S	↓		Other	X	1
	WTS-06-S	↓		Other	X	1
	NEM-05-S	19-Sep-15		Other	X	1
	NEM-06-S	↓		Other	X	1
	MAM-05-S	↓		Other	X	1
	MAM-06-S	↓		Other	X	1
	C2-SEP	20-Sep-15		Other	X	1
	C14-SEP	↓		Other	X	1
	C17-SEP	↓		Other	X	1
	C20-SEP	↓		Other	X	1

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

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Morgan Finley	Date (dd-mmm-yy)	Time (hh-mm)	Received by: Jean	Date: 24/9	Time: 8:50	Temperature: 13 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

ALS Environmental

Chain of Custody / Analytic[al Request Form]
Canada Toll Free: 1 8
www.alsglobal.

L1678156-COFC

COC #

Report To		Report Format / Distribution	
Company:	Azimuth Consulting Group	☑ Standard ☐ Other	
Contact:	Eric Franz	☑ PDF ☑ Excel ☐ Digital ☐ Fax	
Address:	218-2902 West Broadway	Email 1:	efranz@azimuthgroup.ca
	Vancouver, BC V6K2G8	Email 2:	gmann@azimuthgroup.ca
Phone:	604-730-1220 Fax:	Email 3:	ryan.vanengen@agnicoeagle.com
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Amaruq Surfacewater
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	Q39503
Lab Work Order # (lab use only)		ALS Contact: Brent Mack	Sampler: Morgan Finley

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Chlorophyl 'a'	Number of Containers
	C41-SEP	20-Sep-15		Other	X	1
	AMARUQ SEP DUP-1	-	-	Other	X	1

Short Holding Time

Rush Processing

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Morgan Finley.	Date (dd-mmm-yy)	Time (hh-mm)	Received by: Jeen	Date: 24/9	Time: 8:50	Temperature: 13 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

AZIMUTH CONSULTING GROUP INC.
ATTN: Eric Franz
218 - 2902 West Broadway
Vancouver BC V6K 2G8

Date Received: 28-SEP-15
Report Date: 07-OCT-15 13:41 (MT)
Version: FINAL

Client Phone: 604-730-1220

Certificate of Analysis

Lab Work Order #: L1679751

Project P.O. #:	NOT SUBMITTED
Job Reference:	AMARUQ SURFACEWATER
C of C Numbers:	1, 2
Legal Site Desc:	

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1679751-1	L1679751-2	L1679751-3	L1679751-4	L1679751-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	18-SEP-15	18-SEP-15	18-SEP-15	18-SEP-15	19-SEP-15
	Sampled Time					
	Client ID	WTN-05-S	WTN-06-S	WTS-05-S	WTS-06-S	NEM-05-S
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	8.63	7.76	7.30	7.30	9.63
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.116	0.118	0.120	0.129	0.123
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0031	0.0023	<0.0020	<0.0020
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.81	1.74	1.74	1.76	1.44
	Total Organic Carbon (mg/L)	1.70	1.77	1.77	1.74	1.34
Total Metals	Aluminum (Al)-Total (mg/L)	0.0116	0.0120	0.0107	0.0111	0.0032
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00019	0.00018	0.00017	0.00017	0.00031
	Barium (Ba)-Total (mg/L)	0.00410	0.00372	0.00354	0.00347	0.00384
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	2.15	1.95	1.77	1.78	2.14
	Chromium (Cr)-Total (mg/L)	0.00014	0.00011	0.00012	0.00011	0.00011
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.021	0.024	0.024	0.022	0.011
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.71	0.70	0.66	0.66	0.98
	Manganese (Mn)-Total (mg/L)	0.00365	0.00294	0.00256	0.00249	0.00248
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000059	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00060	0.00061	0.00052	0.00050	0.00053
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.39	0.38	0.37	0.36	0.56
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.247	0.263	0.256	0.255	0.210
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.526	0.546	0.531	0.536	0.485
	Strontium (Sr)-Total (mg/L)	0.0145	0.0128	0.0113	0.0115	0.00945
	Sulfur (S)-Total (mg/L)	0.54	0.53	<0.50	0.50	1.12

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1679751-6	L1679751-7	L1679751-8	L1679751-9	L1679751-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	19-SEP-15	19-SEP-15	19-SEP-15	20-SEP-15	20-SEP-15
	Sampled Time					
	Client ID	NEM-06-S	MAM-05-S	MAM-06-S	C2-SEP	C14-SEP
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	9.61	9.18	9.21	9.21	10.3
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.115	0.135	0.131	0.125	0.188
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0031	<0.0020	0.0042
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.22	1.46	1.54	1.47	2.34
	Total Organic Carbon (mg/L)	1.55	1.60	1.62	1.50	2.36
Total Metals	Aluminum (Al)-Total (mg/L)	0.0043	0.0062	0.0080	0.0091	0.0338
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00032	0.00040	0.00041	0.00018	0.00042
	Barium (Ba)-Total (mg/L)	0.00391	0.00457	0.00464	0.00343	0.00372
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	0.0000056	<0.0000050	0.0000064
	Calcium (Ca)-Total (mg/L)	2.14	2.33	2.41	2.26	2.84
	Chromium (Cr)-Total (mg/L)	0.00011	0.00012	0.00013	<0.00010	0.00023
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	0.00077	0.00073
	Iron (Fe)-Total (mg/L)	0.010	0.016	0.019	0.039	0.108
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	0.000086	<0.000050	0.000109
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.97	0.77	0.79	0.84	0.75
	Manganese (Mn)-Total (mg/L)	0.00266	0.00220	0.00245	0.00106	0.00912
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	0.0000080	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00053	0.00057	0.00061	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.53	0.48	0.49	0.30	0.35
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.209	0.288	0.300	0.464	0.345
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.490	0.537	0.552	0.536	0.533
	Strontium (Sr)-Total (mg/L)	0.00945	0.0133	0.0134	0.0119	0.0150
	Sulfur (S)-Total (mg/L)	1.11	0.79	0.86	1.39	0.61

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1679751-11	L1679751-12	L1679751-13	L1679751-14	L1679751-15
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15	19-SEP-15
	Sampled Time					
	Client ID	C17-SEP	C20-SEP	C41-SEP	AMARUQ SEP DUP-1	AMARUQ SEP EB-1
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	9.40	8.83	9.88	8.09	<0.50
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	0.0051	<0.0050	<0.0050	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.160	0.234	0.203	0.121	<0.050
	Phosphorus (P)-Total (mg/L)	0.0026	0.0072	0.0071	<0.0020	<0.0020
Cyanides	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.69	1.41	1.88	1.79	<0.50
	Total Organic Carbon (mg/L)	2.65	2.12	1.91	1.87	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.0156	0.0099	0.0647	0.0112	<0.0030
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00029	0.00017	0.00027	0.00018	<0.00010
	Barium (Ba)-Total (mg/L)	0.00243	0.00190	0.00592	0.00374	<0.000050
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	0.0000093	0.0000082	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	2.43	2.17	2.18	1.93	<0.050
	Chromium (Cr)-Total (mg/L)	0.00018	0.00010	0.00079	0.00017	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	0.00013	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	0.00070	<0.00050	0.00107	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.078	0.021	0.336	0.021	<0.010
	Lead (Pb)-Total (mg/L)	<0.000050	0.000372	0.000317	<0.000050	RRV 0.000190
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.79	0.75	1.20	0.70	<0.10
	Manganese (Mn)-Total (mg/L)	0.00762	0.00131	0.00591	0.00262	<0.00010
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	0.000078	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00052	<0.00050	0.00462	0.00057	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.35	0.30	0.33	0.36	<0.10
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	0.404	0.164	0.722	0.259	<0.050
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.560	0.487	0.555	0.522	<0.050
	Strontium (Sr)-Total (mg/L)	0.0128	0.00905	0.0107	0.0126	<0.00020
	Sulfur (S)-Total (mg/L)	0.58	0.58	1.18	<0.50	<0.50

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1679751-1	L1679751-2	L1679751-3	L1679751-4	L1679751-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	18-SEP-15	18-SEP-15	18-SEP-15	18-SEP-15	19-SEP-15
	Sampled Time					
	Client ID	WTN-05-S	WTN-06-S	WTS-05-S	WTS-06-S	NEM-05-S
WATER						
Total Metals	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000032	0.000035	0.000035	0.000035	<0.000010
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0035	0.0038	0.0033	0.0033	0.0024
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00017	0.00017	0.00014	0.00013	0.00026
	Barium (Ba)-Dissolved (mg/L)	0.00423	0.00373	0.00339	0.00340	0.00395
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.24	1.96	1.82	1.82	2.19
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00034	0.00031	0.00033	0.00031	0.00026
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000053	<0.000050	DTC 0.000556
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.74	0.70	0.67	0.67	1.01
	Manganese (Mn)-Dissolved (mg/L)	0.00135	0.00084	0.00057	0.00065	0.00057
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00061	0.00053	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.41	0.39	0.36	0.37	0.56
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.245	0.246	0.241	0.239	0.205
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.534	0.532	0.515	0.518	0.478
	Strontium (Sr)-Dissolved (mg/L)	0.0150	0.0128	0.0116	0.0115	0.00939
	Sulfur (S)-Dissolved (mg/L)	0.53	<0.50	<0.50	<0.50	1.08

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1679751-6 Surface Water 19-SEP-15 NEM-06-S	L1679751-7 Surface Water 19-SEP-15 MAM-05-S	L1679751-8 Surface Water 19-SEP-15 MAM-06-S	L1679751-9 Surface Water 20-SEP-15 C2-SEP	L1679751-10 Surface Water 20-SEP-15 C14-SEP
Grouping	**Analyte**					
WATER						
Total Metals	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	0.00096
	Uranium (U)-Total (mg/L)	<0.000010	0.000022	0.000024	0.000036	0.000040
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0017	0.0025	0.0033	0.0033	0.0053
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00028	0.00034	0.00036	0.00014	0.00029
	Barium (Ba)-Dissolved (mg/L)	0.00391	0.00432	0.00436	0.00309	0.00338
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.19	2.38	2.40	2.29	2.89
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00021	0.00037	0.00054	0.00070	0.00060
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	0.013	0.019
	Lead (Pb)-Dissolved (mg/L)	0.000104	DTC 0.000270	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	1.01	0.78	0.78	0.85	0.76
	Manganese (Mn)-Dissolved (mg/L)	0.00052	0.00068	0.00074	0.00081	0.00358
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	0.0000063	0.0000055	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00051	0.00056	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.56	0.49	0.49	0.31	0.34
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.210	0.278	0.276	0.457	0.290
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.477	0.527	0.523	0.527	0.517
	Strontium (Sr)-Dissolved (mg/L)	0.00941	0.0130	0.0130	0.0121	0.0147
	Sulfur (S)-Dissolved (mg/L)	1.08	0.78	0.79	1.36	0.57

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		L1679751-11	L1679751-12	L1679751-13	L1679751-14	L1679751-15
	Sample ID	L1679751-11	L1679751-12	L1679751-13	L1679751-14	L1679751-15
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15	19-SEP-15
	Sampled Time					
	Client ID	C17-SEP	C20-SEP	C41-SEP	AMARUQ SEP DUP-1	AMARUQ SEP EB-1
Grouping	**Analyte**					
WATER						
Total Metals	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	0.00134	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)	0.000041	0.000022	0.000060	0.000035	<0.000010
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0049	0.0086	0.0053	0.0037	<0.0010
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00027	0.00015	0.00011	0.00017	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.00228	0.00196	0.00477	0.00380	<0.000050
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000067	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.45	2.25	2.10	2.06	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00014	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00064	0.00041	0.00068	0.00033	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.036	0.014	0.030	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000098	<0.000050	<0.000050	RRV 0.000069
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.80	0.78	1.13	0.71	<0.10
	Manganese (Mn)-Dissolved (mg/L)	0.00630	0.00077	0.00169	0.00085	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	0.000104	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00329	0.00051	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.36	0.35	0.33	0.37	<0.10
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.383	0.163	0.606	0.243	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.554	0.481	0.565	0.523	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.0124	0.00917	0.0102	0.0132	<0.00020
	Sulfur (S)-Dissolved (mg/L)	0.56	0.58	1.11	<0.50	<0.50

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1679751-1	L1679751-2	L1679751-3	L1679751-4	L1679751-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	18-SEP-15	18-SEP-15	18-SEP-15	18-SEP-15	19-SEP-15
	Sampled Time					
	Client ID	WTN-05-S	WTN-06-S	WTS-05-S	WTS-06-S	NEM-05-S
Grouping	**Analyte**					
WATER						
Dissolved Metals	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000028	0.000028	0.000028	0.000029	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0011
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID / Description / Sampled Date / Sampled Time / Client ID	L1679751-6 Surface Water 19-SEP-15 NEM-06-S	L1679751-7 Surface Water 19-SEP-15 MAM-05-S	L1679751-8 Surface Water 19-SEP-15 MAM-06-S	L1679751-9 Surface Water 20-SEP-15 C2-SEP	L1679751-10 Surface Water 20-SEP-15 C14-SEP
Grouping	**Analyte**					
WATER						
Dissolved Metals	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.000017	0.000017	0.000030	0.000026
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1679751-11	L1679751-12	L1679751-13	L1679751-14	L1679751-15
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15	19-SEP-15
	Sampled Time					
	Client ID	C17-SEP	C20-SEP	C41-SEP	AMARUQ SEP DUP-1	AMARUQ SEP EB-1
Grouping	**Analyte**					
WATER						
Dissolved Metals	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00034	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000035	0.000021	0.000025	0.000027	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0060	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Calcium (Ca)-Total	B	L1679751-1, -2
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1679751-1, -2, -3, -4
Matrix Spike	Phosphorus (P)-Total	MS-B	L1679751-10, -11, -12, -13, -14, -15, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1679751-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L1679751-14, -15
Matrix Spike	Barium (Ba)-Total	MS-B	L1679751-10, -11, -12, -13, -14, -15, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Total	MS-B	L1679751-10, -11, -12, -13, -14, -15, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L1679751-10, -11, -12, -13, -14, -15, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)

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

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

ALS Test Code	Matrix	Test Description	Method Reference**
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)

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

Reference Information

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

CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-FREE-L-CFA-VA Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

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

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

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

P-T-PRES-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

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

Reference Information

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

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

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

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

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

TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

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

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

Laboratory Definition Code	**Laboratory Location**

Chain of Custody Numbers:

1 2

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

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

COC #

Report To			
Company:	Azimuth Consulting Group		
Contact:	Eric Franz		
Address:	218-2902 West Broadway		
	Vancouver, BC V6K2G8		
Phone:	604-730-1220	Fax:	
Invoice To	Same as Report ?	☑ Yes	☐ No
Hardcopy of Invoice with Report?		☐ Yes	☑ No
Company:			
Contact:			
Address:			
Phone:		Fax:	
Lab Work Order # (lab use only)			

Report Format / Distribution			
☑ Standard	☐ Other		
☑ PDF	☑ Excel	☐ Digital	☐ Fax
Email 1:	efranz@azimuthgroup.ca		
Email 2:	gmann@azimuthgroup.ca		
Email 3:	ryan.vanengen@agnicoeagle.com		
Client / Project Information			
Job #:	Amaruq Surfacewater		
PO / AFE:			
LSD:			
Quote #:	Q39503		
ALS Contact:	Brent Mack	Sampler:	Morgan Finley

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TOC, Ammonia, TKN, Total P (P)	DOC (F/P)	T-CN (Low), Free CN (Low) (P)	Total mercury (P)	Dissolved mercury (F/P)	Total Metals (P)	Dissolved Metals (F/P)						Number of Containers
	C41-SEP	20-Sept-15		Surface Water	X	X	X	X	X	X	X						7
	AMARUQ SEP DUP-1			Surface Water	X	X	X	X	X	X	X						7
	AMARUQ SEP EB-1	19-Sept-15		Surface Water	X	X	X	X	X	X	X						7

L1679751-COFC

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Morgan Finley	Date (dd-mmm-yy) 21-Sept-15	Time (hh-mm)	Received by:	Date:	Time:	Temperature: °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Azimuth Consulting Group	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Eric Franz	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	218-2902 West Broadway	Email 1:	efranz@azimuthgroup.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6K2G8	Email 2:	gmann@azimuthgroup.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-730-1220 Fax:	Email 3:	ryan.vanengen@agnicoeagle.com	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Amaruq Surfacewater	
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:	Fax:	Quote #:	Q39503	
Lab Work Order # (lab use only)	L1679751	ALS Contact: Brent Mack	Sampler: Morgan Finley	

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	TOC, Ammonia, TKN, Total P (P)	DOC (F/P)	T-CN (Low), Free CN (Low) (P)	Total mercury (P)	Dissolved mercury (F/P)	Total Metals (P)	Dissolved Metals (F/P)						Number of Containers
	WTN-05-S	18-Sept-15		Surface Water	X	X	X	X	X	X	X						7
	WTN-06-S	↓		Surface Water	X	X	X	X	X	X	X						7
	WTS-05-S	↓		Surface Water	X	X	X	X	X	X	X						7
	WTS-06-S	↓		Surface Water	X	X	X	X	X	X	X						7
	NEM-05-S	19-Sept-15		Surface Water	X	X	X	X	X	X	X						7
	NEM-06-S	↓		Surface Water	X	X	X	X	X	X	X						7
	MAM-05-S	↓		Surface Water	X	X	X	X	X	X	X						7
	MAM-06-S	↓		Surface Water	X	X	X	X	X	X	X						7
	C2-SEP	20-Sept-15		Surface Water	X	X	X	X	X	X	X						7
	C14-SEP	↓		Surface Water	X	X	X	X	X	X	X						7
	C17-SEP	↓		Surface Water	X	X	X	X	X	X	X						7
	C20-SEP	↓		Surface Water	X	X	X	X	X	X	X						7

L1679751-COFC

Short Holding Time

Rush Processing

Special Instructions / Regulations 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 provided on a separate Excel tab.

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Morgan Finley	Date (dd-mmm-yy): 21-Sept-15	Time (hh-mm):	Received by: Shafee	Date: Sept 28	Time: 1230	Temperature: 14/14/13°C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

APPENDIX D

Golder Memorandum – Stream Water Quality Program

MEMORANDUM

TO Azimuth Consulting: Gary Mann and Maggie McConnell **DATE** 10 December 2015

CC Dionne Filiatrault, Jen Range

FROM Colleen Prather **PROJECT No.** Doc 030-1524321.1010.1011 Ver 1

AMARUQ STREAM WATER QUALITY PROGRAM

Methods:

- Sample summary
  - Field measurements were recorded at 16 tributaries during the August sampling program (Table 1).
  - One set of water quality grab samples were collected at 11 tributaries during the August sampling program (Table 1); two quality control samples (travel blank and a duplicate from A8-A7) were also collected.
  - One set of water quality grab samples were collected at 6 tributaries during the September sampling program; one quality control sample (duplicate from A1-DS1) was also collected.
- Field measurements
  - In situ physico-chemical measurements of specific conductivity, dissolved oxygen (concentration and percent saturation), pH, and water temperature were collected using a submersible YSI Pro Plus multi-sensor probe system (Table 2).
  - Measurements were taken below the water surface in an area of flow.
  - Additional field notes are provided in Table 3.
- Laboratory water quality samples
  - Water samples were collected at a depth of 0.3 m (30 cm), unless water depth was less than 0.3 m.
  - If water depth was less than 0.3 m, water samples were collected at 0.1 m.
  - The actual sampling depth was recorded on the field data sheet.
  - Sample bottles were filled directly in the field.
  - Samples were processed (i.e., filtered and/or preserved) according to the instructions provided by ALS Environmental (ALS).
  - Samples requiring filtration were filtered through a 0.45 micron (µm) Millipore filter in a Nalgene filter tower.
  - Samples were submitted to ALS as soon as possible after sample collection for analysis of a suite of parameters including:

- conventional parameters (i.e., alkalinity [total, bicarbonate, carbonate, and hydroxide], conductivity, hardness, pH, total dissolved solids [TDS], total suspended solids [TSS], and turbidity);
- major ions (i.e., bromide, calcium, chloride, fluoride, magnesium, potassium, sodium, and sulphate);
- nutrients (i.e., total organic carbon [TOC], dissolved organic carbon [DOC], total Kjeldahl nitrogen [TKN], total ammonia, nitrate, nitrite, total phosphorus [TP], total dissolved phosphorus [TDP], dissolved orthophosphate, and silicate); and
- total and dissolved metals, metalloids, and non-metals (i.e., aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, cesium, chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, rubidium, selenium, silicon, silver, strontium, sulfur, tellurium, thallium, thorium, tin, titanium, tungsten, uranium, vanadium, zinc, and zirconium).

Table 1: Sample Collection Summary

Current Station ID	Original Station ID	UTM Zone 14W		August Program			September Program		
		Easting	Northing	Date	Field Data Measured	WQ Sample Collected	Date	Field Data Measured	WQ Sample Collected
A18-A17	A17-A16	606637	7253084	4-Aug-15	yes	yes	19-Sep-15	yes	Yes
A17-A16	A16-A14	606269	7255286	7-Aug-15	yes	no	17-Sep-15	yes	Yes
C38-C12	C58 Outlet	606635	7258187	4-Aug-15	yes	yes	19-Sep-15	yes	Yes
A14-A13	A12-A11	602978	7255643	4-Aug-15	yes	yes	-	-	-
A12-A77	A10-A9	602772	7256632	5-Aug-15	yes	no	18-Sep-15	yes	No
A12-A11	A10-B11	603297	7256774	5-Aug-15	yes	no	19-Sep-15	yes	No
A69-DS1	A1-DS1	598452	7256756	4-Aug-15	yes	yes	19-Sep-15	yes	Yes
DS1	D1	599116	7268305	5-Aug-15	yes	yes	19-Sep-15	yes	No
A65-A17	A23-A16	607487	7252319	5-Aug-15	no water in channel		-	-	-
A55-A17	A34-A16	608010	7254529	7-Aug-15	yes	yes	17-Sep-15	yes	Yes
A21-A20	A20-A19	604557	7252299	6-Aug-15	yes	yes	-	-	-
A76-A75	A8-A7	601358	7256775	5-Aug-15	yes	yes	-	-	-
B3-B2	A92-A91	600133	7258962	7-Aug-15	yes	no	-	-	-
A81-A80	A101-A100	598340	7255446	8-Aug-15	yes	yes	17-Sep-15	yes	No
A5-A4	B5-B4	600130	7260456	6-Aug-15	yes	yes	-	-	-
A53-A17	A40-A16	607914	7255485	7-Aug-15	yes	no	-	-	-
C8-C7	C8-C7	604266	7260887	8-Aug-15	yes	yes	-	-	-
A76-A41	A8-B10	602904	7257119	-	-	-	19-Sep-15	yes	No
A15-A14	A13-A12	603003	7255649	-	-	-	21-Sep-15	yes	Yes
E2-E1 (travel blank)	E2-E1 (travel blank)	-	-	8-Aug-15	-	yes	-	-	-
E3-E2 (duplicate from A76-A75)	E3-E2 (duplicate from A8-A7)	-	-	5-Aug-15	-	yes	-	-	-
E5-E4 (duplicate from A69-DS1)	E5-E4 (duplicate from A1-DS1)	-	-	-	-	-	19-Sep-15	-	yes

Table 2: August and September Field Data

Current Station ID	Original Station ID	UTM (easting), Zone 14W	UTM (northing), Zone 14W	Date (D/M/Y)	WQ Sample collected (yes/no)	Total Depth (m)	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	Conductivity (µS/cm)	pH
A18-A17	A17-A16	606637	7253084	4-Aug-15	yes	0.17	0.1	17.2	10.1	103	15.1	6.71
A17-A16	A16-A14	606269	7255286	7-Aug-15	no	0.25	0.1	13.8	8.9	86	20.8	6.8
C38-C12	C58 Outlet	606635	7258187	4-Aug-15	yes	0.12	0.08	16.1	10.4	105	24.1	6.65
A14-A13	A12-A11	602978	7255643	4-Aug-15	yes	0.65	0.3	14.4	10	101	23.5	6.53
A12-A77	A10-A9	602772	7256632	5-Aug-15	no	0.25	0.15	14.6	9.7	96	23.2	6.73
A12-A11	A10-B11	603297	7256774	5-Aug-15	no	-	-	14.3	9.7	95	23.4	6.72
A69-DS1	A1-DS1	598452	7256756	4-Aug-15	yes	0.3	0.15	14.6	10.2	100	17.1	6.6
DS1	D1	599116	7268305	5-Aug-15	yes	0.35	0.2	13.6	11.1	107	20.8	7.02
A65-A17	A23-A16	607487	7252319	5-Aug-15	no	-	-	-	-	-	-	-
A55-A17	A34-A16	608010	7254529	7-Aug-15	yes	0.15	0.1	16.6	10.1	102	14.9	6.48
A21-A20	A20-A19	604557	7252299	6-Aug-15	yes	0.2	0.1	17.2	9.6	98.7	13.4	6.75
A76-A75	A8-A7	601358	7256775	5-Aug-15	Yes & duplicate	0.35	0.2	13.1	9.6	93	22	6.93
B3-B2	A92-A91	600133	7258962	7-Aug-15	no	0.15	0.1	14.5	8.9	90	15.5	6.25
A81-A80	A101-A100	598340	7255446	8-Aug-15	yes	0.25	0.1	15.4	9.5	95	12	6.52
A5-A4	B5-B4	600130	7260456	6-Aug-15	yes	0.2	0.1	15.5	10	100	20.6	6.23
A53-A17	A40-A16	607914	7255485	7-Aug-15	no	0.1	0.05	16.2	9.6	100	15.2	6.62
C8-C7	C8-C7	604266	7260887	8-Aug-15	yes	0.3	0.1	12.6	10.7	101	25.1	6.85
A81-A80	A101-A100	598347	7255434	17-Sep-15	No	-	<0.3	3.2	12.5	94	11.4	7.2
A55-A17	A34-A16	608010	7254529	17-Sep-15	Yes	-	<0.3		13.1	98	-	7.25
A17-A16	A16-A14	606189	7255256	17-Sep-15	Yes	-	<0.3		12.7	96	18	7.16
A12-A77	A10-A9	602772	7256620	18-Sep-15	No	-	<0.3	3.3	12.7	96	18.2	8.04
A69-DS1	A1-DS1	598443	7256729	18-Sep-15	No	-	<0.3	3.9	13	100	12.2	7.77
A12-A11	A10-B11	603030	7256592	19-Sep-15	No	-	<0.3	2.9	13.2	100	17.4	8.02
A76-A41	A8-B10	602904	7257119	19-Sep-15	No	-	<0.3	4.1	11.6	90	15.6	7.71
C38-C12	C58	606634	7258188	19-Sep-15	Yes	-	<0.3	5.5	11.8	95	16.3	7.14
DS1	DS1	599158	7268338	19-Sep-15	No	-	<0.3	6	12.1	98	15.5	7.14
A69-DS1	A1-DS1	598443	7256729	19-Sep-15	Yes & duplicate	-	<0.3	4.2	12.7	99	12.9	7.33
A18-A17	A17-A16	606635	7253081	19-Sep-15	Yes	-	<0.3	4.7	12.5	98	10.5	7.14
A15-A14	A13-A12	603003	7255649	21-Sep-15	Yes	-	<0.3	1.8	12.9	98	17.7	7.08

Table 3: August and September Field Notes

Revised Station ID	Original Station ID	Air Temperature (°C)	Cloud Cover (%)	Wind (dir/rate)	Weather	Other Notes:
A18-A17	A17-A16	21.3	2	from south @ 10 km/h	clear, sunny	water level low; boulder/cobble substrate
A17-A16	A16-A14	15.2	10	from south, gusting to 20 km/h	clear, windy, cool	moderate periphyton cover; very slow flowing water; clear, colourless; 100% boulder
C38-C12	C58 Outlet	20.4	30	from south @ 10-15 km/h	clear, sunny	-
A14-A13	A12-A11	22	19	from south @ 5 km/h	clear, sunny	substrate is large boulder throughout
A12-A77	A10-A9	14.2	45	south, gusting to 30 km/h	breezy, cool	watercourse not on original list; field data only
A12-A11	A10-B11	14.2	45	south, gusting to 30 km/h	breezy, cool	no sample collected
A69-DS1	A1-DS1	15.5	5	from south @ 5 km/h	clear, sunny	meters calibrated morning of August 4; fish observed; cobble substrate
DS1	D1	14	80	south at 35 km/h	windy, cool	fast moving water, large channel
A65-A17	A23-A16	-	-	-	-	fly over only; no water in channel
A55-A17	A34-A16	18.4	5	from south at 15 km/h	clear, breezy, sunny	high periphyton cover along shoreline, but sparse mid-channel; 90% boulder, 10% cobble
A21-A20	A20-A19	20.4	15	SW at 15 km/h	clear, sunny	periphyton present; no observable flow or distinct channel; clear, colourless water
A76-A75	A8-A7	12.5	25	30 km/h from south	clear, cool and breezy	drainage through large boulder garden; duplicate sample (E3-E2) collected
B3-B2	A92-A91	24.3	2	south at 15 km/h	sunny, clear, breezy	small, shallow channel; boulder 40%, cobble 30%, small gravel 30%; moderate periphyton cover spread across channel
A81-A80	A101-A100	16	85	N @ 10 km/h	overcast, cool, windy	fish observed; periphyton with moderate coverage; 100% boulder
A5-A4	B5-B4	20	35	south @ 10 km/h	clear, sunny	periphyton present (see field book); good flow, but dispersed throughout boulder garden; clear, colourless water
A53-A17	A40-A16	15.8	5	south @ 15 km/h	clear, windy, sunny	organic substrate, few boulders; small drainage creek east of camp; total periphyton coverage on bed; som flow observable

Revised Station ID	Original Station ID	Air Temperature (°C)	Cloud Cover (%)	Wind (dir/rate)	Weather	Other Notes:
C8-C7	C8-C7	14.7	100	NE @ 10-20 km/h	overcast, cool and windy	short outflow channel (~40 m); fast moving water, obvious change in elevation between lakes; periphyton present with moderate cover
A81-A80	A101-A100	~2 C	low cloud cover	very windy	-	
A55-A17	A34-A16	~2 C	low cloud cover	very windy	-	
A17-A16	A16-A14	~2 C	low cloud cover	very windy	-	
A12-A77	A10-A9	~5 C	mostly cloudy	light wind	some rain	
A69-DS1	A1-DS1	~5 C	mostly cloudy	light wind	some rain	
A12-A11	A10-B11	~5 C	clear skies	gentle breeze	sunny	
A76-A41	A8-B10	~5 C	clear skies	gentle breeze	sunny	
C38-C12	C58	~5 C	clear skies	gentle breeze	sunny	
DS1	DS1	~5 C	clear skies	gentle breeze	sunny	
A69-DS1	A1-DS1	~5 C	clear skies	gentle breeze	sunny	duplicate
A18-A17	A17-A16	~5 C	clear skies	gentle breeze	sunny	
A15-A14	A13-A12	~3 C	cloudy	very windy	low cloud cover	

APPENDIX E

Phytoplankton Taxonomy, Whale Tail Pit Baseline, 2015

Seasonal Phytoplankton biomass for AMARUQ 2015 and CREMP INUG and PDL stations

******** *R=QA\QC sample*

*****All data are in (mg m^{-3})*

Station	date	Cyanophyte mg m^{-3}	Chlorophyte mg m^{-3}	Euglenophyte mg m^{-3}	Chrysophyte mg m^{-3}	Diatoms mg m^{-3}	Cryptophytes mg m^{-3}	Dinoflagellates mg m^{-3}	Total biomass mg m^{-3}	# species	Simpsons Diversity
DUP1	1/Jul/15	0.00	1.50	0.00	259.24	8.21	12.15	39.44	320.54	33	0.68
DUP1	1/Aug/15	1.20	9.09	0.00	147.20	12.30	5.12	36.41	211.33	36	0.87
DUP1	1/Sep/15	0.18	2.22	0.00	174.61	15.68	5.79	6.22	204.69	37	0.87
MAM1-S	18/Jul/15	0.00	1.22	0.00	236.00	17.45	10.98	11.65	277.29	32	0.67
MAM2-S	18/Jul/15	0.00	0.91	0.00	179.18	5.82	3.67	4.47	194.05	26	0.68
MAM3-S	24/Aug/15	0.22	10.34	0.00	112.65	11.42	4.83	18.63	158.10	38	0.91
MAM4-S	24/Aug/15	0.05	6.50	0.00	108.09	7.08	4.82	10.08	136.61	37	0.87
MAM5-S	19/Sep/15	0.06	2.65	0.00	197.57	11.42	5.24	11.17	228.12	36	0.90
MAM6-S	19/Sep/15	3.10	5.27	0.00	173.26	13.28	5.55	13.35	213.82	37	0.89
NEM1-S	18/Jul/15	0.00	1.82	0.00	120.53	13.42	12.30	17.12	165.18	28	0.79
NEM2-S	18/Jul/15	0.00	3.28	0.00	205.25	13.89	12.88	21.60	256.90	31	0.83
NEM2-SR	18/Jul/15	0.00	2.92	0.00	199.97	15.28	15.18	11.41	244.76	31	0.83
NEM3-S	23/Aug/15	0.00	20.94	0.00	59.06	22.86	2.13	6.32	111.30	30	0.90
NEM4-S	23/Aug/15	0.05	15.70	0.00	69.75	19.11	0.34	1.82	106.77	29	0.91
NEM5-S	19/Sep/15	0.71	6.67	0.00	114.56	17.91	0.57	6.48	146.91	30	0.89
NEM6-S	19/Sep/15	0.64	5.18	0.00	132.57	7.91	1.89	4.08	152.27	35	0.87
NEM6-SR	19/Sep/15	0.48	4.78	0.00	139.60	5.41	1.16	2.04	153.46	36	0.88
WTN1-S	17/Jul/15	0.00	1.15	0.00	343.85	2.17	6.72	9.82	363.71	30	0.61
WTN2-S	17/Jul/15	0.00	1.02	0.00	233.57	3.64	6.76	25.48	270.48	30	0.72
WTN3-S	20/Aug/15	0.10	4.54	0.00	140.23	7.28	7.79	23.85	183.78	33	0.91
WTN3-SR	20/Aug/15	0.18	5.15	0.00	152.68	5.89	8.43	25.53	197.87	32	0.91
WTN4-S	20/Aug/15	0.05	3.71	0.00	104.11	11.02	4.69	30.43	154.01	35	0.90
WTN5-S	18/Sep/15	0.24	6.05	0.00	191.32	25.18	4.33	15.26	242.39	37	0.90
WTN6-S	18/Sep/15	0.28	1.89	0.00	188.62	14.95	4.36	16.29	226.39	38	0.90
WTS1-S	17/Jul/15	0.00	1.19	0.00	283.77	5.68	19.73	29.98	340.35	29	0.71
WTS2-S	17/Jul/15	0.00	1.28	0.00	210.55	5.39	12.79	34.64	264.65	35	0.74
WTS3-S	21/Aug/15	3.50	11.06	0.00	122.42	8.40	2.85	24.37	172.61	40	0.87
WTS4-S	21/Aug/15	2.70	5.89	0.00	112.13	5.00	2.05	6.25	134.03	35	0.91
WTS5-S	18/Sep/15	0.89	1.57	0.00	157.69	20.05	4.54	10.07	194.82	33	0.86
WTS6-S	18/Sep/15	0.08	13.58	0.00	248.35	17.33	8.80	4.47	292.62	37	0.84
INUG68S	16/May/15	0.00	0.30	0.00	41.69	7.16	9.25	9.05	67.45	25	0.67
INUG69S	16/May/15	0.00	0.60	0.00	23.25	5.06	10.15	1.56	40.62	17	0.68
INUG70S	27/Jul/15	0.00	2.38	0.00	368.81	13.06	14.99	13.60	412.84	30	0.85
INUG71S	27/Jul/15	0.00	2.13	0.00	398.85	6.34	12.17	20.84	440.33	33	0.85
INUG72S	27/Aug/15	0.10	5.76	0.00	156.60	13.32	1.02	2.29	179.10	35	0.89
INUG73S	27/Aug/15	0.59	6.39	0.00	167.17	11.64	5.78	9.99	201.56	37	0.90
INUG74S	1/Oct/15	3.39	6.04	0.00	156.27	20.71	9.65	8.13	204.19	40	0.90
INUG75S	1/Oct/15	1.97	8.31	0.00	147.89	18.04	7.03	7.94	191.19	39	0.86
PDL37S	28/Jul/15	0.00	0.59	0.00	198.76	13.66	7.78	6.64	227.43	28	0.72
PDL38S	28/Jul/15	0.00	0.07	0.00	230.32	10.16	6.26	15.07	261.88	23	0.71
PDL39S	26/Aug/15	0.84	7.83	0.00	127.44	16.64	2.49	2.32	157.57	32	0.84
PDL40S	26/Aug/15	0.90	5.35	0.00	134.66	16.33	2.24	2.11	161.59	32	0.85
PDL41S	4/Oct/15	2.51	8.95	0.00	97.02	11.44	3.96	13.33	137.20	30	0.91

Seasonal Phytoplankton cell density for AMARUQ 2015 and CREMP INUG and PDL stations

********* R=QA\QC sample*

******All data are in cells L^{-1}*

Station	date	Cyanophyte cells L^{-1}	Chlorophyte cells L^{-1}	Euglenophyte cells L^{-1}	Chrysophyte cells L^{-1}	Diatoms cells L^{-1}	Cryptophytes cells L^{-1}	Dinoflagellates cells L^{-1}	Total density cells L^{-1}
DUP1	1/Jul/15	0	43704	0	3828704	69456	161448	11784	4115096
DUP1	1/Aug/15	35920	288160	0	2012120	297144	107760	67656	2808760
DUP1	1/Sep/15	1200	115544	0	2153016	257856	93792	7784	2629192
MAM1-S	18/Jul/15	0	71840	0	3346560	157864	99392	13384	3689040
MAM2-S	18/Jul/15	0	57472	0	2900952	87608	37720	1200	3084952
MAM3-S	24/Aug/15	1000	424056	0	1323256	187200	72840	23752	2032104
MAM4-S	24/Aug/15	400	359600	0	1604632	151080	73040	9184	2197936
MAM5-S	19/Sep/15	600	316696	0	2149432	223368	79624	1200	2770920
MAM6-S	19/Sep/15	57472	359400	0	2023120	265688	87008	1600	2794288
NEM1-S	18/Jul/15	0	36120	0	1975816	245488	69256	2000	2328680
NEM2-S	18/Jul/15	0	65056	0	2694616	259272	104576	9384	3132904
NEM2-SR	18/Jul/15	0	65256	0	2680448	229736	120144	8384	3103968
NEM3-S	23/Aug/15	0	424456	0	900400	218120	43104	7384	1593464
NEM4-S	23/Aug/15	400	395720	0	636792	266408	7184	200	1306704
NEM5-S	19/Sep/15	15368	266408	0	974256	288760	7384	7584	1559760
NEM6-S	19/Sep/15	14968	208936	0	1320688	209136	29336	400	1783464
NEM6-SR	19/Sep/15	8984	187184	0	1286368	194768	14968	200	1692472
WTN1-S	17/Jul/15	0	35920	0	4638096	65056	95592	1600	4836264
WTN2-S	17/Jul/15	0	36120	0	3971584	67856	68656	10384	4154600
WTN3-S	20/Aug/15	800	165432	0	1567312	131512	165232	23552	2053840
WTN3-SR	20/Aug/15	1400	208536	0	1546160	88808	179600	37920	2062424
WTN4-S	20/Aug/15	400	158248	0	1201128	146480	100576	44704	1651536
WTN5-S	18/Sep/15	600	237472	0	2011736	362216	52088	22752	2686864
WTN6-S	18/Sep/15	1800	143680	0	2094344	228520	65456	2200	2536000
WTS1-S	17/Jul/15	0	50288	0	3985568	97592	299144	23952	4456544
WTS2-S	17/Jul/15	0	72040	0	2880616	54488	113360	4000	3124504
WTS3-S	21/Aug/15	72840	366984	0	1703008	177016	50288	3600	2373736
WTS4-S	21/Aug/15	57472	323880	0	1315472	133312	35920	8184	1874240
WTS5-S	18/Sep/15	29936	122128	0	1851888	298960	72640	15768	2391320
WTS6-S	18/Sep/15	600	173616	0	2737520	323512	144880	7584	3387712
INUG68S	16/May/15	0	3746	0	969985	39107	65230	700	1078768
INUG69S	16/May/15	0	3946	0	518531	28469	75468	200	626614
INUG70S	27/Jul/15	0	172616	0	2061504	296744	140096	800	2671760
INUG71S	27/Jul/15	0	129712	0	2190616	117144	57688	8784	2503944
INUG72S	27/Aug/15	400	196768	0	1419448	210336	14768	7184	1848904
INUG73S	27/Aug/15	7584	211536	0	1671288	260424	114944	8384	2274160
INUG74S	1/Oct/15	66056	274992	0	1734744	305544	72640	21752	2475728
INUG75S	1/Oct/15	14968	209736	0	1734144	356232	79424	21552	2416056
PDL37S	28/Jul/15	0	36320	0	1790048	225112	59872	1400	2112752
PDL38S	28/Jul/15	0	14368	0	1986416	207552	38920	10584	2257840
PDL39S	26/Aug/15	9184	244456	0	1361176	219520	43504	600	1878440
PDL40S	26/Aug/15	3800	123328	0	1370160	213536	22952	400	1734176
PDL41S	4/Oct/15	7400	359200	0	939920	219520	22152	14968	1563160

Phytoplankton species data for AMARUQ 2015 and CREMP INUG and PDL stations

** 1st number in **species code** = group 1=cyanophyte 2=chlorophyte
3= Euglenophyte 4=chrysophyte 5=diatoms 6=Cryptophyte 7=Dinoflagellates
***R=QA\QC sample
** total daily biomass is sum of all species on a date.

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
DUP 1	1-Jul-15	2105	Chlamydomonas spp.	28736	0.68	5.00	3.00	23.60
DUP 1	1-Jul-15	2187	Staurodesmus extensus (Andersson) Teiling	600	0.21	13.00	12.00	354.00
DUP 1	1-Jul-15	2235	Ankistrodesmus spiralis Lemmermann	7184	0.45	33.00	2.20	62.70
DUP 1	1-Jul-15	2260	Monomastix minuta Skuja	7184	0.16	6.10	3.20	21.80
DUP 1	1-Jul-15	4351	Small chrysophyceae	617824	7.91	2.90	2.90	12.80
DUP 1	1-Jul-15	4352	Large chrysophyceae	35920	4.70	6.30	6.30	130.90
DUP 1	1-Jul-15	4357	Chrysococcus sp.	2191120	111.75	4.60	4.60	51.00
DUP 1	1-Jul-15	4361	Kephyrion boreale Skuja	7184	0.90	6.20	6.20	124.80
DUP 1	1-Jul-15	4362	Kephyrion sp.	423856	5.98	3.00	3.00	14.10
DUP 1	1-Jul-15	4363	Spinifiromonas sirratus***************	7184	0.66	5.60	5.60	92.00
DUP 1	1-Jul-15	4368	Mallomonas crassisquama (Asmund) Fott	200	0.21	19.60	10.00	1026.30
DUP 1	1-Jul-15	4378	Dinobryon borgei Lemmermann	14368	0.74	9.00	3.30	51.30
DUP 1	1-Jul-15	4388	Dinobryon sertularia Ehrenberg	86208	22.75	14.00	6.00	263.90
DUP 1	1-Jul-15	4388	Dinobryon sertularia Ehrenberg	11400	26.51	0.00	0.00	2325.00
DUP 1	1-Jul-15	4390	Dinobryon sociale Ehrenberg	43104	9.75	12.00	6.00	226.20
DUP 1	1-Jul-15	4390	Dinobryon sociale Ehrenberg	2400	4.78	0.00	0.00	1991.00
DUP 1	1-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	100576	2.84	5.60	3.10	28.20
DUP 1	1-Jul-15	4401	Uroglena volvox Ehrenberg	129312	14.63	6.00	6.00	113.10
DUP 1	1-Jul-15	4413	Chrysochromulina laurentiana Kling	107760	42.52	9.10	9.10	394.60
DUP 1	1-Jul-15	4414	Stichogloea spp.	7184	0.36	6.00	4.00	50.30
DUP 1	1-Jul-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	35920	0.88	5.20	3.00	24.50
DUP 1	1-Jul-15	4436	Dinobryon attenatum Hill	7184	1.40	10.30	6.00	194.20
DUP 1	1-Jul-15	5507	Cyclotella stelligera Cleve and Grunow	200	0.24	9.10	18.20	1183.70
DUP 1	1-Jul-15	5509	Cyclotella ocellata Pant.	28736	3.23	4.15	8.30	112.30
DUP 1	1-Jul-15	5514	Tabellaria flocculsa (Roth) Kutzing	3000	3.93	25.50	14.00	1308.50
DUP 1	1-Jul-15	5518	Synedra acus Kutzing	1600	0.13	80.00	2.00	83.80
DUP 1	1-Jul-15	5551	Cyclotella michiganiana Skvortzow	35920	0.69	2.30	4.60	19.10
DUP 1	1-Jul-15	6554	Rhodomonas minuta Skuja	50288	4.39	10.00	5.00	87.30
DUP 1	1-Jul-15	6558	Cryptomonas erosa Ehrenberg	2600	1.91	21.00	10.00	733.00
DUP 1	1-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	400	0.27	19.60	10.00	684.20
DUP 1	1-Jul-15	6565	Cryptomonas rostratiformis Skuja	400	0.77	28.00	14.00	1915.70
DUP 1	1-Jul-15	6568	Katablepharis ovalis Skuja	107760	4.82	8.00	4.00	44.70
DUP 1	1-Jul-15	7632	Gymnodinium sp.	7184	2.24	9.30	8.00	311.60
DUP 1	1-Jul-15	7632	Gymnodinium sp.	1800	16.57	26.00	26.00	9202.80
DUP 1	1-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	600	0.60	13.30	12.00	1002.80
DUP 1	1-Jul-15	7641	Peridinium aciculiferum Lemmermann	2200	20.04	30.20	24.00	9108.10
DUP 1	1-Aug-15	1008	Aphanocapsa sp.	7184	0.72	0.00	0.00	100.00
DUP 1	1-Aug-15	1033	Rhabdogloea lineare Schmidle and Lauterborn	28736	0.48	8.00	2.00	16.80
DUP 1	1-Aug-15	2100	Pyramidomonas tetrarhynchus Schmarda	600	0.32	14.20	12.00	535.30
DUP 1	1-Aug-15	2105	Chlamydomonas spp.	35920	0.46	5.00	2.20	12.70
DUP 1	1-Aug-15	2112	Sphaerocystis schroeteri Chodat	7184	0.21	3.80	3.80	28.70
DUP 1	1-Aug-15	2121	Oocystis lacustris Chodat	114944	5.78	6.00	4.00	50.30
DUP 1	1-Aug-15	2137	Dictyosphaerium simplex Sukja	57472	0.24	2.00	2.00	4.20
DUP 1	1-Aug-15	2167	Elakatothrix gelatinosa Willen	57472	1.17	13.00	2.00	20.40
DUP 1	1-Aug-15	2206	Botryococcus braunii Kutzing	200	0.14	11.00	11.00	696.90
DUP 1	1-Aug-15	2235	Ankistrodesmus spiralis Lemmermann	14368	0.77	31.00	2.10	53.70
DUP 1	1-Aug-15	4351	Small chrysophyceae	510064	8.77	3.20	3.20	17.20
DUP 1	1-Aug-15	4352	Large chrysophyceae	7184	1.29	7.00	7.00	179.60
DUP 1	1-Aug-15	4357	Chrysococcus sp.	783056	51.21	5.00	5.00	65.40
DUP 1	1-Aug-15	4362	Kephyrion sp.	107760	2.03	3.30	3.30	18.80
DUP 1	1-Aug-15	4367	Mallomonas duerrschmidtiae Siver, Hamer and Kling	200	0.12	17.60	8.00	589.80
DUP 1	1-Aug-15	4378	Dinobryon borgei Lemmermann	79024	4.88	9.10	3.60	61.80
DUP 1	1-Aug-15	4381	Dinobryon mucronutom Nygaard	21552	2.82	10.00	5.00	130.90
DUP 1	1-Aug-15	4383	Dinobryon bavaricum Imhof	50288	11.38	12.00	6.00	226.20
DUP 1	1-Aug-15	4383	Dinobryon bavaricum Imhof	400	0.80	0.00	0.00	1990.00
DUP 1	1-Aug-15	4388	Dinobryon sertularia Ehrenberg	35920	8.33	12.30	6.00	231.80
DUP 1	1-Aug-15	4390	Dinobryon sociale Ehrenberg	50288	11.38	12.00	6.00	226.20
DUP 1	1-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	35920	0.88	5.20	3.00	24.50
DUP 1	1-Aug-15	4401	Uroglena volvox Ehrenberg	215520	24.38	6.00	6.00	113.10
DUP 1	1-Aug-15	4411	Bitrichia chodatii (Reverdin) Chodat	14368	0.70	5.80	4.00	48.60
DUP 1	1-Aug-15	4413	Chrysochromulina laurentiana Kling	28736	11.72	9.20	9.20	407.70
DUP 1	1-Aug-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.20	5.20	3.20	27.90
DUP 1	1-Aug-15	4437	Pteridomonas sp.	28736	5.33	8.10	8.10	185.50
DUP 1	1-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.63	10.00	20.00	1570.80
DUP 1	1-Aug-15	5509	Cyclotella ocellata Pant.	35920	3.89	4.10	8.20	108.30
DUP 1	1-Aug-15	5511	Rhizosolenia eriense H.L. Smith	21552	1.68	11.00	3.00	77.80
DUP 1	1-Aug-15	5513	Tabellaria fenestrata (Lyngbye) Kutzing	1200	0.88	78.00	6.00	735.10
DUP 1	1-Aug-15	5518	Synedra acus Kutzing	1000	0.08	76.00	2.00	79.60
DUP 1	1-Aug-15	5551	Cyclotella michiganiana Skvortzow	237072	5.14	2.40	4.80	21.70

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
DUP 1	1-Aug-15	6554	Rhodomonas minuta Skuja	35920	1.67	8.30	4.00	46.40
DUP 1	1-Aug-15	6568	Katablepharis ovalis Skuja	71840	3.46	8.30	4.00	48.10
DUP 1	1-Aug-15	7632	Gymnodinium sp.	64656	21.67	10.00	8.00	335.10
DUP 1	1-Aug-15	7632	Gymnodinium sp.	1400	12.74	25.90	25.90	9097.00
DUP 1	1-Aug-15	7639	Peridinium pusillum (Penard) Lemmermann	1600	2.01	14.20	13.00	1256.50
DUP 1	1-Sep-15	1054	Planktolyngbya limnetica	1200	0.18	132.00	1.20	149.30
DUP 1	1-Sep-15	2100	Pyramidomonas tetrarhynchus Schmarda	200	0.12	13.90	13.00	615.00
DUP 1	1-Sep-15	2105	Chlamydomonas spp.	7184	0.16	6.00	2.70	22.90
DUP 1	1-Sep-15	2137	Dictyosphaerium simplex Sukja	43104	0.18	2.00	2.00	4.20
DUP 1	1-Sep-15	2167	Elakatothrix gelatinosa Willen	7184	0.13	11.60	2.00	18.20
DUP 1	1-Sep-15	2182	Euastrum spp.	200	0.10	15.00	13.00	510.50
DUP 1	1-Sep-15	2199	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81	6.00	6.00	37.70
DUP 1	1-Sep-15	2206	Botryococcus braunii Kutzing	200	0.10	10.00	10.00	523.60
DUP 1	1-Sep-15	2215	Tetraedron caudatum (Corda) Hansgrig	28736	0.14	3.00	3.00	4.70
DUP 1	1-Sep-15	2235	Ankistrodesmus spiralis Lemmermann	7184	0.46	34.00	2.20	64.60
DUP 1	1-Sep-15	4351	Small chrysophyceae	445408	6.95	3.10	3.10	15.60
DUP 1	1-Sep-15	4357	Chrysococcus sp.	711216	46.51	5.00	5.00	65.40
DUP 1	1-Sep-15	4361	Kephyrion boreale Skuja	57472	6.83	6.10	6.10	118.80
DUP 1	1-Sep-15	4362	Kephyrion sp.	229888	4.32	3.30	3.30	18.80
DUP 1	1-Sep-15	4363	Spinifiromonas sirratus***************	7184	0.90	6.20	6.20	124.80
DUP 1	1-Sep-15	4370	Mallomonas akrokomos Asmund and Kristiansen	7184	2.31	16.00	6.20	322.00
DUP 1	1-Sep-15	4378	Dinobryon borgei Lemmermann	35920	1.63	9.00	3.10	45.30
DUP 1	1-Sep-15	4381	Dinobryon mucronutom Nygaard	21552	2.82	10.00	5.00	130.90
DUP 1	1-Sep-15	4390	Dinobryon sociale Ehrenberg	294544	66.63	12.00	6.00	226.20
DUP 1	1-Sep-15	4390	Dinobryon sociale Ehrenberg	5000	6.33	0.00	0.00	1265.00
DUP 1	1-Sep-15	4396	Chrysolkos skuja (Nauwerck) Willen	64656	1.94	5.60	3.20	30.00
DUP 1	1-Sep-15	4401	Uroglena volvox Ehrenberg	93392	10.56	6.00	6.00	113.10
DUP 1	1-Sep-15	4411	Bitrichia chodatii (Reverdin) Chodat	7184	0.36	6.00	4.00	50.30
DUP 1	1-Sep-15	4413	Chrysochromulina laurentiana Kling	21552	8.50	9.10	9.10	394.60
DUP 1	1-Sep-15	4414	Stichogloea spp.	93392	4.70	6.00	4.00	50.30
DUP 1	1-Sep-15	4415	Bicoeca lacustris Clark	7184	0.63	5.50	5.50	87.10
DUP 1	1-Sep-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.36	5.90	3.20	31.60
DUP 1	1-Sep-15	4437	Pteridomonas sp.	7184	1.33	8.10	8.10	185.50
DUP 1	1-Sep-15	5509	Cyclotella ocellata Pant.	35920	4.03	4.15	8.30	112.30
DUP 1	1-Sep-15	5511	Rhizosolenia eriense H.L. Smith	100576	7.82	11.00	3.00	77.80
DUP 1	1-Sep-15	5518	Synedra acus Kutzing	13600	1.18	83.00	2.00	86.90
DUP 1	1-Sep-15	5551	Cyclotella michiganiana Skvortzow	107760	2.64	2.50	5.00	24.50
DUP 1	1-Sep-15	6554	Rhodomonas minuta Skuja	35920	1.90	9.00	4.10	52.80
DUP 1	1-Sep-15	6558	Cryptomonas erosa Ehrenberg	200	0.15	21.30	10.00	743.50
DUP 1	1-Sep-15	6565	Cryptomonas rostratiformis Skuja	200	0.41	30.00	14.00	2052.50
DUP 1	1-Sep-15	6568	Katablepharis ovalis Skuja	57472	3.33	9.00	4.10	58.00
DUP 1	1-Sep-15	7632	Gymnodinium sp.	7184	2.24	9.30	8.00	311.60
DUP 1	1-Sep-15	7632	Gymnodinium sp.	400	3.68	26.00	26.00	9202.80
DUP 1	1-Sep-15	7639	Peridinium pusillum (Penard) Lemmermann	200	0.30	14.70	14.00	1508.60
MAM - 1-S	18-Jul-15	2105	Chlamydomonas spp.	14368	0.31	4.60	3.00	21.70
MAM - 1-S	18-Jul-15	2121	Oocystis lacustris Chodat	14368	0.35	5.20	3.00	24.50
MAM - 1-S	18-Jul-15	2167	Elakatothrix gelatinosa Willen	35920	0.51	9.00	2.00	14.10
MAM - 1-S	18-Jul-15	2215	Tetraedron caudatum (Corda) Hansgrig	7184	0.05	3.30	3.30	6.30
MAM - 1-S	18-Jul-15	4351	Small chrysophyceae	481328	6.79	3.00	3.00	14.10
MAM - 1-S	18-Jul-15	4352	Large chrysophyceae	7184	1.29	7.00	7.00	179.60
MAM - 1-S	18-Jul-15	4357	Chrysococcus sp.	2025888	132.49	5.00	5.00	65.40
MAM - 1-S	18-Jul-15	4358	Chrysostephanospaera globulifera Scherffel	7184	4.48	10.60	10.60	623.60
MAM - 1-S	18-Jul-15	4362	Kephyrion sp.	387936	7.29	3.30	3.30	18.80
MAM - 1-S	18-Jul-15	4363	Spinifiromonas sirratus***************	7184	0.73	5.80	5.80	102.20
MAM - 1-S	18-Jul-15	4368	Mallomonas crassisquama (Asmund) Fott	1000	1.10	21.10	10.00	1104.80
MAM - 1-S	18-Jul-15	4378	Dinobryon borgei Lemmermann	64656	3.32	9.00	3.30	51.30
MAM - 1-S	18-Jul-15	4381	Dinobryon mucronutom Nygaard	21552	2.82	10.00	5.00	130.90
MAM - 1-S	18-Jul-15	4388	Dinobryon sertularia Ehrenberg	71840	16.25	12.00	6.00	226.20
MAM - 1-S	18-Jul-15	4388	Dinobryon sertularia Ehrenberg	4400	8.76	0.00	0.00	1991.00
MAM - 1-S	18-Jul-15	4390	Dinobryon sociale Ehrenberg	86208	19.50	12.00	6.00	226.20
MAM - 1-S	18-Jul-15	4390	Dinobryon sociale Ehrenberg	600	0.73	0.00	0.00	1221.00
MAM - 1-S	18-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	100576	2.84	5.60	3.10	28.20
MAM - 1-S	18-Jul-15	4413	Chrysochromulina laurentiana Kling	64656	26.36	9.20	9.20	407.70
MAM - 1-S	18-Jul-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.16	4.60	3.00	21.70
MAM - 1-S	18-Jul-15	4439	Chrysosphaerella brevispina	7184	1.08	6.60	6.60	150.50
MAM - 1-S	18-Jul-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.51	9.30	18.60	1263.50
MAM - 1-S	18-Jul-15	5508	Cyclotella pseudostelligera	35920	7.93	5.20	10.40	220.90
MAM - 1-S	18-Jul-15	5509	Cyclotella ocellata Pant.	35920	4.49	4.30	8.60	124.90
MAM - 1-S	18-Jul-15	5514	Tabellaria flocculsa (Roth) Kutzing	1600	2.16	26.30	14.00	1349.50
MAM - 1-S	18-Jul-15	5518	Synedra acus Kutzing	5000	0.42	81.00	2.00	84.80
MAM - 1-S	18-Jul-15	5551	Cyclotella michiganiana Skvortzow	79024	1.94	2.50	5.00	24.50
MAM - 1-S	18-Jul-15	6554	Rhodomonas minuta Skuja	21552	1.92	10.20	5.00	89.00
MAM - 1-S	18-Jul-15	6558	Cryptomonas erosa Ehrenberg	4400	3.23	21.00	10.00	733.00
MAM - 1-S	18-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	600	0.42	20.00	10.00	698.10
MAM - 1-S	18-Jul-15	6565	Cryptomonas rostratiformis Skuja	1000	2.05	30.00	14.00	2052.50
MAM - 1-S	18-Jul-15	6568	Katablepharis ovalis Skuja	71840	3.37	8.10	4.10	46.90
MAM - 1-S	18-Jul-15	7632	Gymnodinium sp.	7184	3.08	10.10	9.00	428.40
MAM - 1-S	18-Jul-15	7632	Gymnodinium sp.	2000	4.45	16.20	16.20	2226.10
MAM - 1-S	18-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	4200	4.12	13.00	12.00	980.20
MAM - 2-S	18-Jul-15	2105	Chlamydomonas spp.	7184	0.16	4.60	3.00	21.70

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
MAM - 2-S	18-Jul-15	2121	Oocystis lacustris Chodat	14368	0.35	5.20	3.00	24.50
MAM - 2-S	18-Jul-15	2199	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27	6.00	6.00	37.70
MAM - 2-S	18-Jul-15	2215	Tetraedron caudatum (Corda) Hansgrig	28736	0.14	3.00	3.00	4.70
MAM - 2-S	18-Jul-15	4351	Small chrysophyceae	646560	9.12	3.00	3.00	14.10
MAM - 2-S	18-Jul-15	4352	Large chrysophyceae	7184	2.74	9.00	9.00	381.70
MAM - 2-S	18-Jul-15	4357	Chrysococcus sp.	1573296	102.89	5.00	5.00	65.40
MAM - 2-S	18-Jul-15	4362	Kephyrion sp.	337648	6.35	3.30	3.30	18.80
MAM - 2-S	18-Jul-15	4363	Spinifiromonas sirratus***************	7184	0.66	5.60	5.60	92.00
MAM - 2-S	18-Jul-15	4378	Dinobryon borgei Lemmermann	35920	1.84	9.00	3.30	51.30
MAM - 2-S	18-Jul-15	4381	Dinobryon mucronutom Nygaard	7184	0.90	9.60	5.00	125.70
MAM - 2-S	18-Jul-15	4388	Dinobryon sertularia Ehrenberg	93392	22.88	13.00	6.00	245.00
MAM - 2-S	18-Jul-15	4388	Dinobryon sertularia Ehrenberg	4800	9.56	0.00	0.00	1991.00
MAM - 2-S	18-Jul-15	4390	Dinobryon sociale Ehrenberg	43104	9.75	12.00	6.00	226.20
MAM - 2-S	18-Jul-15	4390	Dinobryon sociale Ehrenberg	1000	1.22	0.00	0.00	1221.00
MAM - 2-S	18-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	114944	3.24	5.60	3.10	28.20
MAM - 2-S	18-Jul-15	4413	Chrysochromulina laurentiana Kling	14368	5.86	9.20	9.20	407.70
MAM - 2-S	18-Jul-15	4439	Chrysosphaerella brevispina	14368	2.16	6.60	6.60	150.50
MAM - 2-S	18-Jul-15	5508	Cyclotella pseudostelligera	7184	1.88	5.50	11.00	261.30
MAM - 2-S	18-Jul-15	5509	Cyclotella ocellata Pant.	21552	2.42	4.15	8.30	112.30
MAM - 2-S	18-Jul-15	5518	Synedra acus Kutzing	1400	0.12	81.00	2.00	84.80
MAM - 2-S	18-Jul-15	5551	Cyclotella michiganiana Skvortzow	57472	1.41	2.50	5.00	24.50
MAM - 2-S	18-Jul-15	6558	Cryptomonas erosa Ehrenberg	1000	0.70	20.00	10.00	698.10
MAM - 2-S	18-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	200	0.14	19.60	10.00	684.20
MAM - 2-S	18-Jul-15	6565	Cryptomonas rostratiformis Skuja	600	1.15	28.00	14.00	1915.70
MAM - 2-S	18-Jul-15	6568	Katablepharis ovalis Skuja	35920	1.68	8.20	4.00	46.90
MAM - 2-S	18-Jul-15	7632	Gymnodinium sp.	400	3.68	26.00	26.00	9202.80
MAM - 2-S	18-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	800	0.78	13.00	12.00	980.20
MAM - 3-S	24-Aug-15	1054	Planktolyngbya limnetica	800	0.12	131.00	1.20	148.20
MAM - 3-S	24-Aug-15	1073	Snowella sp	200	0.11	0.00	0.00	525.00
MAM - 3-S	24-Aug-15	2105	Chlamydomonas spp.	14368	0.33	5.30	2.90	23.30
MAM - 3-S	24-Aug-15	2121	Oocystis lacustris Chodat	114944	5.78	6.00	4.00	50.30
MAM - 3-S	24-Aug-15	2137	Dictyosphaerium simplex Sukja	64656	0.27	2.00	2.00	4.20
MAM - 3-S	24-Aug-15	2164	Quadrigula closterioides (Bohl.) Printz	86208	2.07	15.30	2.00	24.00
MAM - 3-S	24-Aug-15	2167	Elakatothrix gelatinosa Willen	28736	0.50	11.00	2.00	17.30
MAM - 3-S	24-Aug-15	2199	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81	6.00	6.00	37.70
MAM - 3-S	24-Aug-15	2206	Botryococcus braunii Kutzing	200	0.14	11.00	11.00	696.90
MAM - 3-S	24-Aug-15	2215	Tetraedron caudatum (Corda) Hansgrig	93392	0.44	3.00	3.00	4.70
MAM - 3-S	24-Aug-15	4351	Small chrysophyceae	287360	4.48	3.10	3.10	15.60
MAM - 3-S	24-Aug-15	4352	Large chrysophyceae	43104	7.74	7.00	7.00	179.60
MAM - 3-S	24-Aug-15	4357	Chrysococcus sp.	445408	22.72	4.60	4.60	51.00
MAM - 3-S	24-Aug-15	4358	Chrysostephanospaera globulifera Scherffel	28736	10.25	8.80	8.80	356.80
MAM - 3-S	24-Aug-15	4361	Kephyrion boreale Skuja	43104	5.38	6.20	6.20	124.80
MAM - 3-S	24-Aug-15	4362	Kephyrion sp.	100576	2.25	3.50	3.50	22.40
MAM - 3-S	24-Aug-15	4367	Mallomonas duerrschmidtiae Siver, Hamer and Kling	400	0.26	19.60	8.00	656.80
MAM - 3-S	24-Aug-15	4368	Mallomonas crassisquama (Asmund) Fott	200	0.23	22.20	10.00	1162.40
MAM - 3-S	24-Aug-15	4378	Dinobryon borgei Lemmermann	21552	1.11	9.60	3.20	51.50
MAM - 3-S	24-Aug-15	4383	Dinobryon bavaricum Imhof	28736	6.99	12.90	6.00	243.20
MAM - 3-S	24-Aug-15	4383	Dinobryon bavaricum Imhof	600	0.76	0.00	0.00	1265.00
MAM - 3-S	24-Aug-15	4388	Dinobryon sertularia Ehrenberg	7184	1.63	12.00	6.00	226.20
MAM - 3-S	24-Aug-15	4390	Dinobryon sociale Ehrenberg	79024	17.88	12.00	6.00	226.20
MAM - 3-S	24-Aug-15	4390	Dinobryon sociale Ehrenberg	200	0.20	0.00	0.00	991.00
MAM - 3-S	24-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	7184	0.19	5.50	3.00	25.90
MAM - 3-S	24-Aug-15	4400	Ochromonas sp.	7184	0.61	8.80	4.30	85.20
MAM - 3-S	24-Aug-15	4401	Uroglena volvox Ehrenberg	122128	13.81	6.00	6.00	113.10
MAM - 3-S	24-Aug-15	4411	Bitrichia chodatii (Reverdin) Chodat	21552	1.01	5.60	4.00	46.90
MAM - 3-S	24-Aug-15	4413	Chrysochromulina laurentiana Kling	35920	13.71	9.00	9.00	381.70
MAM - 3-S	24-Aug-15	4414	Stichogloea spp.	7184	0.36	6.00	4.00	50.30
MAM - 3-S	24-Aug-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.08	5.60	3.20	30.00
MAM - 3-S	24-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	800	0.93	9.05	18.10	1164.30
MAM - 3-S	24-Aug-15	5509	Cyclotella ocellata Pant.	64656	7.26	4.15	8.30	112.30
MAM - 3-S	24-Aug-15	5518	Synedra acus Kutzing	6800	0.58	81.00	2.00	84.80
MAM - 3-S	24-Aug-15	5551	Cyclotella michiganiana Skvortzow	114944	2.66	2.45	4.90	23.10
MAM - 3-S	24-Aug-15	6554	Rhodomonas minuta Skuja	43104	2.39	9.00	4.20	55.40
MAM - 3-S	24-Aug-15	6558	Cryptomonas erosa Ehrenberg	1000	0.77	22.10	10.00	771.40
MAM - 3-S	24-Aug-15	6568	Katablepharis ovalis Skuja	28736	1.67	9.00	4.10	58.00
MAM - 3-S	24-Aug-15	7632	Gymnodinium sp.	21552	6.93	9.60	8.00	321.70
MAM - 3-S	24-Aug-15	7632	Gymnodinium sp.	1000	10.19	26.90	26.90	10191.90
MAM - 3-S	24-Aug-15	7639	Peridinium pusillum (Penard) Lemmermann	1200	1.51	14.20	13.00	1256.50
MAM - 4-S	24-Aug-15	1054	Planktolyngbya limnetica	400	0.05	110.00	1.20	124.40
MAM - 4-S	24-Aug-15	2100	Pyramidomonas tetrarhynchus Schmarda	400	0.20	13.30	12.00	501.40
MAM - 4-S	24-Aug-15	2105	Chlamydomonas spp.	21552	0.50	5.30	2.90	23.30
MAM - 4-S	24-Aug-15	2121	Oocystis lacustris Chodat	64656	3.25	6.00	4.00	50.30
MAM - 4-S	24-Aug-15	2137	Dictyosphaerium simplex Sukja	86208	0.36	2.00	2.00	4.20
MAM - 4-S	24-Aug-15	2145	Crucigenia quadrata Morr.	28736	0.14	3.00	3.00	4.70
MAM - 4-S	24-Aug-15	2164	Quadrigula closterioides (Bohl.) Printz	28736	0.69	15.30	2.00	24.00
MAM - 4-S	24-Aug-15	2167	Elakatothrix gelatinosa Willen	21552	0.37	11.00	2.00	17.30
MAM - 4-S	24-Aug-15	2199	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54	6.00	6.00	37.70
MAM - 4-S	24-Aug-15	2215	Tetraedron caudatum (Corda) Hansgrig	93392	0.44	3.00	3.00	4.70
MAM - 4-S	24-Aug-15	4351	Small chrysophyceae	402304	6.28	3.10	3.10	15.60
MAM - 4-S	24-Aug-15	4352	Large chrysophyceae	79024	14.19	7.00	7.00	179.60

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
MAM - 4-S	24-Aug-15	4357	Chrysococcus sp.	617824	31.51	4.60	4.60	51.00
MAM - 4-S	24-Aug-15	4361	Kephyrion boreale Skuja	21552	2.56	6.10	6.10	118.80
MAM - 4-S	24-Aug-15	4362	Kephyrion sp.	165232	3.70	3.50	3.50	22.40
MAM - 4-S	24-Aug-15	4368	Mallomonas crassisquama (Asmund) Fott	400	0.46	22.20	10.00	1162.40
MAM - 4-S	24-Aug-15	4378	Dinobryon borgei Lemmermann	35920	1.66	8.60	3.20	46.10
MAM - 4-S	24-Aug-15	4381	Dinobryon mucronutom Nygaard	14368	1.77	9.40	5.00	123.00
MAM - 4-S	24-Aug-15	4383	Dinobryon bavaricum Imhof	7184	1.63	12.00	6.00	226.20
MAM - 4-S	24-Aug-15	4383	Dinobryon bavaricum Imhof	400	0.40	0.00	0.00	991.00
MAM - 4-S	24-Aug-15	4388	Dinobryon sertularia Ehrenberg	14368	3.25	12.00	6.00	226.20
MAM - 4-S	24-Aug-15	4390	Dinobryon sociale Ehrenberg	64656	14.63	12.00	6.00	226.20
MAM - 4-S	24-Aug-15	4390	Dinobryon sociale Ehrenberg	1800	2.28	0.00	0.00	1265.00
MAM - 4-S	24-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	43104	1.12	5.50	3.00	25.90
MAM - 4-S	24-Aug-15	4400	Ochromonas sp.	7184	0.50	8.30	4.00	69.50
MAM - 4-S	24-Aug-15	4401	Uroglena volvox Ehrenberg	35920	4.06	6.00	6.00	113.10
MAM - 4-S	24-Aug-15	4411	Bitrichia chodatii (Reverdin) Chodat	7184	0.36	6.00	4.00	50.30
MAM - 4-S	24-Aug-15	4413	Chrysochromulina laurentiana Kling	43104	16.45	9.00	9.00	381.70
MAM - 4-S	24-Aug-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.29	5.60	3.20	30.00
MAM - 4-S	24-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.46	9.00	18.00	1145.10
MAM - 4-S	24-Aug-15	5509	Cyclotella ocellata Pant.	21552	2.42	4.15	8.30	112.30
MAM - 4-S	24-Aug-15	5511	Rhizosolenia eriense H.L. Smith	14368	1.12	11.00	3.00	77.80
MAM - 4-S	24-Aug-15	5518	Synedra acus Kutzing	7000	0.59	81.00	2.00	84.80
MAM - 4-S	24-Aug-15	5551	Cyclotella michiganiana Skvortzow	107760	2.49	2.45	4.90	23.10
MAM - 4-S	24-Aug-15	6554	Rhodomonas minuta Skuja	57472	3.18	9.00	4.20	55.40
MAM - 4-S	24-Aug-15	6558	Cryptomonas erosa Ehrenberg	1200	0.93	22.20	10.00	774.90
MAM - 4-S	24-Aug-15	6568	Katablepharis ovalis Skuja	14368	0.71	8.30	4.10	49.30
MAM - 4-S	24-Aug-15	7632	Gymnodinium sp.	7184	2.17	9.00	8.00	301.60
MAM - 4-S	24-Aug-15	7632	Gymnodinium sp.	600	6.12	26.90	26.90	10191.90
MAM - 4-S	24-Aug-15	7639	Peridinium pusillum (Penard) Lemmermann	1400	1.80	14.50	13.00	1283.10
MAM - 5-S	19-Sep-15	1054	Planktolyngbya limnetica	600	0.06	93.00	1.20	105.20
MAM - 5-S	19-Sep-15	2100	Pyramidomonas tetrarhynchus Schmarda	200	0.12	14.10	13.00	623.80
MAM - 5-S	19-Sep-15	2105	Chlamydomonas spp.	21552	0.66	7.00	2.90	30.80
MAM - 5-S	19-Sep-15	2121	Oocystis lacustris Chodat	21552	0.38	5.00	2.60	17.70
MAM - 5-S	19-Sep-15	2137	Dictyosphaerium simplex Sukja	129312	0.54	2.00	2.00	4.20
MAM - 5-S	19-Sep-15	2187	Staurodesmus extensus (Andersson) Teiling	200	0.11	15.10	14.00	557.10
MAM - 5-S	19-Sep-15	2193	Staurodesmus paradoxum Meyen	200	0.15	17.20	15.00	774.50
MAM - 5-S	19-Sep-15	2215	Tetraedron caudatum (Corda) Hansgrig	143680	0.68	3.00	3.00	4.70
MAM - 5-S	19-Sep-15	4351	Small chrysophyceae	380752	5.94	3.10	3.10	15.60
MAM - 5-S	19-Sep-15	4352	Large chrysophyceae	35920	14.64	9.20	9.20	407.70
MAM - 5-S	19-Sep-15	4357	Chrysococcus sp.	617824	31.51	4.60	4.60	51.00
MAM - 5-S	19-Sep-15	4358	Chrysostephanospaera globulifera Scherffel	7184	2.83	9.10	9.10	394.60
MAM - 5-S	19-Sep-15	4361	Kephyrion boreale Skuja	21552	3.24	6.60	6.60	150.50
MAM - 5-S	19-Sep-15	4362	Kephyrion sp.	215520	3.36	3.10	3.10	15.60
MAM - 5-S	19-Sep-15	4363	Spinifiromonas sirratus***************	14368	1.71	6.10	6.10	118.80
MAM - 5-S	19-Sep-15	4368	Mallomonas crassisquama (Asmund) Fott	400	0.44	21.00	10.00	1099.60
MAM - 5-S	19-Sep-15	4378	Dinobryon borgei Lemmermann	14368	0.69	9.00	3.20	48.30
MAM - 5-S	19-Sep-15	4381	Dinobryon mucronutom Nygaard	7184	0.94	10.00	5.00	130.90
MAM - 5-S	19-Sep-15	4390	Dinobryon sociale Ehrenberg	287360	65.00	12.00	6.00	226.20
MAM - 5-S	19-Sep-15	4390	Dinobryon sociale Ehrenberg	8200	10.37	0.00	0.00	1265.00
MAM - 5-S	19-Sep-15	4394	Epiphyxis sp.	21552	1.68	9.30	4.00	77.90
MAM - 5-S	19-Sep-15	4396	Chrysolkos skuja (Nauwerck) Willen	107760	3.25	6.00	3.10	30.20
MAM - 5-S	19-Sep-15	4401	Uroglena volvox Ehrenberg	244256	27.63	6.00	6.00	113.10
MAM - 5-S	19-Sep-15	4411	Bitrichia chodatii (Reverdin) Chodat	7184	0.36	6.00	4.00	50.30
MAM - 5-S	19-Sep-15	4413	Chrysochromulina laurentiana Kling	43104	17.01	9.10	9.10	394.60
MAM - 5-S	19-Sep-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	93392	2.80	5.60	3.20	30.00
MAM - 5-S	19-Sep-15	4437	Pteridomonas sp.	21552	4.15	8.20	8.20	192.50
MAM - 5-S	19-Sep-15	5507	Cyclotella stelligera Cleve and Grunow	200	0.25	9.30	18.60	1263.50
MAM - 5-S	19-Sep-15	5509	Cyclotella ocellata Pant.	14368	1.79	4.30	8.60	124.90
MAM - 5-S	19-Sep-15	5511	Rhizosolenia eriense H.L. Smith	50288	3.91	11.00	3.00	77.80
MAM - 5-S	19-Sep-15	5518	Synedra acus Kutzing	29200	2.48	81.00	2.00	84.80
MAM - 5-S	19-Sep-15	5551	Cyclotella michiganiana Skvortzow	129312	2.99	2.45	4.90	23.10
MAM - 5-S	19-Sep-15	6554	Rhodomonas minuta Skuja	21552	1.14	9.00	4.10	52.80
MAM - 5-S	19-Sep-15	6558	Cryptomonas erosa Ehrenberg	400	0.30	21.30	10.00	743.50
MAM - 5-S	19-Sep-15	6565	Cryptomonas rostratiformis Skuja	200	0.41	30.00	14.00	2052.50
MAM - 5-S	19-Sep-15	6568	Katablepharis ovalis Skuja	57472	3.40	9.20	4.00	59.10
MAM - 5-S	19-Sep-15	7632	Gymnodinium sp.	1200	11.17	26.10	26.10	9309.40
MAM - 6-S	19-Sep-15	1014	Chroococcus limneticus Lemmermann	28736	2.24	5.30	5.30	78.00
MAM - 6-S	19-Sep-15	1037	Myxobaktron smithii **********************	28736	0.86	5.60	3.20	30.00
MAM - 6-S	19-Sep-15	2100	Pyramidomonas tetrarhynchus Schmarda	200	0.16	15.30	14.00	785.10
MAM - 6-S	19-Sep-15	2105	Chlamydomonas spp.	50288	1.55	7.00	2.90	30.80
MAM - 6-S	19-Sep-15	2121	Oocystis lacustris Chodat	21552	0.38	5.00	2.60	17.70
MAM - 6-S	19-Sep-15	2137	Dictyosphaerium simplex Sukja	35920	0.15	2.00	2.00	4.20
MAM - 6-S	19-Sep-15	2167	Elakatothrix gelatinosa Willen	28736	0.59	13.10	2.00	20.60
MAM - 6-S	19-Sep-15	2199	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54	6.00	6.00	37.70
MAM - 6-S	19-Sep-15	2215	Tetraedron caudatum (Corda) Hansgrig	193968	0.91	3.00	3.00	4.70
MAM - 6-S	19-Sep-15	2235	Ankistrodesmus spiralis Lemmermann	14368	0.98	36.00	2.20	68.40
MAM - 6-S	19-Sep-15	4351	Small chrysophyceae	323280	5.04	3.10	3.10	15.60
MAM - 6-S	19-Sep-15	4352	Large chrysophyceae	7184	2.83	9.10	9.10	394.60
MAM - 6-S	19-Sep-15	4357	Chrysococcus sp.	754320	38.47	4.60	4.60	51.00
MAM - 6-S	19-Sep-15	4361	Kephyrion boreale Skuja	93392	14.06	6.60	6.60	150.50
MAM - 6-S	19-Sep-15	4362	Kephyrion sp.	158048	2.47	3.10	3.10	15.60

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
MAM - 6-S	19-Sep-15	4368	Mallomonas crassisquama (Asmund) Fott	200	0.22	21.00	10.00	1099.60
MAM - 6-S	19-Sep-15	4378	Dinobryon borgei Lemmermann	43104	2.08	9.00	3.20	48.30
MAM - 6-S	19-Sep-15	4381	Dinobryon mucronutom Nygaard	7184	0.94	10.00	5.00	130.90
MAM - 6-S	19-Sep-15	4388	Dinobryon sertularia Ehrenberg	35920	8.13	12.00	6.00	226.20
MAM - 6-S	19-Sep-15	4390	Dinobryon sociale Ehrenberg	165232	37.38	12.00	6.00	226.20
MAM - 6-S	19-Sep-15	4390	Dinobryon sociale Ehrenberg	11400	14.42	0.00	0.00	1265.00
MAM - 6-S	19-Sep-15	4394	Epiphyxis sp.	7184	0.54	9.00	4.00	75.40
MAM - 6-S	19-Sep-15	4396	Chrysolkos skuja (Nauwerck) Willen	136496	4.12	6.00	3.10	30.20
MAM - 6-S	19-Sep-15	4401	Uroglena volvox Ehrenberg	122128	13.81	6.00	6.00	113.10
MAM - 6-S	19-Sep-15	4413	Chrysochromulina laurentiana Kling	64656	25.51	9.10	9.10	394.60
MAM - 6-S	19-Sep-15	4414	Stichogloea spp.	21552	1.08	6.00	4.00	50.30
MAM - 6-S	19-Sep-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	71840	2.16	5.60	3.20	30.00
MAM - 6-S	19-Sep-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.51	9.30	18.60	1263.50
MAM - 6-S	19-Sep-15	5509	Cyclotella ocellata Pant.	14368	1.79	4.30	8.60	124.90
MAM - 6-S	19-Sep-15	5511	Rhizosolenia eriense H.L. Smith	50288	3.91	11.00	3.00	77.80
MAM - 6-S	19-Sep-15	5514	Tabellaria flocculsa (Roth) Kutzing	200	0.27	26.00	14.00	1334.10
MAM - 6-S	19-Sep-15	5518	Synedra acus Kutzing	35200	2.98	81.00	2.00	84.80
MAM - 6-S	19-Sep-15	5551	Cyclotella michiganiana Skvortzow	165232	3.82	2.45	4.90	23.10
MAM - 6-S	19-Sep-15	6554	Rhodomonas minuta Skuja	21552	1.14	9.00	4.10	52.80
MAM - 6-S	19-Sep-15	6558	Cryptomonas erosa Ehrenberg	800	0.59	21.30	10.00	743.50
MAM - 6-S	19-Sep-15	6568	Katablepharis ovalis Skuja	64656	3.82	9.20	4.00	59.10
MAM - 6-S	19-Sep-15	7632	Gymnodinium sp.	1400	13.03	26.10	26.10	9309.40
MAM - 6-S	19-Sep-15	7639	Peridinium pusillum (Penard) Lemmermann	200	0.32	15.50	14.00	1590.70
NEM - 1-S	18-Jul-15	2105	Chlamydomonas spp.	21552	0.71	7.00	3.00	33.00
NEM - 1-S	18-Jul-15	2138	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	14368	1.00	41.00	1.80	69.60
NEM - 1-S	18-Jul-15	2206	Botryococcus braunii Kutzing	200	0.10	10.00	10.00	523.60
NEM - 1-S	18-Jul-15	4351	Small chrysophyceae	833344	11.75	3.00	3.00	14.10
NEM - 1-S	18-Jul-15	4352	Large chrysophyceae	35920	6.45	7.00	7.00	179.60
NEM - 1-S	18-Jul-15	4357	Chrysococcus sp.	581904	35.85	4.90	4.90	61.60
NEM - 1-S	18-Jul-15	4358	Chrysostephanospaera globulifera Scherffel	7184	4.48	10.60	10.60	623.60
NEM - 1-S	18-Jul-15	4362	Kephyrion sp.	237072	4.46	3.30	3.30	18.80
NEM - 1-S	18-Jul-15	4368	Mallomonas crassisquama (Asmund) Fott	600	0.63	20.10	10.00	1052.40
NEM - 1-S	18-Jul-15	4378	Dinobryon borgei Lemmermann	100576	5.22	9.10	3.30	51.90
NEM - 1-S	18-Jul-15	4388	Dinobryon sertularia Ehrenberg	7184	1.63	12.00	6.00	226.20
NEM - 1-S	18-Jul-15	4388	Dinobryon sertularia Ehrenberg	3400	11.53	0.00	0.00	3390.00
NEM - 1-S	18-Jul-15	4390	Dinobryon sociale Ehrenberg	64656	14.63	12.00	6.00	226.20
NEM - 1-S	18-Jul-15	4390	Dinobryon sociale Ehrenberg	3400	6.77	0.00	0.00	1991.00
NEM - 1-S	18-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	43104	1.22	5.60	3.10	28.20
NEM - 1-S	18-Jul-15	4413	Chrysochromulina laurentiana Kling	28736	11.34	9.10	9.10	394.60
NEM - 1-S	18-Jul-15	4436	Dinobryon attenatum Hill	7184	1.35	10.00	6.00	188.50
NEM - 1-S	18-Jul-15	4439	Chrysosphaerella brevispina	21552	3.24	6.60	6.60	150.50
NEM - 1-S	18-Jul-15	5507	Cyclotella stelligera Cleve and Grunow	600	0.76	9.30	18.60	1263.50
NEM - 1-S	18-Jul-15	5509	Cyclotella ocellata Pant.	57472	7.18	4.30	8.60	124.90
NEM - 1-S	18-Jul-15	5518	Synedra acus Kutzing	15000	1.26	80.00	2.00	83.80
NEM - 1-S	18-Jul-15	5551	Cyclotella michiganiana Skvortzow	172416	4.22	2.50	5.00	24.50
NEM - 1-S	18-Jul-15	6554	Rhodomonas minuta Skuja	57472	5.67	11.30	5.00	98.60
NEM - 1-S	18-Jul-15	6558	Cryptomonas erosa Ehrenberg	3400	4.03	23.60	12.00	1186.30
NEM - 1-S	18-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	200	0.14	20.00	10.00	698.10
NEM - 1-S	18-Jul-15	6565	Cryptomonas rostratiformis Skuja	1000	2.12	31.00	14.00	2120.90
NEM - 1-S	18-Jul-15	6568	Katablepharis ovalis Skuja	7184	0.34	8.00	4.20	46.90
NEM - 1-S	18-Jul-15	7632	Gymnodinium sp.	1400	13.18	26.20	26.20	9416.80
NEM - 1-S	18-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	200	0.20	13.10	12.00	987.70
NEM - 1-S	18-Jul-15	7641	Peridinium aciculiferum Lemmermann	400	3.74	31.00	24.00	9349.40
NEM - 2-S	18-Jul-15	2105	Chlamydomonas spp.	14368	0.47	7.00	3.00	33.00
NEM - 2-S	18-Jul-15	2121	Oocystis lacustris Chodat	28736	1.47	6.10	4.00	51.10
NEM - 2-S	18-Jul-15	2132	Scenedesmus denticulatus Lagerhiem	14368	0.67	8.30	4.00	46.40
NEM - 2-S	18-Jul-15	2167	Elakatothrix gelatinosa Willen	7184	0.11	10.00	2.00	15.70
NEM - 2-S	18-Jul-15	2178	Cosmarium sp.	400	0.56	20.00	20.00	1396.30
NEM - 2-S	18-Jul-15	4351	Small chrysophyceae	567536	8.85	3.10	3.10	15.60
NEM - 2-S	18-Jul-15	4352	Large chrysophyceae	43104	7.74	7.00	7.00	179.60
NEM - 2-S	18-Jul-15	4357	Chrysococcus sp.	1041680	72.40	5.10	5.10	69.50
NEM - 2-S	18-Jul-15	4362	Kephyrion sp.	366384	4.69	2.90	2.90	12.80
NEM - 2-S	18-Jul-15	4363	Spinifiromonas sirratus***************	7184	0.90	6.20	6.20	124.80
NEM - 2-S	18-Jul-15	4368	Mallomonas crassisquama (Asmund) Fott	800	0.77	18.30	10.00	958.20
NEM - 2-S	18-Jul-15	4378	Dinobryon borgei Lemmermann	107760	5.66	9.80	3.20	52.50
NEM - 2-S	18-Jul-15	4388	Dinobryon sertularia Ehrenberg	50288	11.94	12.60	6.00	237.50
NEM - 2-S	18-Jul-15	4388	Dinobryon sertularia Ehrenberg	2400	4.78	0.00	0.00	1991.00
NEM - 2-S	18-Jul-15	4390	Dinobryon sociale Ehrenberg	43104	9.75	12.00	6.00	226.20
NEM - 2-S	18-Jul-15	4390	Dinobryon sociale Ehrenberg	4600	5.62	0.00	0.00	1221.00
NEM - 2-S	18-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	201152	5.37	5.30	3.10	26.70
NEM - 2-S	18-Jul-15	4413	Chrysochromulina laurentiana Kling	150864	61.51	9.20	9.20	407.70
NEM - 2-S	18-Jul-15	4414	Stichogloea spp.	100576	5.06	6.00	4.00	50.30
NEM - 2-S	18-Jul-15	4415	Bicoeca lacustris Clark	7184	0.22	5.40	3.30	30.80
NEM - 2-S	18-Jul-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.51	9.30	18.60	1263.50
NEM - 2-S	18-Jul-15	5509	Cyclotella ocellata Pant.	28736	4.54	4.65	9.30	157.90
NEM - 2-S	18-Jul-15	5514	Tabellaria flocculsa (Roth) Kutzing	1600	2.05	25.00	14.00	1282.80
NEM - 2-S	18-Jul-15	5518	Synedra acus Kutzing	20200	1.69	80.00	2.00	83.80
NEM - 2-S	18-Jul-15	5551	Cyclotella michiganiana Skvortzow	208336	5.10	2.50	5.00	24.50
NEM - 2-S	18-Jul-15	6554	Rhodomonas minuta Skuja	100576	9.92	11.30	5.00	98.60
NEM - 2-S	18-Jul-15	6558	Cryptomonas erosa Ehrenberg	3400	2.56	21.60	10.00	754.00

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
NEM - 2-S	18-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	600	0.40	19.00	10.00	663.20
NEM - 2-S	18-Jul-15	7631	Gymnodinium helveticum Penard	200	5.00	53.00	30.00	24975.70
NEM - 2-S	18-Jul-15	7632	Gymnodinium sp.	7184	2.52	10.20	8.10	350.40
NEM - 2-S	18-Jul-15	7632	Gymnodinium sp.	200	1.26	22.90	22.90	6287.90
NEM - 2-S	18-Jul-15	7635	Peridinium willei Huitfeldt-Kaas	200	6.21	39.00	39.00	31059.40
NEM - 2-S	18-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	1000	1.01	13.00	12.20	1013.10
NEM - 2-S	18-Jul-15	7641	Peridinium aciculiferum Lemmermann	600	5.61	31.00	24.00	9349.40
NEM - 2-SR	18-Jul-15	2105	Chlamydomonas spp.	14368	0.47	7.00	3.00	33.00
NEM - 2-SR	18-Jul-15	2121	Oocystis lacustris Chodat	14368	0.73	6.10	4.00	51.10
NEM - 2-SR	18-Jul-15	2167	Elakatothrix gelatinosa Willen	28736	0.45	10.00	2.00	15.70
NEM - 2-SR	18-Jul-15	2178	Cosmarium sp.	600	0.84	20.00	20.00	1396.30
NEM - 2-SR	18-Jul-15	2235	Ankistrodesmus spiralis Lemmermann	7184	0.42	31.00	2.20	58.90
NEM - 2-SR	18-Jul-15	4351	Small chrysophyceae	452592	7.06	3.10	3.10	15.60
NEM - 2-SR	18-Jul-15	4352	Large chrysophyceae	64656	11.61	7.00	7.00	179.60
NEM - 2-SR	18-Jul-15	4357	Chrysococcus sp.	1034496	71.90	5.10	5.10	69.50
NEM - 2-SR	18-Jul-15	4362	Kephyrion sp.	452592	5.79	2.90	2.90	12.80
NEM - 2-SR	18-Jul-15	4363	Spinifiromonas sirratus***************	21552	2.69	6.20	6.20	124.80
NEM - 2-SR	18-Jul-15	4368	Mallomonas crassisquama (Asmund) Fott	1800	1.72	18.30	10.00	958.20
NEM - 2-SR	18-Jul-15	4378	Dinobryon borgei Lemmermann	150864	7.20	8.90	3.20	47.70
NEM - 2-SR	18-Jul-15	4388	Dinobryon sertularia Ehrenberg	64656	14.63	12.00	6.00	226.20
NEM - 2-SR	18-Jul-15	4388	Dinobryon sertularia Ehrenberg	2400	4.78	0.00	0.00	1991.00
NEM - 2-SR	18-Jul-15	4390	Dinobryon sociale Ehrenberg	50288	11.94	12.60	6.00	237.50
NEM - 2-SR	18-Jul-15	4390	Dinobryon sociale Ehrenberg	3800	4.64	0.00	0.00	1221.00
NEM - 2-SR	18-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	179600	4.80	5.30	3.10	26.70
NEM - 2-SR	18-Jul-15	4400	Ochromonas sp.	7184	0.52	8.60	4.00	72.00
NEM - 2-SR	18-Jul-15	4413	Chrysochromulina laurentiana Kling	114944	46.86	9.20	9.20	407.70
NEM - 2-SR	18-Jul-15	4414	Stichogloea spp.	71840	3.61	6.00	4.00	50.30
NEM - 2-SR	18-Jul-15	4415	Bicoeca lacustris Clark	7184	0.22	5.40	3.30	30.80
NEM - 2-SR	18-Jul-15	5507	Cyclotella stelligera Cleve and Grunow	200	0.25	9.30	18.60	1263.50
NEM - 2-SR	18-Jul-15	5509	Cyclotella ocellata Pant.	43104	6.81	4.65	9.30	157.90
NEM - 2-SR	18-Jul-15	5514	Tabellaria flocculsa (Roth) Kutzing	2000	2.57	25.00	14.00	1282.80
NEM - 2-SR	18-Jul-15	5518	Synedra acus Kutzing	19200	1.61	80.00	2.00	83.80
NEM - 2-SR	18-Jul-15	5551	Cyclotella michiganiana Skvortzow	165232	4.05	2.50	5.00	24.50
NEM - 2-SR	18-Jul-15	6554	Rhodomonas minuta Skuja	114944	11.33	11.30	5.00	98.60
NEM - 2-SR	18-Jul-15	6558	Cryptomonas erosa Ehrenberg	4400	3.32	21.60	10.00	754.00
NEM - 2-SR	18-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	800	0.53	19.00	10.00	663.20
NEM - 2-SR	18-Jul-15	7632	Gymnodinium sp.	7184	2.52	10.20	8.10	350.40
NEM - 2-SR	18-Jul-15	7635	Peridinium willei Huitfeldt-Kaas	200	6.21	39.00	39.00	31059.40
NEM - 2-SR	18-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	800	0.81	13.00	12.20	1013.10
NEM - 2-SR	18-Jul-15	7641	Peridinium aciculiferum Lemmermann	200	1.87	31.00	24.00	9349.40
NEM - 3-S	23-Aug-15	2105	Chlamydomonas spp.	21552	0.47	6.10	2.60	21.60
NEM - 3-S	23-Aug-15	2112	Sphaerocystis schroeteri Chodat	43104	1.44	4.00	4.00	33.50
NEM - 3-S	23-Aug-15	2121	Oocystis lacustris Chodat	251440	16.85	8.00	4.00	67.00
NEM - 3-S	23-Aug-15	2137	Dictyosphaerium simplex Sukja	71840	0.26	1.90	1.90	3.60
NEM - 3-S	23-Aug-15	2167	Elakatothrix gelatinosa Willen	28736	0.59	13.10	2.00	20.60
NEM - 3-S	23-Aug-15	2178	Cosmarium sp.	600	0.84	20.00	20.00	1396.30
NEM - 3-S	23-Aug-15	2235	Ankistrodesmus spiralis Lemmermann	7184	0.49	36.00	2.20	68.40
NEM - 3-S	23-Aug-15	4351	Small chrysophyceae	280176	4.82	3.20	3.20	17.20
NEM - 3-S	23-Aug-15	4352	Large chrysophyceae	7184	1.29	7.00	7.00	179.60
NEM - 3-S	23-Aug-15	4357	Chrysococcus sp.	129312	8.46	5.00	5.00	65.40
NEM - 3-S	23-Aug-15	4362	Kephyrion sp.	201152	3.78	3.30	3.30	18.80
NEM - 3-S	23-Aug-15	4368	Mallomonas crassisquama (Asmund) Fott	400	0.65	21.60	12.00	1628.60
NEM - 3-S	23-Aug-15	4378	Dinobryon borgei Lemmermann	43104	2.57	8.80	3.60	59.70
NEM - 3-S	23-Aug-15	4381	Dinobryon mucronutom Nygaard	14368	1.88	10.00	5.00	130.90
NEM - 3-S	23-Aug-15	4383	Dinobryon bavaricum Imhof	43104	10.07	12.40	6.00	233.70
NEM - 3-S	23-Aug-15	4383	Dinobryon bavaricum Imhof	2000	2.57	0.00	0.00	1285.00
NEM - 3-S	23-Aug-15	4390	Dinobryon sociale Ehrenberg	35920	8.13	12.00	6.00	226.20
NEM - 3-S	23-Aug-15	4394	Epiphyxis sp.	7184	0.74	9.30	4.60	103.00
NEM - 3-S	23-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	14368	0.42	5.50	3.20	29.50
NEM - 3-S	23-Aug-15	4401	Uroglena volvox Ehrenberg	79024	8.94	6.00	6.00	113.10
NEM - 3-S	23-Aug-15	4413	Chrysochromulina laurentiana Kling	7184	2.93	9.20	9.20	407.70
NEM - 3-S	23-Aug-15	4414	Stichogloea spp.	35920	1.81	6.00	4.00	50.30
NEM - 3-S	23-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.53	9.45	18.90	1325.60
NEM - 3-S	23-Aug-15	5509	Cyclotella ocellata Pant.	179600	20.17	4.15	8.30	112.30
NEM - 3-S	23-Aug-15	5511	Rhizosolenia eriense H.L. Smith	7184	0.46	9.00	3.00	63.60
NEM - 3-S	23-Aug-15	5518	Synedra acus Kutzing	1400	0.11	75.00	2.00	78.50
NEM - 3-S	23-Aug-15	5540	Aulacoseira italica v subarctica (O. Muller) Simonsen	800	1.05	26.00	8.00	1306.90
NEM - 3-S	23-Aug-15	5551	Cyclotella michiganiana Skvortzow	28736	0.55	2.30	4.60	19.10
NEM - 3-S	23-Aug-15	6554	Rhodomonas minuta Skuja	35920	1.79	8.10	4.20	49.90
NEM - 3-S	23-Aug-15	6568	Katablepharis ovalis Skuja	7184	0.34	8.20	4.00	46.90
NEM - 3-S	23-Aug-15	7632	Gymnodinium sp.	7184	4.14	11.00	10.00	576.00
NEM - 3-S	23-Aug-15	7632	Gymnodinium sp.	200	2.18	27.50	27.50	10889.20
NEM - 4-S	23-Aug-15	1054	Planktolyngbya limnetica	400	0.05	106.00	1.20	119.90
NEM - 4-S	23-Aug-15	2105	Chlamydomonas spp.	7184	0.10	5.60	2.20	14.20
NEM - 4-S	23-Aug-15	2112	Sphaerocystis schroeteri Chodat	208336	6.98	4.00	4.00	33.50
NEM - 4-S	23-Aug-15	2121	Oocystis lacustris Chodat	107760	7.22	8.00	4.00	67.00
NEM - 4-S	23-Aug-15	2137	Dictyosphaerium simplex Sukja	57472	0.24	2.00	2.00	4.20
NEM - 4-S	23-Aug-15	2167	Elakatothrix gelatinosa Willen	14368	0.29	13.00	2.00	20.40
NEM - 4-S	23-Aug-15	2206	Botryococcus braunii Kutzing	400	0.28	11.00	11.00	696.90
NEM - 4-S	23-Aug-15	2247	Oocystis gigas Archer	200	0.59	22.00	16.00	2948.90

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume µ^3
NEM - 4-S	23-Aug-15	4351	Small chrysophyceae	136496	2.35	3.20	3.20	17.20
NEM - 4-S	23-Aug-15	4352	Large chrysophyceae	14368	2.58	7.00	7.00	179.60
NEM - 4-S	23-Aug-15	4357	Chrysococcus sp.	64656	4.23	5.00	5.00	65.40
NEM - 4-S	23-Aug-15	4361	Kephyrion boreale Skuja	7184	0.77	5.90	5.90	107.50
NEM - 4-S	23-Aug-15	4362	Kephyrion sp.	143680	2.96	3.40	3.40	20.60
NEM - 4-S	23-Aug-15	4378	Dinobryon borgei Lemmermann	21552	1.32	9.00	3.60	61.10
NEM - 4-S	23-Aug-15	4381	Dinobryon mucronutom Nygaard	43104	5.64	10.00	5.00	130.90
NEM - 4-S	23-Aug-15	4383	Dinobryon bavaricum Imhof	43104	9.99	12.30	6.00	231.80
NEM - 4-S	23-Aug-15	4383	Dinobryon bavaricum Imhof	4600	9.15	0.00	0.00	1990.00
NEM - 4-S	23-Aug-15	4388	Dinobryon sertularia Ehrenberg	28736	6.50	12.00	6.00	226.20
NEM - 4-S	23-Aug-15	4390	Dinobryon sociale Ehrenberg	21552	4.88	12.00	6.00	226.20
NEM - 4-S	23-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	7184	0.20	5.50	3.10	27.70
NEM - 4-S	23-Aug-15	4401	Uroglena volvox Ehrenberg	43104	4.88	6.00	6.00	113.10
NEM - 4-S	23-Aug-15	4413	Chrysochromulina laurentiana Kling	28736	11.72	9.20	9.20	407.70
NEM - 4-S	23-Aug-15	4414	Stichogloea spp.	21552	1.08	6.00	4.00	50.30
NEM - 4-S	23-Aug-15	4436	Dinobryon attenatum Hill	7184	1.50	11.10	6.00	209.20
NEM - 4-S	23-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.63	10.00	20.00	1570.80
NEM - 4-S	23-Aug-15	5509	Cyclotella ocellata Pant.	143680	16.14	4.15	8.30	112.30
NEM - 4-S	23-Aug-15	5518	Synedra acus Kutzing	200	0.02	77.00	2.00	80.60
NEM - 4-S	23-Aug-15	5551	Cyclotella michiganiana Skvortzow	122128	2.33	2.30	4.60	19.10
NEM - 4-S	23-Aug-15	6568	Katablepharis ovalis Skuja	7184	0.34	8.20	4.00	46.90
NEM - 4-S	23-Aug-15	7632	Gymnodinium sp.	200	1.82	25.90	25.90	9097.00
NEM - 5-S	19-Sep-15	1014	Chroococcus limneticus Lemmermann	14368	0.60	4.30	4.30	41.60
NEM - 5-S	19-Sep-15	1054	Planktolyngbya limnetica	1000	0.12	103.00	1.20	116.50
NEM - 5-S	19-Sep-15	2105	Chlamydomonas spp.	14368	0.25	5.00	2.60	17.70
NEM - 5-S	19-Sep-15	2112	Sphaerocystis schroeteri Chodat	114944	1.98	3.20	3.20	17.20
NEM - 5-S	19-Sep-15	2121	Oocystis lacustris Chodat	57472	1.72	5.60	3.20	30.00
NEM - 5-S	19-Sep-15	2167	Elakatothrix gelatinosa Willen	64656	1.12	11.00	2.00	17.30
NEM - 5-S	19-Sep-15	2178	Cosmarium sp.	600	0.84	20.00	20.00	1396.30
NEM - 5-S	19-Sep-15	2199	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27	6.00	6.00	37.70
NEM - 5-S	19-Sep-15	2235	Ankistrodesmus spiralis Lemmermann	7184	0.49	36.00	2.20	68.40
NEM - 5-S	19-Sep-15	4351	Small chrysophyceae	301728	4.71	3.10	3.10	15.60
NEM - 5-S	19-Sep-15	4352	Large chrysophyceae	28736	5.16	7.00	7.00	179.60
NEM - 5-S	19-Sep-15	4357	Chrysococcus sp.	258624	16.91	5.00	5.00	65.40
NEM - 5-S	19-Sep-15	4362	Kephyrion sp.	122128	2.10	3.20	3.20	17.20
NEM - 5-S	19-Sep-15	4368	Mallomonas crassisquama (Asmund) Fott	400	0.46	22.10	10.00	1157.20
NEM - 5-S	19-Sep-15	4378	Dinobryon borgei Lemmermann	28736	1.39	9.00	3.20	48.30
NEM - 5-S	19-Sep-15	4381	Dinobryon mucronutom Nygaard	35920	4.70	10.00	5.00	130.90
NEM - 5-S	19-Sep-15	4383	Dinobryon bavaricum Imhof	71840	16.25	12.00	6.00	226.20
NEM - 5-S	19-Sep-15	4383	Dinobryon bavaricum Imhof	11200	37.97	0.00	0.00	3390.00
NEM - 5-S	19-Sep-15	4388	Dinobryon sertularia Ehrenberg	21552	4.88	12.00	6.00	226.20
NEM - 5-S	19-Sep-15	4396	Chrysolkos skuja (Nauwerck) Willen	14368	0.48	5.50	3.40	33.30
NEM - 5-S	19-Sep-15	4401	Uroglena volvox Ehrenberg	35920	4.06	6.00	6.00	113.10
NEM - 5-S	19-Sep-15	4413	Chrysochromulina laurentiana Kling	35920	15.13	9.30	9.30	421.20
NEM - 5-S	19-Sep-15	4414	Stichogloea spp.	7184	0.36	6.00	4.00	50.30
NEM - 5-S	19-Sep-15	5507	Cyclotella stelligera Cleve and Grunow	1000	1.33	9.45	18.90	1325.60
NEM - 5-S	19-Sep-15	5509	Cyclotella ocellata Pant.	71840	8.97	4.30	8.60	124.90
NEM - 5-S	19-Sep-15	5523	Synedra ulna (Nitzsch) Ehrenberg	200	1.39	265.00	10.00	6937.70
NEM - 5-S	19-Sep-15	5551	Cyclotella michiganiana Skvortzow	215520	4.68	2.40	4.80	21.70
NEM - 5-S	19-Sep-15	5720	Cyclotella bodanica Eulenst.	200	1.54	17.00	34.00	7717.30
NEM - 5-S	19-Sep-15	6554	Rhodomonas minuta Skuja	7184	0.41	9.30	4.20	57.30
NEM - 5-S	19-Sep-15	6558	Cryptomonas erosa Ehrenberg	200	0.16	22.60	10.00	788.90
NEM - 5-S	19-Sep-15	7632	Gymnodinium sp.	7184	2.41	10.00	8.00	335.10
NEM - 5-S	19-Sep-15	7632	Gymnodinium sp.	400	4.08	26.90	26.90	10191.90
NEM - 6-S	19-Sep-15	1012	Aphanothece sp.	14368	0.57	0.00	0.00	40.00
NEM - 6-S	19-Sep-15	1054	Planktolyngbya limnetica	600	0.07	96.00	1.20	108.60
NEM - 6-S	19-Sep-15	2105	Chlamydomonas spp.	14368	0.25	5.00	2.60	17.70
NEM - 6-S	19-Sep-15	2112	Sphaerocystis schroeteri Chodat	93392	1.76	3.30	3.30	18.80
NEM - 6-S	19-Sep-15	2121	Oocystis lacustris Chodat	50288	1.51	5.60	3.20	30.00
NEM - 6-S	19-Sep-15	2167	Elakatothrix gelatinosa Willen	43104	0.75	11.00	2.00	17.30
NEM - 6-S	19-Sep-15	2178	Cosmarium sp.	400	0.70	21.60	21.60	1758.90
NEM - 6-S	19-Sep-15	2206	Botryococcus braunii Kutzing	200	0.18	12.00	12.00	904.80
NEM - 6-S	19-Sep-15	2215	Tetraedron caudatum (Corda) Hansgrig	7184	0.03	3.00	3.00	4.70
NEM - 6-S	19-Sep-15	4351	Small chrysophyceae	395120	6.16	3.10	3.10	15.60
NEM - 6-S	19-Sep-15	4352	Large chrysophyceae	7184	1.29	7.00	7.00	179.60
NEM - 6-S	19-Sep-15	4357	Chrysococcus sp.	366384	23.96	5.00	5.00	65.40
NEM - 6-S	19-Sep-15	4361	Kephyrion boreale Skuja	7184	0.81	6.00	6.00	113.10
NEM - 6-S	19-Sep-15	4362	Kephyrion sp.	265808	4.57	3.20	3.20	17.20
NEM - 6-S	19-Sep-15	4368	Mallomonas crassisquama (Asmund) Fott	200	0.22	21.00	10.00	1099.60
NEM - 6-S	19-Sep-15	4378	Dinobryon borgei Lemmermann	7184	0.35	9.00	3.20	48.30
NEM - 6-S	19-Sep-15	4381	Dinobryon mucronutom Nygaard	28736	3.76	10.00	5.00	130.90
NEM - 6-S	19-Sep-15	4383	Dinobryon bavaricum Imhof	71840	16.25	12.00	6.00	226.20
NEM - 6-S	19-Sep-15	4383	Dinobryon bavaricum Imhof	13000	44.07	0.00	0.00	3390.00
NEM - 6-S	19-Sep-15	4388	Dinobryon sertularia Ehrenberg	7184	1.76	13.00	6.00	245.00
NEM - 6-S	19-Sep-15	4390	Dinobryon sociale Ehrenberg	64656	14.63	12.00	6.00	226.20
NEM - 6-S	19-Sep-15	4394	Epiphyxis sp.	14368	0.99	8.20	4.00	68.70
NEM - 6-S	19-Sep-15	4401	Uroglena volvox Ehrenberg	14368	1.63	6.00	6.00	113.10
NEM - 6-S	19-Sep-15	4411	Bitrichia chodatii (Reverdin) Chodat	7184	0.36	6.00	4.00	50.30
NEM - 6-S	19-Sep-15	4413	Chrysochromulina laurentiana Kling	28736	10.97	9.00	9.00	381.70
NEM - 6-S	19-Sep-15	4414	Stichogloea spp.	7184	0.36	6.00	4.00	50.30

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
NEM - 6-S	19-Sep-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.43	5.60	3.20	30.00
NEM - 6-S	19-Sep-15	5507	Cyclotella stelligera Cleve and Grunow	600	0.76	9.30	18.60	1263.50
NEM - 6-S	19-Sep-15	5509	Cyclotella ocellata Pant.	28736	3.00	4.05	8.10	104.30
NEM - 6-S	19-Sep-15	5514	Tabellaria flocculsa (Roth) Kutzing	200	0.26	25.00	14.00	1282.80
NEM - 6-S	19-Sep-15	5551	Cyclotella michiganiana Skvortzow	179600	3.90	2.40	4.80	21.70
NEM - 6-S	19-Sep-15	6554	Rhodomonas minuta Skuja	14368	0.82	9.30	4.20	57.30
NEM - 6-S	19-Sep-15	6558	Cryptomonas erosa Ehrenberg	400	0.29	21.10	10.00	736.50
NEM - 6-S	19-Sep-15	6562	Cryptomonas reflexa (Marsson) Skuja	200	0.13	19.00	10.00	663.20
NEM - 6-S	19-Sep-15	6568	Katablepharis ovalis Skuja	14368	0.64	8.00	4.00	44.70
NEM - 6-S	19-Sep-15	7632	Gymnodinium sp.	400	4.08	26.90	26.90	10191.90
NEM - 6-SR	19-Sep-15	1012	Aphanothece sp.	7184	0.29	0.00	0.00	40.00
NEM - 6-SR	19-Sep-15	1054	Planktolyngbya limnetica	1800	0.20	96.00	1.20	108.60
NEM - 6-SR	19-Sep-15	2105	Chlamydomonas spp.	7184	0.13	5.00	2.60	17.70
NEM - 6-SR	19-Sep-15	2112	Sphaerocystis schroeteri Chodat	64656	1.22	3.30	3.30	18.80
NEM - 6-SR	19-Sep-15	2121	Oocystis lacustris Chodat	79024	2.37	5.60	3.20	30.00
NEM - 6-SR	19-Sep-15	2167	Elakatothrix gelatinosa Willen	28736	0.50	11.00	2.00	17.30
NEM - 6-SR	19-Sep-15	2178	Cosmarium sp.	200	0.35	21.60	21.60	1758.90
NEM - 6-SR	19-Sep-15	2206	Botryococcus braunii Kutzing	200	0.18	12.00	12.00	904.80
NEM - 6-SR	19-Sep-15	2215	Tetraedron caudatum (Corda) Hansgrig	7184	0.03	3.00	3.00	4.70
NEM - 6-SR	19-Sep-15	4351	Small chrysophyceae	308912	4.82	3.10	3.10	15.60
NEM - 6-SR	19-Sep-15	4352	Large chrysophyceae	7184	1.29	7.00	7.00	179.60
NEM - 6-SR	19-Sep-15	4357	Chrysococcus sp.	373568	24.43	5.00	5.00	65.40
NEM - 6-SR	19-Sep-15	4358	Chrysostephanospaera globulifera Scherffel	14368	5.67	9.10	9.10	394.60
NEM - 6-SR	19-Sep-15	4361	Kephyrion boreale Skuja	28736	3.25	6.00	6.00	113.10
NEM - 6-SR	19-Sep-15	4362	Kephyrion sp.	229888	3.95	3.20	3.20	17.20
NEM - 6-SR	19-Sep-15	4368	Mallomonas crassisquama (Asmund) Fott	200	0.22	21.00	10.00	1099.60
NEM - 6-SR	19-Sep-15	4378	Dinobryon borgei Lemmermann	28736	1.39	9.00	3.20	48.30
NEM - 6-SR	19-Sep-15	4381	Dinobryon mucronutom Nygaard	14368	1.88	10.00	5.00	130.90
NEM - 6-SR	19-Sep-15	4383	Dinobryon bavaricum Imhof	57472	13.00	12.00	6.00	226.20
NEM - 6-SR	19-Sep-15	4383	Dinobryon bavaricum Imhof	14600	49.49	0.00	0.00	3390.00
NEM - 6-SR	19-Sep-15	4390	Dinobryon sociale Ehrenberg	57472	13.00	12.00	6.00	226.20
NEM - 6-SR	19-Sep-15	4394	Epiphyxis sp.	14368	0.99	8.20	4.00	68.70
NEM - 6-SR	19-Sep-15	4400	Ochromonas sp.	7184	0.44	4.90	4.90	61.60
NEM - 6-SR	19-Sep-15	4401	Uroglena volvox Ehrenberg	43104	4.88	6.00	6.00	113.10
NEM - 6-SR	19-Sep-15	4411	Bitrichia chodatii (Reverdin) Chodat	7184	0.36	6.00	4.00	50.30
NEM - 6-SR	19-Sep-15	4413	Chrysochromulina laurentiana Kling	21552	8.23	9.00	9.00	381.70
NEM - 6-SR	19-Sep-15	4414	Stichogloea spp.	28736	1.45	6.00	4.00	50.30
NEM - 6-SR	19-Sep-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.86	5.60	3.20	30.00
NEM - 6-SR	19-Sep-15	5507	Cyclotella stelligera Cleve and Grunow	200	0.25	9.30	18.60	1263.50
NEM - 6-SR	19-Sep-15	5509	Cyclotella ocellata Pant.	7184	0.75	4.05	8.10	104.30
NEM - 6-SR	19-Sep-15	5511	Rhizosolenia eriense H.L. Smith	7184	0.46	9.00	3.00	63.60
NEM - 6-SR	19-Sep-15	5518	Synedra acus Kutzing	600	0.05	81.00	2.00	84.80
NEM - 6-SR	19-Sep-15	5551	Cyclotella michiganiana Skvortzow	179600	3.90	2.40	4.80	21.70
NEM - 6-SR	19-Sep-15	6554	Rhodomonas minuta Skuja	7184	0.39	9.30	4.10	54.60
NEM - 6-SR	19-Sep-15	6558	Cryptomonas erosa Ehrenberg	600	0.44	21.10	10.00	736.50
NEM - 6-SR	19-Sep-15	6568	Katablepharis ovalis Skuja	7184	0.32	8.00	4.00	44.70
NEM - 6-SR	19-Sep-15	7632	Gymnodinium sp.	200	2.04	26.90	26.90	10191.90
WTN - 1-S	17-Jul-15	2105	Chlamydomonas spp.	14368	0.34	5.00	3.00	23.60
WTN - 1-S	17-Jul-15	2235	Ankistrodesmus spiralis Lemmermann	7184	0.49	36.00	2.20	68.40
WTN - 1-S	17-Jul-15	2260	Monomastix minuta Skuja	14368	0.32	6.30	3.20	22.50
WTN - 1-S	17-Jul-15	4351	Small chrysophyceae	395120	5.06	2.90	2.90	12.80
WTN - 1-S	17-Jul-15	4352	Large chrysophyceae	7184	0.94	6.30	6.30	130.90
WTN - 1-S	17-Jul-15	4357	Chrysococcus sp.	2923888	149.12	4.60	4.60	51.00
WTN - 1-S	17-Jul-15	4358	Chrysostephanospaera globulifera Scherffel	7184	2.65	8.90	8.90	369.10
WTN - 1-S	17-Jul-15	4362	Kephyrion sp.	344832	5.93	3.20	3.20	17.20
WTN - 1-S	17-Jul-15	4363	Spinifiromonas sirratus***************	14368	1.32	5.60	5.60	92.00
WTN - 1-S	17-Jul-15	4368	Mallomonas crassisquama (Asmund) Fott	200	0.21	20.00	10.00	1047.20
WTN - 1-S	17-Jul-15	4378	Dinobryon borgei Lemmermann	7184	0.37	9.00	3.30	51.30
WTN - 1-S	17-Jul-15	4381	Dinobryon mucronutom Nygaard	14368	1.88	10.00	5.00	130.90
WTN - 1-S	17-Jul-15	4388	Dinobryon sertularia Ehrenberg	79024	20.85	14.00	6.00	263.90
WTN - 1-S	17-Jul-15	4388	Dinobryon sertularia Ehrenberg	10600	24.65	0.00	0.00	2325.00
WTN - 1-S	17-Jul-15	4390	Dinobryon sociale Ehrenberg	35920	8.13	12.00	6.00	226.20
WTN - 1-S	17-Jul-15	4390	Dinobryon sociale Ehrenberg	800	1.59	0.00	0.00	1991.00
WTN - 1-S	17-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	136496	3.85	5.60	3.10	28.20
WTN - 1-S	17-Jul-15	4401	Uroglena volvox Ehrenberg	495696	56.06	6.00	6.00	113.10
WTN - 1-S	17-Jul-15	4413	Chrysochromulina laurentiana Kling	150864	59.53	9.10	9.10	394.60
WTN - 1-S	17-Jul-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.18	5.20	3.00	24.50
WTN - 1-S	17-Jul-15	4436	Dinobryon attenatum Hill	7184	1.53	11.30	6.00	213.00
WTN - 1-S	17-Jul-15	5509	Cyclotella ocellata Pant.	7184	0.81	4.15	8.30	112.30
WTN - 1-S	17-Jul-15	5518	Synedra acus Kutzing	400	0.03	81.00	2.00	84.80
WTN - 1-S	17-Jul-15	5551	Cyclotella michiganiana Skvortzow	57472	1.33	2.45	4.90	23.10
WTN - 1-S	17-Jul-15	6554	Rhodomonas minuta Skuja	14368	1.30	10.00	5.10	90.80
WTN - 1-S	17-Jul-15	6558	Cryptomonas erosa Ehrenberg	1600	1.15	20.60	10.00	719.10
WTN - 1-S	17-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	400	0.27	19.10	10.00	666.70
WTN - 1-S	17-Jul-15	6565	Cryptomonas rostratiformis Skuja	200	0.38	28.00	14.00	1915.70
WTN - 1-S	17-Jul-15	6568	Katablepharis ovalis Skuja	79024	3.62	8.10	4.00	45.80
WTN - 1-S	17-Jul-15	7632	Gymnodinium sp.	400	3.64	25.90	25.90	9097.00
WTN - 1-S	17-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	600	0.57	12.60	12.00	950.00
WTN - 1-S	17-Jul-15	7641	Peridinium aciculiferum Lemmermann	600	5.61	31.00	24.00	9349.40
WTN - 2-S	17-Jul-15	2105	Chlamydomonas spp.	7184	0.17	5.00	3.00	23.60

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume µ^3
WTN - 2-S	17-Jul-15	2137	Dictyosphaerium simplex Sukja	14368	0.09	2.30	2.30	6.40
WTN - 2-S	17-Jul-15	2178	Cosmarium sp.	200	0.28	20.00	20.00	1396.30
WTN - 2-S	17-Jul-15	2215	Tetraedron caudatum (Corda) Hansgrig	7184	0.03	3.00	3.00	4.70
WTN - 2-S	17-Jul-15	2235	Ankistrodesmus spiralis Lemmermann	7184	0.45	33.00	2.20	62.70
WTN - 2-S	17-Jul-15	4351	Small chrysophyceae	948288	12.14	2.90	2.90	12.80
WTN - 2-S	17-Jul-15	4352	Large chrysophyceae	21552	2.82	6.30	6.30	130.90
WTN - 2-S	17-Jul-15	4357	Chrysococcus sp.	1910944	97.46	4.60	4.60	51.00
WTN - 2-S	17-Jul-15	4362	Kephyrion sp.	438224	6.18	3.00	3.00	14.10
WTN - 2-S	17-Jul-15	4363	Spinifiromonas sirratus***************	21552	2.56	6.10	6.10	118.80
WTN - 2-S	17-Jul-15	4378	Dinobryon borgei Lemmermann	14368	0.74	9.00	3.30	51.30
WTN - 2-S	17-Jul-15	4388	Dinobryon sertularia Ehrenberg	79024	20.85	14.00	6.00	263.90
WTN - 2-S	17-Jul-15	4388	Dinobryon sertularia Ehrenberg	11800	27.44	0.00	0.00	2325.00
WTN - 2-S	17-Jul-15	4390	Dinobryon sociale Ehrenberg	7184	1.63	12.00	6.00	226.20
WTN - 2-S	17-Jul-15	4390	Dinobryon sociale Ehrenberg	1400	2.79	0.00	0.00	1991.00
WTN - 2-S	17-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	215520	6.08	5.60	3.10	28.20
WTN - 2-S	17-Jul-15	4401	Uroglena volvox Ehrenberg	193968	21.94	6.00	6.00	113.10
WTN - 2-S	17-Jul-15	4413	Chrysochromulina laurentiana Kling	71840	28.35	9.10	9.10	394.60
WTN - 2-S	17-Jul-15	4414	Stichogloea spp.	21552	1.08	6.00	4.00	50.30
WTN - 2-S	17-Jul-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.18	5.20	3.00	24.50
WTN - 2-S	17-Jul-15	4436	Dinobryon attenatum Hill	7184	1.35	10.00	6.00	188.50
WTN - 2-S	17-Jul-15	5509	Cyclotella ocellata Pant.	7184	0.81	4.15	8.30	112.30
WTN - 2-S	17-Jul-15	5514	Tabellaria flocculsa (Roth) Kutzing	1200	1.57	25.50	14.00	1308.50
WTN - 2-S	17-Jul-15	5518	Synedra acus Kutzing	2000	0.17	81.00	2.00	84.80
WTN - 2-S	17-Jul-15	5551	Cyclotella michiganiana Skvortzow	57472	1.10	2.30	4.60	19.10
WTN - 2-S	17-Jul-15	6558	Cryptomonas erosa Ehrenberg	14368	1.30	10.00	5.10	90.80
WTN - 2-S	17-Jul-15	6558	Cryptomonas erosa Ehrenberg	3400	2.49	21.00	10.00	733.00
WTN - 2-S	17-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	400	0.27	19.60	10.00	684.20
WTN - 2-S	17-Jul-15	6565	Cryptomonas rostratiformis Skuja	200	0.38	28.00	14.00	1915.70
WTN - 2-S	17-Jul-15	6568	Katablepharis ovalis Skuja	50288	2.30	8.10	4.00	45.80
WTN - 2-S	17-Jul-15	7632	Gymnodinium sp.	7184	2.65	11.00	8.00	368.60
WTN - 2-S	17-Jul-15	7632	Gymnodinium sp.	1800	16.57	26.00	26.00	9202.80
WTN - 2-S	17-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	800	0.80	13.30	12.00	1002.80
WTN - 2-S	17-Jul-15	7641	Peridinium aciculiferum Lemmermann	600	5.46	30.20	24.00	9108.10
WTN - 3-S	20-Aug-15	1054	Planktolyngbya limnetica	800	0.10	116.00	1.20	131.20
WTN - 3-S	20-Aug-15	2121	Oocystis lacustris Chodat	43104	2.17	6.00	4.00	50.30
WTN - 3-S	20-Aug-15	2137	Dictyosphaerium simplex Sukja	64656	0.27	2.00	2.00	4.20
WTN - 3-S	20-Aug-15	2167	Elakatothrix gelatinosa Willen	43104	0.88	13.00	2.00	20.40
WTN - 3-S	20-Aug-15	2182	Euastrum spp.	200	0.37	22.00	22.00	1858.40
WTN - 3-S	20-Aug-15	2235	Ankistrodesmus spiralis Lemmermann	14368	0.85	34.00	2.10	58.90
WTN - 3-S	20-Aug-15	4351	Small chrysophyceae	323280	5.56	3.20	3.20	17.20
WTN - 3-S	20-Aug-15	4352	Large chrysophyceae	35920	6.45	7.00	7.00	179.60
WTN - 3-S	20-Aug-15	4357	Chrysococcus sp.	387936	25.37	5.00	5.00	65.40
WTN - 3-S	20-Aug-15	4361	Kephyrion boreale Skuja	21552	2.56	6.10	6.10	118.80
WTN - 3-S	20-Aug-15	4362	Kephyrion sp.	158048	2.97	3.30	3.30	18.80
WTN - 3-S	20-Aug-15	4363	Spinifiromonas sirratus***************	7184	1.08	6.60	6.60	150.50
WTN - 3-S	20-Aug-15	4378	Dinobryon borgei Lemmermann	100576	6.22	9.10	3.60	61.80
WTN - 3-S	20-Aug-15	4381	Dinobryon mucronutom Nygaard	35920	4.70	10.00	5.00	130.90
WTN - 3-S	20-Aug-15	4383	Dinobryon bavaricum Imhof	50288	11.38	12.00	6.00	226.20
WTN - 3-S	20-Aug-15	4383	Dinobryon bavaricum Imhof	1000	1.99	0.00	0.00	1990.00
WTN - 3-S	20-Aug-15	4388	Dinobryon sertularia Ehrenberg	14368	3.41	12.60	6.00	237.50
WTN - 3-S	20-Aug-15	4388	Dinobryon sertularia Ehrenberg	200	0.53	0.00	0.00	2650.00
WTN - 3-S	20-Aug-15	4390	Dinobryon sociale Ehrenberg	28736	6.50	12.00	6.00	226.20
WTN - 3-S	20-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	43104	1.06	5.20	3.00	24.50
WTN - 3-S	20-Aug-15	4401	Uroglena volvox Ehrenberg	186784	21.13	6.00	6.00	113.10
WTN - 3-S	20-Aug-15	4411	Bitrichia chodatii (Reverdin) Chodat	7184	0.36	6.00	4.00	50.30
WTN - 3-S	20-Aug-15	4413	Chrysochromulina laurentiana Kling	86208	35.15	9.20	9.20	407.70
WTN - 3-S	20-Aug-15	4414	Stichogloea spp.	21552	1.08	6.00	4.00	50.30
WTN - 3-S	20-Aug-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	50288	1.40	5.20	3.20	27.90
WTN - 3-S	20-Aug-15	4437	Pteridomonas sp.	7184	1.33	8.10	8.10	185.50
WTN - 3-S	20-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.63	10.00	20.00	1570.80
WTN - 3-S	20-Aug-15	5509	Cyclotella ocellata Pant.	28736	3.11	4.10	8.20	108.30
WTN - 3-S	20-Aug-15	5511	Rhizosolenia eriense H.L. Smith	21552	1.68	11.00	3.00	77.80
WTN - 3-S	20-Aug-15	5518	Synedra acus Kutzing	1800	0.14	76.00	2.00	79.60
WTN - 3-S	20-Aug-15	5551	Cyclotella michiganiana Skvortzow	79024	1.71	2.40	4.80	21.70
WTN - 3-S	20-Aug-15	6554	Rhodomonas minuta Skuja	93392	4.33	8.30	4.00	46.40
WTN - 3-S	20-Aug-15	6568	Katablepharis ovalis Skuja	71840	3.46	8.30	4.00	48.10
WTN - 3-S	20-Aug-15	7632	Gymnodinium sp.	21552	7.22	10.00	8.00	335.10
WTN - 3-S	20-Aug-15	7632	Gymnodinium sp.	1800	16.37	25.90	25.90	9097.00
WTN - 3-S	20-Aug-15	7639	Peridinium pusillum (Penard) Lemmermann	200	0.25	14.20	13.00	1256.50
WTN - 3-SR	20-Aug-15	1054	Planktolyngbya limnetica	1400	0.18	116.00	1.20	131.20
WTN - 3-SR	20-Aug-15	2105	Chlamydomonas spp.	14368	0.35	5.60	2.90	24.70
WTN - 3-SR	20-Aug-15	2121	Oocystis lacustris Chodat	71840	3.61	6.00	4.00	50.30
WTN - 3-SR	20-Aug-15	2137	Dictyosphaerium simplex Sukja	114944	0.48	2.00	2.00	4.20
WTN - 3-SR	20-Aug-15	2178	Cosmarium sp.	200	0.28	20.00	20.00	1396.30
WTN - 3-SR	20-Aug-15	2235	Ankistrodesmus spiralis Lemmermann	7184	0.42	34.00	2.10	58.90
WTN - 3-SR	20-Aug-15	4351	Small chrysophyceae	258624	4.45	3.20	3.20	17.20
WTN - 3-SR	20-Aug-15	4352	Large chrysophyceae	14368	2.58	7.00	7.00	179.60
WTN - 3-SR	20-Aug-15	4357	Chrysococcus sp.	423856	27.72	5.00	5.00	65.40
WTN - 3-SR	20-Aug-15	4361	Kephyrion boreale Skuja	14368	1.71	6.10	6.10	118.80
WTN - 3-SR	20-Aug-15	4362	Kephyrion sp.	122128	2.30	3.30	3.30	18.80

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume µ^3
WTN - 3-SR	20-Aug-15	4378	Dinobryon borgei Lemmermann	71840	4.44	9.10	3.60	61.80
WTN - 3-SR	20-Aug-15	4381	Dinobryon mucronutom Nygaard	35920	4.70	10.00	5.00	130.90
WTN - 3-SR	20-Aug-15	4383	Dinobryon bavaricum Imhof	71840	16.25	12.00	6.00	226.20
WTN - 3-SR	20-Aug-15	4383	Dinobryon bavaricum Imhof	1400	2.79	0.00	0.00	1990.00
WTN - 3-SR	20-Aug-15	4388	Dinobryon sertularia Ehrenberg	14368	3.41	12.60	6.00	237.50
WTN - 3-SR	20-Aug-15	4388	Dinobryon sertularia Ehrenberg	200	0.53	0.00	0.00	2650.00
WTN - 3-SR	20-Aug-15	4390	Dinobryon sociale Ehrenberg	14368	3.25	12.00	6.00	226.20
WTN - 3-SR	20-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	28736	0.70	5.20	3.00	24.50
WTN - 3-SR	20-Aug-15	4401	Uroglena volvox Ehrenberg	251440	28.44	6.00	6.00	113.10
WTN - 3-SR	20-Aug-15	4411	Bitrichia chodatii (Reverdin) Chodat	21552	1.08	6.00	4.00	50.30
WTN - 3-SR	20-Aug-15	4413	Chrysochromulina laurentiana Kling	107760	43.93	9.20	9.20	407.70
WTN - 3-SR	20-Aug-15	4414	Stichogloea spp.	28736	1.45	6.00	4.00	50.30
WTN - 3-SR	20-Aug-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	57472	1.62	5.60	3.10	28.20
WTN - 3-SR	20-Aug-15	4437	Pteridomonas sp.	7184	1.33	8.10	8.10	185.50
WTN - 3-SR	20-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	200	0.31	10.00	20.00	1570.80
WTN - 3-SR	20-Aug-15	5509	Cyclotella ocellata Pant.	35920	3.89	4.10	8.20	108.30
WTN - 3-SR	20-Aug-15	5511	Rhizosolenia eriense H.L. Smith	7184	0.56	11.00	3.00	77.80
WTN - 3-SR	20-Aug-15	5518	Synedra acus Kutzing	2400	0.19	76.00	2.00	79.60
WTN - 3-SR	20-Aug-15	5551	Cyclotella michiganiana Skvortzow	43104	0.94	2.40	4.80	21.70
WTN - 3-SR	20-Aug-15	6554	Rhodomonas minuta Skuja	122128	5.67	8.30	4.00	46.40
WTN - 3-SR	20-Aug-15	6568	Katablepharis ovalis Skuja	57472	2.76	8.30	4.00	48.10
WTN - 3-SR	20-Aug-15	7632	Gymnodinium sp.	35920	12.04	10.00	8.00	335.10
WTN - 3-SR	20-Aug-15	7632	Gymnodinium sp.	1400	12.74	25.90	25.90	9097.00
WTN - 3-SR	20-Aug-15	7639	Peridinium pusillum (Penard) Lemmermann	600	0.75	14.20	13.00	1256.50
WTN - 4-S	20-Aug-15	1054	Planktolyngbya limnetica	400	0.05	100.00	1.20	113.10
WTN - 4-S	20-Aug-15	2112	Sphaerocystis schroeteri Chodat	64656	1.86	3.80	3.80	28.70
WTN - 4-S	20-Aug-15	2121	Oocystis lacustris Chodat	14368	0.72	6.00	4.00	50.30
WTN - 4-S	20-Aug-15	2137	Dictyosphaerium simplex Sukja	14368	0.06	2.00	2.00	4.20
WTN - 4-S	20-Aug-15	2167	Elakatothrix gelatinosa Willen	43104	0.83	12.30	2.00	19.30
WTN - 4-S	20-Aug-15	2206	Botryococcus braunii Kutzing	200	0.14	11.00	11.00	696.90
WTN - 4-S	20-Aug-15	2215	Tetraedron caudatum (Corda) Hansgrig	21552	0.10	3.00	3.00	4.70
WTN - 4-S	20-Aug-15	4351	Small chrysophyceae	251440	4.32	3.20	3.20	17.20
WTN - 4-S	20-Aug-15	4352	Large chrysophyceae	50288	9.03	7.00	7.00	179.60
WTN - 4-S	20-Aug-15	4357	Chrysococcus sp.	359200	23.49	5.00	5.00	65.40
WTN - 4-S	20-Aug-15	4358	Chrysostephanospaera globulifera Scherffel	7184	1.65	7.60	7.60	229.80
WTN - 4-S	20-Aug-15	4361	Kephyrion boreale Skuja	14368	1.71	6.10	6.10	118.80
WTN - 4-S	20-Aug-15	4362	Kephyrion sp.	143680	2.96	3.40	3.40	20.60
WTN - 4-S	20-Aug-15	4367	Mallomonas duerrschmidtiae Siver, Hamer and Kling	200	0.13	19.00	8.00	636.70
WTN - 4-S	20-Aug-15	4378	Dinobryon borgei Lemmermann	21552	1.33	9.10	3.60	61.80
WTN - 4-S	20-Aug-15	4381	Dinobryon mucronutom Nygaard	7184	0.94	10.00	5.00	130.90
WTN - 4-S	20-Aug-15	4383	Dinobryon bavaricum Imhof	28736	6.50	12.00	6.00	226.20
WTN - 4-S	20-Aug-15	4383	Dinobryon bavaricum Imhof	1000	1.99	0.00	0.00	1990.00
WTN - 4-S	20-Aug-15	4388	Dinobryon sertularia Ehrenberg	7184	1.76	13.00	6.00	245.00
WTN - 4-S	20-Aug-15	4390	Dinobryon sociale Ehrenberg	28736	6.50	12.00	6.00	226.20
WTN - 4-S	20-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	7184	0.18	5.20	3.00	24.50
WTN - 4-S	20-Aug-15	4401	Uroglena volvox Ehrenberg	165232	18.69	6.00	6.00	113.10
WTN - 4-S	20-Aug-15	4401	Uroglena volvox Ehrenberg	200	2.26	0.00	0.00	11300.00
WTN - 4-S	20-Aug-15	4411	Bitrichia chodatii (Reverdin) Chodat	21552	1.08	6.00	4.00	50.30
WTN - 4-S	20-Aug-15	4413	Chrysochromulina laurentiana Kling	43104	17.57	9.20	9.20	407.70
WTN - 4-S	20-Aug-15	4414	Stichogloea spp.	35920	1.81	6.00	4.00	50.30
WTN - 4-S	20-Aug-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.20	5.60	3.10	28.20
WTN - 4-S	20-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	200	0.31	10.00	20.00	1570.80
WTN - 4-S	20-Aug-15	5509	Cyclotella ocellata Pant.	57472	6.69	4.20	8.40	116.40
WTN - 4-S	20-Aug-15	5511	Rhizosolenia eriense H.L. Smith	7184	0.46	9.00	3.00	63.60
WTN - 4-S	20-Aug-15	5514	Tabellaria flocculsa (Roth) Kutzing	1400	1.75	24.30	14.00	1246.90
WTN - 4-S	20-Aug-15	5518	Synedra acus Kutzing	1200	0.10	80.00	2.00	83.80
WTN - 4-S	20-Aug-15	5551	Cyclotella michiganiana Skvortzow	79024	1.71	2.40	4.80	21.70
WTN - 4-S	20-Aug-15	6554	Rhodomonas minuta Skuja	86208	4.00	8.30	4.00	46.40
WTN - 4-S	20-Aug-15	6568	Katablepharis ovalis Skuja	14368	0.69	8.30	4.00	48.10
WTN - 4-S	20-Aug-15	7632	Gymnodinium sp.	43104	14.44	10.00	8.00	335.10
WTN - 4-S	20-Aug-15	7632	Gymnodinium sp.	1200	15.48	29.10	29.10	12902.60
WTN - 4-S	20-Aug-15	7639	Peridinium pusillum (Penard) Lemmermann	400	0.50	14.20	13.00	1256.50
WTN - 5-S	18-Sep-15	1054	Planktolyngbya limnetica	200	0.02	109.00	1.20	123.30
WTN - 5-S	18-Sep-15	1073	Snowella sp	400	0.22	0.00	0.00	550.00
WTN - 5-S	18-Sep-15	2105	Chlamydomonas spp.	21552	0.48	4.70	3.00	22.10
WTN - 5-S	18-Sep-15	2112	Sphaerocystis schroeteri Chodat	43104	0.55	2.90	2.90	12.80
WTN - 5-S	18-Sep-15	2121	Oocystis lacustris Chodat	43104	2.17	6.00	4.00	50.30
WTN - 5-S	18-Sep-15	2157	Kichnerella lunaris (Kirchn.) Moeb.	28736	0.32	5.90	2.20	11.20
WTN - 5-S	18-Sep-15	2167	Elakatothrix gelatinosa Willen	50288	0.87	11.00	2.00	17.30
WTN - 5-S	18-Sep-15	2186	Xanthidium sp.	7184	1.25	10.00	10.00	174.50
WTN - 5-S	18-Sep-15	2206	Botryococcus braunii Kutzing	400	0.21	10.00	10.00	523.60
WTN - 5-S	18-Sep-15	2215	Tetraedron caudatum (Corda) Hansgrig	43104	0.20	3.00	3.00	4.70
WTN - 5-S	18-Sep-15	4351	Small chrysophyceae	538800	10.13	3.30	3.30	18.80
WTN - 5-S	18-Sep-15	4352	Large chrysophyceae	35920	13.71	9.00	9.00	381.70
WTN - 5-S	18-Sep-15	4357	Chrysococcus sp.	517248	33.83	5.00	5.00	65.40
WTN - 5-S	18-Sep-15	4358	Chrysostephanospaera globulifera Scherffel	7184	2.15	8.30	8.30	299.40
WTN - 5-S	18-Sep-15	4361	Kephyrion boreale Skuja	43104	5.12	6.10	6.10	118.80
WTN - 5-S	18-Sep-15	4362	Kephyrion sp.	201152	4.51	3.50	3.50	22.40
WTN - 5-S	18-Sep-15	4378	Dinobryon borgei Lemmermann	28736	1.39	9.00	3.20	48.30
WTN - 5-S	18-Sep-15	4381	Dinobryon mucronutom Nygaard	21552	2.82	10.00	5.00	130.90

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length μ	width μ	cell volume $μ^3$
WTN - 5-S	18-Sep-15	4383	Dinobryon bavaricum Imhof	7184	1.63	12.00	6.00	226.20
WTN - 5-S	18-Sep-15	4383	Dinobryon bavaricum Imhof	200	0.40	0.00	0.00	1990.00
WTN - 5-S	18-Sep-15	4390	Dinobryon sociale Ehrenberg	165232	35.51	11.40	6.00	214.90
WTN - 5-S	18-Sep-15	4390	Dinobryon sociale Ehrenberg	7200	9.11	0.00	0.00	1265.00
WTN - 5-S	18-Sep-15	4396	Chrysolkos skuja (Nauwerck) Willen	57472	1.62	5.60	3.10	28.20
WTN - 5-S	18-Sep-15	4401	Uroglena volvox Ehrenberg	201152	22.75	6.00	6.00	113.10
WTN - 5-S	18-Sep-15	4413	Chrysochromulina laurentiana Kling	79024	34.37	9.40	9.40	434.90
WTN - 5-S	18-Sep-15	4414	Stichogloea spp.	21552	1.08	6.00	4.00	50.30
WTN - 5-S	18-Sep-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	35920	0.95	5.60	3.00	26.40
WTN - 5-S	18-Sep-15	4437	Pteridomonas sp.	43104	10.25	8.80	8.80	237.90
WTN - 5-S	18-Sep-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.46	9.00	18.00	1145.10
WTN - 5-S	18-Sep-15	5509	Cyclotella ocellata Pant.	28736	3.59	4.30	8.60	124.90
WTN - 5-S	18-Sep-15	5511	Rhizosolenia eriense H.L. Smith	208336	16.21	11.00	3.00	77.80
WTN - 5-S	18-Sep-15	5518	Synedra acus Kutzing	9600	0.76	76.00	2.00	79.60
WTN - 5-S	18-Sep-15	5523	Synedra ulna (Nitzsch) Ehrenberg	200	1.35	257.00	10.00	6728.20
WTN - 5-S	18-Sep-15	5551	Cyclotella michiganiana Skvortzow	114944	2.82	2.50	5.00	24.50
WTN - 5-S	18-Sep-15	6554	Rhodomonas minuta Skuja	21552	1.21	9.10	4.20	56.00
WTN - 5-S	18-Sep-15	6558	Cryptomonas erosa Ehrenberg	1800	1.39	22.10	10.00	771.40
WTN - 5-S	18-Sep-15	6568	Katablepharis ovalis Skuja	28736	1.74	9.30	4.00	60.40
WTN - 5-S	18-Sep-15	7632	Gymnodinium sp.	21552	7.40	10.00	8.10	343.50
WTN - 5-S	18-Sep-15	7632	Gymnodinium sp.	800	7.36	26.00	26.00	9202.80
WTN - 5-S	18-Sep-15	7639	Peridinium pusillum (Penard) Lemmermann	400	0.49	13.90	13.00	1230.00
WTN - 6-S	18-Sep-15	1054	Planktolyngbya limnetica	1800	0.28	136.00	1.20	153.80
WTN - 6-S	18-Sep-15	2112	Sphaerocystis schroeteri Chodat	21552	0.28	2.90	2.90	12.80
WTN - 6-S	18-Sep-15	2121	Oocystis lacustris Chodat	14368	0.72	6.00	4.00	50.30
WTN - 6-S	18-Sep-15	2137	Dictyosphaerium simplex Sukja	28736	0.12	2.00	2.00	4.20
WTN - 6-S	18-Sep-15	2145	Crucigenia quadrata Morr.	28736	0.04	2.00	2.00	1.40
WTN - 6-S	18-Sep-15	2167	Elakatothrix gelatinosa Willen	14368	0.25	11.00	2.00	17.30
WTN - 6-S	18-Sep-15	2215	Tetraedron caudatum (Corda) Hansgrig	21552	0.10	3.00	3.00	4.70
WTN - 6-S	18-Sep-15	2235	Ankistrodesmus spiralis Lemmermann	14368	0.38	30.00	1.50	26.50
WTN - 6-S	18-Sep-15	4351	Small chrysophyceae	452592	8.51	3.30	3.30	18.80
WTN - 6-S	18-Sep-15	4352	Large chrysophyceae	43104	16.45	9.00	9.00	381.70
WTN - 6-S	18-Sep-15	4357	Chrysococcus sp.	553168	36.18	5.00	5.00	65.40
WTN - 6-S	18-Sep-15	4358	Chrysostephanospaera globulifera Scherffel	14368	4.62	8.50	8.50	321.60
WTN - 6-S	18-Sep-15	4361	Kephyrion boreale Skuja	100576	11.95	6.10	6.10	118.80
WTN - 6-S	18-Sep-15	4362	Kephyrion sp.	208336	4.67	3.50	3.50	22.40
WTN - 6-S	18-Sep-15	4363	Spinifiromonas sirratus***************	28736	3.41	6.10	6.10	118.80
WTN - 6-S	18-Sep-15	4378	Dinobryon borgei Lemmermann	43104	2.08	9.00	3.20	48.30
WTN - 6-S	18-Sep-15	4381	Dinobryon mucronutom Nygaard	21552	2.82	10.00	5.00	130.90
WTN - 6-S	18-Sep-15	4383	Dinobryon bavaricum Imhof	600	1.19	0.00	0.00	1990.00
WTN - 6-S	18-Sep-15	4390	Dinobryon sociale Ehrenberg	193968	41.68	11.40	6.00	214.90
WTN - 6-S	18-Sep-15	4390	Dinobryon sociale Ehrenberg	3200	4.05	0.00	0.00	1265.00
WTN - 6-S	18-Sep-15	4396	Chrysolkos skuja (Nauwerck) Willen	79024	2.23	5.60	3.10	28.20
WTN - 6-S	18-Sep-15	4401	Uroglena volvox Ehrenberg	150864	17.06	6.00	6.00	113.10
WTN - 6-S	18-Sep-15	4411	Bitrichia chodatii (Reverdin) Chodat	21552	1.08	6.00	4.00	50.30
WTN - 6-S	18-Sep-15	4413	Chrysochromulina laurentiana Kling	57472	24.99	9.40	9.40	434.90
WTN - 6-S	18-Sep-15	4414	Stichogloea spp.	100576	5.06	6.00	4.00	50.30
WTN - 6-S	18-Sep-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.57	5.60	3.00	26.40
WTN - 6-S	18-Sep-15	5507	Cyclotella stelligera Cleve and Grunow	200	0.23	9.00	18.00	1145.10
WTN - 6-S	18-Sep-15	5509	Cyclotella ocellata Pant.	35920	4.49	4.30	8.60	124.90
WTN - 6-S	18-Sep-15	5511	Rhizosolenia eriense H.L. Smith	86208	6.71	11.00	3.00	77.80
WTN - 6-S	18-Sep-15	5514	Tabellaria flocculsa (Roth) Kutzing	200	0.27	26.00	14.00	1334.10
WTN - 6-S	18-Sep-15	5518	Synedra acus Kutzing	12600	0.98	74.00	2.00	77.50
WTN - 6-S	18-Sep-15	5551	Cyclotella michiganiana Skvortzow	93392	2.29	2.50	5.00	24.50
WTN - 6-S	18-Sep-15	6554	Rhodomonas minuta Skuja	35920	2.01	9.10	4.20	56.00
WTN - 6-S	18-Sep-15	6558	Cryptomonas erosa Ehrenberg	800	0.62	22.10	10.00	771.40
WTN - 6-S	18-Sep-15	6568	Katablepharis ovalis Skuja	28736	1.74	9.30	4.00	60.40
WTN - 6-S	18-Sep-15	7631	Gymnodinium helveticum Penard	200	4.71	50.00	30.00	23561.90
WTN - 6-S	18-Sep-15	7632	Gymnodinium sp.	1000	8.78	25.60	25.60	8784.50
WTN - 6-S	18-Sep-15	7639	Peridinium pusillum (Penard) Lemmermann	800	0.98	13.90	13.00	1230.00
WTN - 6-S	18-Sep-15	7641	Peridinium aciculiferum Lemmermann	200	1.81	30.00	24.00	9047.80
WTS - 1-S	17-Jul-15	2105	Chlamydomonas spp.	50288	1.19	5.00	3.00	23.60
WTS - 1-S	17-Jul-15	4351	Small chrysophyceae	725584	9.29	2.90	2.90	12.80
WTS - 1-S	17-Jul-15	4352	Large chrysophyceae	14368	2.36	6.80	6.80	164.60
WTS - 1-S	17-Jul-15	4355	Chrysochromulina parva Lackey	21552	1.41	5.00	5.00	65.40
WTS - 1-S	17-Jul-15	4357	Chrysococcus sp.	2248592	114.68	4.60	4.60	51.00
WTS - 1-S	17-Jul-15	4361	Kephyrion boreale Skuja	7184	0.85	6.10	6.10	118.80
WTS - 1-S	17-Jul-15	4362	Kephyrion sp.	330464	4.66	3.00	3.00	14.10
WTS - 1-S	17-Jul-15	4363	Spinifiromonas sirratus***************	21552	1.98	5.60	5.60	92.00
WTS - 1-S	17-Jul-15	4370	Mallomonas akrokomos Asmund and Kristiansen	7184	1.90	14.00	6.00	263.90
WTS - 1-S	17-Jul-15	4378	Dinobryon borgei Lemmermann	21552	1.11	9.00	3.30	51.30
WTS - 1-S	17-Jul-15	4388	Dinobryon sertularia Ehrenberg	107760	28.44	14.00	6.00	263.90
WTS - 1-S	17-Jul-15	4388	Dinobryon sertularia Ehrenberg	18800	43.71	0.00	0.00	2325.00
WTS - 1-S	17-Jul-15	4390	Dinobryon sociale Ehrenberg	93392	21.13	12.00	6.00	226.20
WTS - 1-S	17-Jul-15	4390	Dinobryon sociale Ehrenberg	1200	2.39	0.00	0.00	1991.00
WTS - 1-S	17-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	165232	4.28	5.50	3.00	25.90
WTS - 1-S	17-Jul-15	4401	Uroglena volvox Ehrenberg	64656	7.31	6.00	6.00	113.10
WTS - 1-S	17-Jul-15	4413	Chrysochromulina laurentiana Kling	93392	36.85	9.10	9.10	394.60
WTS - 1-S	17-Jul-15	4414	Stichogloea spp.	14368	0.72	6.00	4.00	50.30
WTS - 1-S	17-Jul-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.70	5.20	3.00	24.50

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
WTS - 1-S	17-Jul-15	5509	Cyclotella ocellata Pant.	14368	1.61	4.15	8.30	112.30
WTS - 1-S	17-Jul-15	5514	Tabellaria flocculsa (Roth) Kutzing	1800	2.36	25.50	14.00	1308.50
WTS - 1-S	17-Jul-15	5518	Synedra acus Kutzing	2400	0.20	80.00	2.00	83.80
WTS - 1-S	17-Jul-15	5551	Cyclotella michiganiana Skvortzow	79024	1.51	2.30	4.60	19.10
WTS - 1-S	17-Jul-15	6554	Rhodomonas minuta Skuja	100576	8.78	10.00	5.00	87.30
WTS - 1-S	17-Jul-15	6558	Cryptomonas erosa Ehrenberg	3800	2.79	21.00	10.00	733.00
WTS - 1-S	17-Jul-15	6565	Cryptomonas rostratiformis Skuja	800	1.53	28.00	14.00	1915.70
WTS - 1-S	17-Jul-15	6568	Katablepharis ovalis Skuja	193968	6.63	7.00	4.00	34.20
WTS - 1-S	17-Jul-15	7632	Gymnodinium sp.	21552	6.93	9.60	8.00	321.70
WTS - 1-S	17-Jul-15	7632	Gymnodinium sp.	800	7.36	26.00	26.00	9202.80
WTS - 1-S	17-Jul-15	7635	Peridinium willei Huitfeldt-Kaas	200	6.21	39.00	39.00	31059.40
WTS - 1-S	17-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	400	0.39	13.00	12.00	980.20
WTS - 1-S	17-Jul-15	7641	Peridinium aciculiferum Lemmermann	1000	9.08	30.10	24.00	9077.90
WTS - 2-S	17-Jul-15	2105	Chlamydomonas spp.	35920	0.85	5.00	3.00	23.60
WTS - 2-S	17-Jul-15	2137	Dictyosphaerium simplex Sukja	28736	0.12	2.00	2.00	4.20
WTS - 2-S	17-Jul-15	2178	Cosmarium sp.	200	0.28	20.00	20.00	1396.30
WTS - 2-S	17-Jul-15	2215	Tetraedron caudatum (Corda) Hansgrig	7184	0.03	3.00	3.00	4.70
WTS - 2-S	17-Jul-15	4351	Small chrysophyceae	466960	5.98	2.90	2.90	12.80
WTS - 2-S	17-Jul-15	4352	Large chrysophyceae	57472	7.52	6.30	6.30	130.90
WTS - 2-S	17-Jul-15	4355	Chrysochromulina parva Lackey	14368	0.94	5.00	5.00	65.40
WTS - 2-S	17-Jul-15	4357	Chrysococcus sp.	1472720	75.11	4.60	4.60	51.00
WTS - 2-S	17-Jul-15	4361	Kephyrion boreale Skuja	7184	0.85	6.10	6.10	118.80
WTS - 2-S	17-Jul-15	4362	Kephyrion sp.	330464	4.66	3.00	3.00	14.10
WTS - 2-S	17-Jul-15	4363	Spinifiromonas sirratus***************	21552	1.98	5.60	5.60	92.00
WTS - 2-S	17-Jul-15	4370	Mallomonas akrokomos Asmund and Kristiansen	7184	1.90	14.00	6.00	263.90
WTS - 2-S	17-Jul-15	4378	Dinobryon borgei Lemmermann	43104	2.21	9.00	3.30	51.30
WTS - 2-S	17-Jul-15	4388	Dinobryon sertularia Ehrenberg	93392	24.65	14.00	6.00	263.90
WTS - 2-S	17-Jul-15	4388	Dinobryon sertularia Ehrenberg	12600	29.30	0.00	0.00	2325.00
WTS - 2-S	17-Jul-15	4390	Dinobryon sociale Ehrenberg	35920	8.13	12.00	6.00	226.20
WTS - 2-S	17-Jul-15	4390	Dinobryon sociale Ehrenberg	1600	3.19	0.00	0.00	1991.00
WTS - 2-S	17-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	143680	3.72	5.50	3.00	25.90
WTS - 2-S	17-Jul-15	4400	Ochromonas sp.	7184	0.58	9.60	4.00	80.40
WTS - 2-S	17-Jul-15	4401	Uroglena volvox Ehrenberg	71840	8.13	6.00	6.00	113.10
WTS - 2-S	17-Jul-15	4413	Chrysochromulina laurentiana Kling	79024	31.18	9.10	9.10	394.60
WTS - 2-S	17-Jul-15	4414	Stichogloea spp.	7184	0.36	6.00	4.00	50.30
WTS - 2-S	17-Jul-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.18	5.20	3.00	24.50
WTS - 2-S	17-Jul-15	5507	Cyclotella stelligera Cleve and Grunow	200	0.24	9.10	18.20	1183.70
WTS - 2-S	17-Jul-15	5509	Cyclotella ocellata Pant.	7184	0.81	4.15	8.30	112.30
WTS - 2-S	17-Jul-15	5514	Tabellaria flocculsa (Roth) Kutzing	2600	3.40	25.50	14.00	1308.50
WTS - 2-S	17-Jul-15	5518	Synedra acus Kutzing	1400	0.12	80.00	2.00	83.80
WTS - 2-S	17-Jul-15	5551	Cyclotella michiganiana Skvortzow	43104	0.82	2.30	4.60	19.10
WTS - 2-S	17-Jul-15	6554	Rhodomonas minuta Skuja	64656	5.64	10.00	5.00	87.30
WTS - 2-S	17-Jul-15	6558	Cryptomonas erosa Ehrenberg	3200	2.35	21.00	10.00	733.00
WTS - 2-S	17-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	1400	0.96	19.60	10.00	684.20
WTS - 2-S	17-Jul-15	6565	Cryptomonas rostratiformis Skuja	1000	1.92	28.00	14.00	1915.70
WTS - 2-S	17-Jul-15	6568	Katablepharis ovalis Skuja	43104	1.93	8.00	4.00	44.70
WTS - 2-S	17-Jul-15	7632	Gymnodinium sp.	1200	11.04	26.00	26.00	9202.80
WTS - 2-S	17-Jul-15	7635	Peridinium willei Huitfeldt-Kaas	400	11.49	38.00	38.00	28730.90
WTS - 2-S	17-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	1200	1.18	13.00	12.00	980.20
WTS - 2-S	17-Jul-15	7641	Peridinium aciculiferum Lemmermann	1200	10.93	30.20	24.00	9108.10
WTS - 3-S	21-Aug-15	1014	Chroococcus limneticus Lemmermann	71840	3.37	5.60	4.00	46.90
WTS - 3-S	21-Aug-15	1054	Planktolyngbya limnetica	1000	0.13	116.00	1.20	131.20
WTS - 3-S	21-Aug-15	2100	Pyramidomonas tetrarhynchus Schmarda	200	0.10	13.40	12.20	522.10
WTS - 3-S	21-Aug-15	2105	Chlamydomonas spp.	14368	0.18	5.00	2.20	12.70
WTS - 3-S	21-Aug-15	2112	Sphaerocystis schroeteri Chodat	229888	8.30	4.10	4.10	36.10
WTS - 3-S	21-Aug-15	2121	Oocystis lacustris Chodat	43104	1.06	5.60	2.90	24.70
WTS - 3-S	21-Aug-15	2137	Dictyosphaerium simplex Sukja	28736	0.14	2.10	2.10	4.80
WTS - 3-S	21-Aug-15	2167	Elakatothrix gelatinosa Willen	21552	0.48	14.10	2.00	22.10
WTS - 3-S	21-Aug-15	2182	Euastrum spp.	200	0.37	22.00	22.00	1858.40
WTS - 3-S	21-Aug-15	2187	Staurodesmus extensus (Andersson) Teiling	200	0.09	14.00	12.90	441.30
WTS - 3-S	21-Aug-15	2215	Tetraedron caudatum (Corda) Hansgrig	14368	0.07	3.00	3.00	4.70
WTS - 3-S	21-Aug-15	2235	Ankistrodesmus spiralis Lemmermann	14368	0.27	21.00	1.50	18.60
WTS - 3-S	21-Aug-15	4351	Small chrysophyceae	488512	9.18	3.30	3.30	18.80
WTS - 3-S	21-Aug-15	4352	Large chrysophyceae	21552	3.87	7.00	7.00	179.60
WTS - 3-S	21-Aug-15	4357	Chrysococcus sp.	596272	36.73	4.90	4.90	61.60
WTS - 3-S	21-Aug-15	4358	Chrysostephanospaera globulifera Scherffel	7184	2.15	8.30	8.30	299.40
WTS - 3-S	21-Aug-15	4361	Kephyrion boreale Skuja	14368	1.71	6.10	6.10	118.80
WTS - 3-S	21-Aug-15	4362	Kephyrion sp.	122128	2.30	3.30	3.30	18.80
WTS - 3-S	21-Aug-15	4378	Dinobryon borgei Lemmermann	43104	2.24	9.10	3.30	51.90
WTS - 3-S	21-Aug-15	4381	Dinobryon mucronutom Nygaard	50288	6.58	10.00	5.00	130.90
WTS - 3-S	21-Aug-15	4383	Dinobryon bavaricum Imhof	200	0.15	0.00	0.00	765.00
WTS - 3-S	21-Aug-15	4388	Dinobryon sertularia Ehrenberg	50288	12.42	13.10	6.00	246.90
WTS - 3-S	21-Aug-15	4390	Dinobryon sociale Ehrenberg	35920	8.13	12.00	6.00	226.20
WTS - 3-S	21-Aug-15	4390	Dinobryon sociale Ehrenberg	200	0.25	0.00	0.00	1225.00
WTS - 3-S	21-Aug-15	4394	Epiphyxis sp.	21552	1.81	9.10	4.20	84.10
WTS - 3-S	21-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	21552	0.69	6.00	3.20	32.20
WTS - 3-S	21-Aug-15	4401	Uroglena volvox Ehrenberg	86208	9.75	6.00	6.00	113.10
WTS - 3-S	21-Aug-15	4413	Chrysochromulina laurentiana Kling	50288	19.19	9.00	9.00	381.70
WTS - 3-S	21-Aug-15	4414	Stichogloea spp.	64656	3.25	6.00	4.00	50.30
WTS - 3-S	21-Aug-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.61	5.30	3.20	28.40

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
WTS - 3-S	21-Aug-15	4436	Dinobryon attenatum Hill	7184	1.41	10.40	6.00	196.00
WTS - 3-S	21-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.64	10.05	20.10	1594.50
WTS - 3-S	21-Aug-15	5509	Cyclotella ocellata Pant.	7184	1.59	5.20	10.40	220.90
WTS - 3-S	21-Aug-15	5511	Rhizosolenia eriense H.L. Smith	28736	2.24	11.00	3.00	77.80
WTS - 3-S	21-Aug-15	5514	Tabellaria flocculsa (Roth) Kutzing	800	1.07	26.00	14.00	1334.10
WTS - 3-S	21-Aug-15	5518	Synedra acus Kutzing	3400	0.27	75.00	2.00	78.50
WTS - 3-S	21-Aug-15	5551	Cyclotella michiganiana Skvortzow	136496	2.61	2.30	4.60	19.10
WTS - 3-S	21-Aug-15	6554	Rhodomonas minuta Skuja	21552	1.19	9.00	4.20	55.40
WTS - 3-S	21-Aug-15	6568	Katablepharis ovalis Skuja	28736	1.66	9.10	4.00	57.80
WTS - 3-S	21-Aug-15	7632	Gymnodinium sp.	1800	22.05	28.60	28.60	12248.90
WTS - 3-S	21-Aug-15	7639	Peridinium pusillum (Penard) Lemmermann	1800	2.33	14.60	13.00	1291.90
WTS - 4-S	21-Aug-15	1014	Chroococcus limneticus Lemmermann	57472	2.70	5.60	4.00	46.90
WTS - 4-S	21-Aug-15	2100	Pyramidomonas tetrarhynchus Schmarda	600	0.40	15.20	13.00	672.50
WTS - 4-S	21-Aug-15	2112	Sphaerocystis schroeteri Chodat	143680	2.24	3.10	3.10	15.60
WTS - 4-S	21-Aug-15	2121	Oocystis lacustris Chodat	35920	1.81	6.00	4.00	50.30
WTS - 4-S	21-Aug-15	2137	Dictyosphaerium simplex Sukja	79024	0.33	2.00	2.00	4.20
WTS - 4-S	21-Aug-15	2167	Elakatothrix gelatinosa Willen	43104	0.88	13.00	2.00	20.40
WTS - 4-S	21-Aug-15	2215	Tetraedron caudatum (Corda) Hansgrig	14368	0.07	3.00	3.00	4.70
WTS - 4-S	21-Aug-15	2260	Monomastix minuta Skuja	7184	0.16	6.40	3.20	22.90
WTS - 4-S	21-Aug-15	4351	Small chrysophyceae	280176	4.82	3.20	3.20	17.20
WTS - 4-S	21-Aug-15	4352	Large chrysophyceae	64656	11.61	7.00	7.00	179.60
WTS - 4-S	21-Aug-15	4357	Chrysococcus sp.	409488	26.78	5.00	5.00	65.40
WTS - 4-S	21-Aug-15	4361	Kephyrion boreale Skuja	14368	1.54	5.90	5.90	107.50
WTS - 4-S	21-Aug-15	4362	Kephyrion sp.	93392	1.61	3.20	3.20	17.20
WTS - 4-S	21-Aug-15	4378	Dinobryon borgei Lemmermann	28736	1.30	9.00	3.10	45.30
WTS - 4-S	21-Aug-15	4381	Dinobryon mucronutom Nygaard	7184	0.94	10.00	5.00	130.90
WTS - 4-S	21-Aug-15	4383	Dinobryon bavaricum Imhof	35920	8.13	12.00	6.00	226.20
WTS - 4-S	21-Aug-15	4383	Dinobryon bavaricum Imhof	400	0.80	0.00	0.00	1990.00
WTS - 4-S	21-Aug-15	4390	Dinobryon sociale Ehrenberg	93392	21.13	12.00	6.00	226.20
WTS - 4-S	21-Aug-15	4390	Dinobryon sociale Ehrenberg	400	0.51	0.00	0.00	1265.00
WTS - 4-S	21-Aug-15	4394	Epiphyxis sp.	21552	1.64	9.10	4.00	76.20
WTS - 4-S	21-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	14368	0.43	5.60	3.20	30.00
WTS - 4-S	21-Aug-15	4401	Uroglena volvox Ehrenberg	79024	8.94	6.00	6.00	113.10
WTS - 4-S	21-Aug-15	4411	Bitrichia chodatii (Reverdin) Chodat	21552	1.08	6.00	4.00	50.30
WTS - 4-S	21-Aug-15	4413	Chrysochromulina laurentiana Kling	21552	8.23	9.00	9.00	381.70
WTS - 4-S	21-Aug-15	4414	Stichogloea spp.	79024	3.97	6.00	4.00	50.30
WTS - 4-S	21-Aug-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.43	5.60	3.20	30.00
WTS - 4-S	21-Aug-15	4436	Dinobryon attenatum Hill	7184	1.41	10.40	6.00	196.00
WTS - 4-S	21-Aug-15	4437	Pteridomonas sp.	28736	6.84	8.80	8.80	237.90
WTS - 4-S	21-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.53	9.45	18.90	1325.60
WTS - 4-S	21-Aug-15	5509	Cyclotella ocellata Pant.	7184	0.81	4.15	8.30	112.30
WTS - 4-S	21-Aug-15	5511	Rhizosolenia eriense H.L. Smith	7184	0.56	11.00	3.00	77.80
WTS - 4-S	21-Aug-15	5518	Synedra acus Kutzing	3600	0.29	76.00	2.00	79.60
WTS - 4-S	21-Aug-15	5551	Cyclotella michiganiana Skvortzow	114944	2.82	2.50	5.00	24.50
WTS - 4-S	21-Aug-15	6554	Rhodomonas minuta Skuja	14368	0.80	9.10	4.20	56.00
WTS - 4-S	21-Aug-15	6568	Katablepharis ovalis Skuja	21552	1.25	9.00	4.10	58.00
WTS - 4-S	21-Aug-15	7632	Gymnodinium sp.	7184	3.25	10.00	9.30	452.90
WTS - 4-S	21-Aug-15	7632	Gymnodinium sp.	200	1.82	25.90	25.90	9097.00
WTS - 4-S	21-Aug-15	7639	Peridinium pusillum (Penard) Lemmermann	800	1.18	14.60	13.90	1477.00
WTS - 5-S	18-Sep-15	1014	Chroococcus limneticus Lemmermann	28736	0.70	3.60	3.60	24.40
WTS - 5-S	18-Sep-15	1054	Planktolyngbya limnetica	1200	0.19	140.00	1.20	158.30
WTS - 5-S	18-Sep-15	2112	Sphaerocystis schroeteri Chodat	57472	0.90	3.10	3.10	15.60
WTS - 5-S	18-Sep-15	2137	Dictyosphaerium simplex Sukja	14368	0.06	2.00	2.00	4.20
WTS - 5-S	18-Sep-15	2167	Elakatothrix gelatinosa Willen	28736	0.51	11.40	2.00	17.90
WTS - 5-S	18-Sep-15	2215	Tetraedron caudatum (Corda) Hansgrig	21552	0.10	3.00	3.00	4.70
WTS - 5-S	18-Sep-15	4351	Small chrysophyceae	387936	6.05	3.10	3.10	15.60
WTS - 5-S	18-Sep-15	4352	Large chrysophyceae	28736	5.16	7.00	7.00	179.60
WTS - 5-S	18-Sep-15	4357	Chrysococcus sp.	732768	47.92	5.00	5.00	65.40
WTS - 5-S	18-Sep-15	4361	Kephyrion boreale Skuja	143680	2.70	3.30	3.30	18.80
WTS - 5-S	18-Sep-15	4361	Kephyrion boreale Skuja	79024	9.39	6.10	6.10	118.80
WTS - 5-S	18-Sep-15	4363	Spinifiromonas sirratus***************	7184	0.94	6.30	6.30	130.90
WTS - 5-S	18-Sep-15	4378	Dinobryon borgei Lemmermann	14368	0.65	9.00	3.10	45.30
WTS - 5-S	18-Sep-15	4381	Dinobryon mucronutom Nygaard	14368	1.88	10.00	5.00	130.90
WTS - 5-S	18-Sep-15	4388	Dinobryon sertularia Ehrenberg	5600	7.08	0.00	0.00	1265.00
WTS - 5-S	18-Sep-15	4390	Dinobryon sociale Ehrenberg	158048	35.75	12.00	6.00	226.20
WTS - 5-S	18-Sep-15	4396	Chrysolkos skuja (Nauwerck) Willen	86208	2.59	5.60	3.20	30.00
WTS - 5-S	18-Sep-15	4401	Uroglena volvox Ehrenberg	50288	5.69	6.00	6.00	113.10
WTS - 5-S	18-Sep-15	4411	Bitrichia chodatii (Reverdin) Chodat	7184	0.36	6.00	4.00	50.30
WTS - 5-S	18-Sep-15	4413	Chrysochromulina laurentiana Kling	71840	28.35	9.10	9.10	394.60
WTS - 5-S	18-Sep-15	4414	Stichogloea spp.	14368	0.72	6.00	4.00	50.30
WTS - 5-S	18-Sep-15	4415	Bicoeca lacustris Clark	14368	1.32	5.60	5.60	92.00
WTS - 5-S	18-Sep-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.14	5.90	3.20	31.60
WTS - 5-S	18-Sep-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.59	9.80	19.60	1478.40
WTS - 5-S	18-Sep-15	5509	Cyclotella ocellata Pant.	14368	1.61	4.15	8.30	112.30
WTS - 5-S	18-Sep-15	5511	Rhizosolenia eriense H.L. Smith	172416	13.41	11.00	3.00	77.80
WTS - 5-S	18-Sep-15	5514	Tabellaria flocculsa (Roth) Kutzing	1000	1.21	23.60	14.00	1211.00
WTS - 5-S	18-Sep-15	5518	Synedra acus Kutzing	10200	0.76	71.00	2.00	74.40
WTS - 5-S	18-Sep-15	5551	Cyclotella michiganiana Skvortzow	100576	2.46	2.50	5.00	24.50
WTS - 5-S	18-Sep-15	6554	Rhodomonas minuta Skuja	35920	1.90	9.00	4.10	52.80
WTS - 5-S	18-Sep-15	6558	Cryptomonas erosa Ehrenberg	800	0.56	20.00	10.00	698.10

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume µ^3
WTS - 5-S	18-Sep-15	6568	Katablepharis ovalis Skuja	35920	2.08	9.00	4.10	58.00
WTS - 5-S	18-Sep-15	7632	Gymnodinium sp.	14368	4.81	10.00	8.00	335.10
WTS - 5-S	18-Sep-15	7632	Gymnodinium sp.	400	3.68	26.00	26.00	9202.80
WTS - 5-S	18-Sep-15	7639	Peridinium pusillum (Penard) Lemmermann	1000	1.57	15.30	14.00	1570.20
WTS - 6-S	18-Sep-15	1054	Planktolyngbya limnetica	600	0.08	115.00	1.20	130.10
WTS - 6-S	18-Sep-15	2100	Pyramidomonas tetrarhynchus Schmarda	7184	6.89	14.30	16.00	958.40
WTS - 6-S	18-Sep-15	2112	Sphaerocystis schroeteri Chodat	7184	0.11	3.10	3.10	15.60
WTS - 6-S	18-Sep-15	2121	Oocystis lacustris Chodat	43104	1.22	6.00	3.00	28.30
WTS - 6-S	18-Sep-15	2167	Elakatothrix gelatinosa Willen	43104	0.77	11.40	2.00	17.90
WTS - 6-S	18-Sep-15	2167	Elakatothrix gelatinosa Willen	7184	0.43	9.00	4.10	59.40
WTS - 6-S	18-Sep-15	2182	Euastrum spp.	600	1.12	22.00	22.00	1858.40
WTS - 6-S	18-Sep-15	2199	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54	6.00	6.00	37.70
WTS - 6-S	18-Sep-15	2206	Botryococcus braunii Kutzing	600	0.31	10.00	10.00	523.60
WTS - 6-S	18-Sep-15	2215	Tetraedron caudatum (Corda) Hansgrig	28736	0.14	3.00	3.00	4.70
WTS - 6-S	18-Sep-15	2235	Ankistrodesmus spiralis Lemmermann	21552	2.06	36.00	2.60	95.60
WTS - 6-S	18-Sep-15	4351	Small chrysophyceae	646560	10.09	3.10	3.10	15.60
WTS - 6-S	18-Sep-15	4352	Large chrysophyceae	43104	7.74	7.00	7.00	179.60
WTS - 6-S	18-Sep-15	4357	Chrysococcus sp.	1084784	70.94	5.00	5.00	65.40
WTS - 6-S	18-Sep-15	4358	Chrysostephanospaera globulifera Scherffel	7184	2.39	8.60	8.60	333.00
WTS - 6-S	18-Sep-15	4361	Kephyrion boreale Skuja	50288	5.97	6.10	6.10	118.80
WTS - 6-S	18-Sep-15	4362	Kephyrion sp.	158048	2.97	3.30	3.30	18.80
WTS - 6-S	18-Sep-15	4378	Dinobryon borgei Lemmermann	50288	2.28	9.00	3.10	45.30
WTS - 6-S	18-Sep-15	4381	Dinobryon mucronutom Nygaard	35920	4.70	10.00	5.00	130.90
WTS - 6-S	18-Sep-15	4383	Dinobryon bavaricum Imhof	200	0.40	0.00	0.00	1990.00
WTS - 6-S	18-Sep-15	4388	Dinobryon sertularia Ehrenberg	14368	3.25	12.00	6.00	226.20
WTS - 6-S	18-Sep-15	4390	Dinobryon sociale Ehrenberg	294544	66.63	12.00	6.00	226.20
WTS - 6-S	18-Sep-15	4390	Dinobryon sociale Ehrenberg	7400	9.36	0.00	0.00	1265.00
WTS - 6-S	18-Sep-15	4396	Chrysolkos skuja (Nauwerck) Willen	50288	1.51	5.60	3.20	30.00
WTS - 6-S	18-Sep-15	4401	Uroglena volvox Ehrenberg	64656	7.31	6.00	6.00	113.10
WTS - 6-S	18-Sep-15	4411	Bitrichia chodatii (Reverdin) Chodat	14368	0.72	6.00	4.00	50.30
WTS - 6-S	18-Sep-15	4413	Chrysochromulina laurentiana Kling	122128	48.19	9.10	9.10	394.60
WTS - 6-S	18-Sep-15	4414	Stichogloea spp.	50288	2.53	6.00	4.00	50.30
WTS - 6-S	18-Sep-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.36	5.90	3.20	31.60
WTS - 6-S	18-Sep-15	5507	Cyclotella stelligera Cleve and Grunow	200	0.31	10.00	20.00	1570.80
WTS - 6-S	18-Sep-15	5509	Cyclotella ocellata Pant.	43104	0.94	2.40	4.80	21.70
WTS - 6-S	18-Sep-15	5511	Rhizosolenia eriense H.L. Smith	158048	12.30	11.00	3.00	77.80
WTS - 6-S	18-Sep-15	5518	Synedra acus Kutzing	14400	1.15	76.00	2.00	79.60
WTS - 6-S	18-Sep-15	5551	Cyclotella michiganiana Skvortzow	107760	2.64	2.50	5.00	24.50
WTS - 6-S	18-Sep-15	6554	Rhodomonas minuta Skuja	79024	4.17	9.00	4.10	52.80
WTS - 6-S	18-Sep-15	6558	Cryptomonas erosa Ehrenberg	1200	0.88	21.00	10.00	733.00
WTS - 6-S	18-Sep-15	6568	Katablepharis ovalis Skuja	64656	3.75	9.00	4.10	58.00
WTS - 6-S	18-Sep-15	7632	Gymnodinium sp.	7184	2.41	10.00	8.00	335.10
WTS - 6-S	18-Sep-15	7632	Gymnodinium sp.	200	1.76	25.60	25.60	8784.50
WTS - 6-S	18-Sep-15	7639	Peridinium pusillum (Penard) Lemmermann	200	0.31	14.90	14.00	1529.10
INUG68S	16-May-15	2105	Chlamydomonas spp.	3546.1	0.11	5.60	3.20	30.00
INUG68S	16-May-15	2187	Staurodesmus extensus (Andersson) Teiling	100	0.05	14.50	13.00	477.00
INUG68S	16-May-15	2206	Botryococcus braunii Kutzing	100	0.14	14.00	14.00	1436.80
INUG68S	16-May-15	4351	Small chrysophyceae	517730.6	7.30	3.00	3.00	14.10
INUG68S	16-May-15	4352	Large chrysophyceae	14184.4	2.55	7.00	7.00	179.60
INUG68S	16-May-15	4355	Chrysochromulina parva Lackey	21276.6	1.23	4.80	4.80	57.90
INUG68S	16-May-15	4357	Chrysococcus sp.	319149	22.18	5.10	5.10	69.50
INUG68S	16-May-15	4362	Kephyrion sp.	17730.5	0.25	3.00	3.00	14.10
INUG68S	16-May-15	4363	Spinifiromonas sirratus***************	3546.1	0.42	6.10	6.10	118.80
INUG68S	16-May-15	4368	Mallomonas crassisquama (Asmund) Fott	100	0.11	21.00	10.00	1099.60
INUG68S	16-May-15	4388	Dinobryon sertularia Ehrenberg	600	1.28	0.00	0.00	2125.00
INUG68S	16-May-15	4390	Dinobryon sociale Ehrenberg	1200	0.27	12.00	6.00	226.20
INUG68S	16-May-15	4396	Chrysolkos skuja (Nauwerck) Willen	60283.7	1.68	5.90	3.00	27.80
INUG68S	16-May-15	4413	Chrysochromulina laurentiana Kling	10638.3	4.34	9.20	9.20	407.70
INUG68S	16-May-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	3546.1	0.09	5.60	3.00	26.40
INUG68S	16-May-15	5507	Cyclotella stelligera Cleve and Grunow	100	0.11	9.00	18.00	1145.10
INUG68S	16-May-15	5509	Cyclotella ocellata Pant.	35461	6.96	5.00	10.00	196.30
INUG68S	16-May-15	5551	Cyclotella michiganiana Skvortzow	3546.1	0.08	2.45	4.90	23.10
INUG68S	16-May-15	6554	Rhodomonas minuta Skuja	63829.8	7.69	11.00	5.60	120.40
INUG68S	16-May-15	6558	Cryptomonas erosa Ehrenberg	1400	1.57	22.30	12.00	1120.90
INUG68S	16-May-15	7631	Gymnodinium helveticum Penard	100	2.36	50.00	30.00	23561.90
INUG68S	16-May-15	7632	Gymnodinium sp.	300	2.34	24.60	24.60	7794.80
INUG68S	16-May-15	7635	Peridinium willei Huitfeldt-Kaas	100	3.35	40.00	40.00	33510.30
INUG68S	16-May-15	7639	Peridinium pusillum (Penard) Lemmermann	100	0.10	13.20	12.00	995.30
INUG68S	16-May-15	7641	Peridinium aciculiferum Lemmermann	100	0.90	30.00	24.00	9047.80
INUG69S	16-May-15	2105	Chlamydomonas spp.	3546.1	0.12	6.00	3.30	34.20
INUG69S	16-May-15	2187	Staurodesmus extensus (Andersson) Teiling	100	0.05	14.50	13.00	477.00
INUG69S	16-May-15	2206	Botryococcus braunii Kutzing	300	0.43	14.00	14.00	1436.80
INUG69S	16-May-15	4351	Small chrysophyceae	283688	4.00	3.00	3.00	14.10
INUG69S	16-May-15	4352	Large chrysophyceae	14184.4	2.55	7.00	7.00	179.60
INUG69S	16-May-15	4357	Chrysococcus sp.	198581.6	13.80	5.10	5.10	69.50
INUG69S	16-May-15	4363	Spinifiromonas sirratus***************	3546.1	0.46	6.30	6.30	130.90
INUG69S	16-May-15	4368	Mallomonas crassisquama (Asmund) Fott	400	0.44	21.00	10.00	1099.60
INUG69S	16-May-15	4390	Dinobryon sociale Ehrenberg	400	0.09	12.00	6.00	226.20
INUG69S	16-May-15	4396	Chrysolkos skuja (Nauwerck) Willen	14184.4	0.46	5.70	3.30	32.50

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume µ^3
INUG69S	16-May-15	4413	Chrysochromulina laurentiana Kling	3546.1	1.45	9.20	9.20	407.70
INUG69S	16-May-15	5507	Cyclotella stelligera Cleve and Grunow	100	0.11	9.00	18.00	1145.10
INUG69S	16-May-15	5509	Cyclotella ocellata Pant.	24822.7	4.87	5.00	10.00	196.30
INUG69S	16-May-15	5551	Cyclotella michiganiana Skvortzow	3546.1	0.07	2.35	4.70	20.40
INUG69S	16-May-15	6554	Rhodomonas minuta Skuja	74468.1	8.97	11.00	5.60	120.40
INUG69S	16-May-15	6558	Cryptomonas erosa Ehrenberg	1000	1.18	23.50	12.00	1181.20
INUG69S	16-May-15	7632	Gymnodinium sp.	200	1.56	24.60	24.60	7794.80
INUG70S	27-Jul-15	2105	Chlamydomonas spp.	28736	0.36	5.00	2.20	12.70
INUG70S	27-Jul-15	2112	Sphaerocystis schroeteri Chodat	136496	1.75	2.90	2.90	12.80
INUG70S	27-Jul-15	2121	Oocystis lacustris Chodat	7184	0.16	4.60	3.00	21.70
INUG70S	27-Jul-15	2187	Staurodesmus extensus (Andersson) Teiling	200	0.11	15.30	14.00	572.00
INUG70S	27-Jul-15	4351	Small chrysophyceae	409488	7.04	3.20	3.20	17.20
INUG70S	27-Jul-15	4352	Large chrysophyceae	14368	2.58	7.00	7.00	179.60
INUG70S	27-Jul-15	4357	Chrysococcus sp.	818976	53.56	5.00	5.00	65.40
INUG70S	27-Jul-15	4362	Kephyrion sp.	150864	2.84	3.30	3.30	18.80
INUG70S	27-Jul-15	4368	Mallomonas crassisquama (Asmund) Fott	400	0.44	21.10	10.00	1104.80
INUG70S	27-Jul-15	4370	Mallomonas akrokomos Asmund and Kristiansen	7184	1.19	15.00	4.60	166.20
INUG70S	27-Jul-15	4378	Dinobryon borgei Lemmermann	28736	2.28	9.00	4.10	79.20
INUG70S	27-Jul-15	4381	Dinobryon mucronutom Nygaard	21552	2.71	9.60	5.00	125.70
INUG70S	27-Jul-15	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	1600	7.52	0.00	0.00	4700.00
INUG70S	27-Jul-15	4388	Dinobryon sertularia Ehrenberg	114944	28.60	13.20	6.00	248.80
INUG70S	27-Jul-15	4388	Dinobryon sertularia Ehrenberg	11000	55.94	0.00	0.00	5085.00
INUG70S	27-Jul-15	4390	Dinobryon sociale Ehrenberg	323280	73.13	12.00	6.00	226.20
INUG70S	27-Jul-15	4390	Dinobryon sociale Ehrenberg	29800	101.02	0.00	0.00	3390.00
INUG70S	27-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	50288	1.42	5.60	3.10	28.20
INUG70S	27-Jul-15	4411	Bitrichia chodatii (Reverdin) Chodat	14368	0.72	6.00	4.00	50.30
INUG70S	27-Jul-15	4413	Chrysochromulina laurentiana Kling	57472	27.47	9.70	9.70	477.90
INUG70S	27-Jul-15	4414	Stichogloea spp.	7184	0.36	6.00	4.00	50.30
INUG70S	27-Jul-15	5507	Cyclotella stelligera Cleve and Grunow	200	0.31	10.00	20.00	1570.80
INUG70S	27-Jul-15	5509	Cyclotella ocellata Pant.	50288	5.45	4.10	8.20	108.30
INUG70S	27-Jul-15	5511	Rhizosolenia eriense H.L. Smith	43104	2.74	9.00	3.00	63.60
INUG70S	27-Jul-15	5518	Synedra acus Kutzing	2000	0.20	93.60	2.00	98.00
INUG70S	27-Jul-15	5551	Cyclotella michiganiana Skvortzow	201152	4.37	2.40	4.80	21.70
INUG70S	27-Jul-15	6554	Rhodomonas minuta Skuja	86208	8.28	11.00	5.00	96.00
INUG70S	27-Jul-15	6558	Cryptomonas erosa Ehrenberg	3000	4.00	22.60	13.00	1333.20
INUG70S	27-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	600	0.41	19.40	10.00	677.20
INUG70S	27-Jul-15	6568	Katablepharis ovalis Skuja	50288	2.30	8.00	4.10	45.80
INUG70S	27-Jul-15	7632	Gymnodinium sp.	600	6.90	28.00	28.00	11494.00
INUG70S	27-Jul-15	7635	Peridinium willei Huitfeldt-Kaas	200	6.70	40.00	40.00	33510.30
INUG71S	27-Jul-15	2105	Chlamydomonas spp.	21552	0.27	5.00	2.20	12.70
INUG71S	27-Jul-15	2112	Sphaerocystis schroeteri Chodat	86208	1.10	2.90	2.90	12.80
INUG71S	27-Jul-15	2167	Elakatothrix gelatinosa Willen	14368	0.25	11.00	2.00	17.30
INUG71S	27-Jul-15	2187	Staurodesmus extensus (Andersson) Teiling	400	0.23	15.30	14.00	572.00
INUG71S	27-Jul-15	2199	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27	6.00	6.00	37.70
INUG71S	27-Jul-15	4351	Small chrysophyceae	438224	7.54	3.20	3.20	17.20
INUG71S	27-Jul-15	4352	Large chrysophyceae	43104	7.74	7.00	7.00	179.60
INUG71S	27-Jul-15	4357	Chrysococcus sp.	711216	46.51	5.00	5.00	65.40
INUG71S	27-Jul-15	4358	Chrysostephanospaera globulifera Scherffel	7184	2.15	8.30	8.30	299.40
INUG71S	27-Jul-15	4362	Kephyrion sp.	114944	2.16	3.30	3.30	18.80
INUG71S	27-Jul-15	4363	Spinifiromonas sirratus***************	14368	2.16	6.60	6.60	150.50
INUG71S	27-Jul-15	4378	Dinobryon borgei Lemmermann	28736	2.28	9.00	4.10	79.20
INUG71S	27-Jul-15	4381	Dinobryon mucronutom Nygaard	57472	7.52	10.00	5.00	130.90
INUG71S	27-Jul-15	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	1800	8.46	0.00	0.00	4700.00
INUG71S	27-Jul-15	4388	Dinobryon sertularia Ehrenberg	201152	49.28	13.00	6.00	245.00
INUG71S	27-Jul-15	4388	Dinobryon sertularia Ehrenberg	9000	45.77	0.00	0.00	5085.00
INUG71S	27-Jul-15	4390	Dinobryon sociale Ehrenberg	359200	81.25	12.00	6.00	226.20
INUG71S	27-Jul-15	4390	Dinobryon sociale Ehrenberg	31800	107.80	0.00	0.00	3390.00
INUG71S	27-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	50288	1.42	5.60	3.10	28.20
INUG71S	27-Jul-15	4400	Ochromonas sp.	7184	0.49	8.10	4.00	67.90
INUG71S	27-Jul-15	4413	Chrysochromulina laurentiana Kling	57472	23.43	9.20	9.20	407.70
INUG71S	27-Jul-15	4414	Stichogloea spp.	57472	2.89	6.00	4.00	50.30
INUG71S	27-Jul-15	5507	Cyclotella stelligera Cleve and Grunow	600	0.94	10.00	20.00	1570.80
INUG71S	27-Jul-15	5509	Cyclotella ocellata Pant.	14368	1.56	4.10	8.20	108.30
INUG71S	27-Jul-15	5511	Rhizosolenia eriense H.L. Smith	35920	2.28	9.00	3.00	63.60
INUG71S	27-Jul-15	5518	Synedra acus Kutzing	1600	0.16	94.00	2.00	98.40
INUG71S	27-Jul-15	5551	Cyclotella michiganiana Skvortzow	64656	1.40	2.40	4.80	21.70
INUG71S	27-Jul-15	6554	Rhodomonas minuta Skuja	7184	0.69	11.00	5.00	96.00
INUG71S	27-Jul-15	6558	Cryptomonas erosa Ehrenberg	6200	8.41	23.00	13.00	1356.80
INUG71S	27-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	1000	0.68	19.60	10.00	684.20
INUG71S	27-Jul-15	6565	Cryptomonas rostratiformis Skuja	200	0.41	30.00	14.00	2052.50
INUG71S	27-Jul-15	6568	Katablepharis ovalis Skuja	43104	1.97	8.00	4.10	45.80
INUG71S	27-Jul-15	7632	Gymnodinium sp.	7184	2.24	9.30	8.00	311.60
INUG71S	27-Jul-15	7632	Gymnodinium sp.	1000	11.49	28.00	28.00	11494.00
INUG71S	27-Jul-15	7635	Peridinium willei Huitfeldt-Kaas	200	6.70	40.00	40.00	33510.30
INUG71S	27-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	400	0.40	13.30	12.00	1002.80
INUG72S	27-Aug-15	1054	Planktolyngbya limnetica	400	0.10	229.00	1.20	259.00
INUG72S	27-Aug-15	2100	Pyramidomonas tetrarhynchus Schmarda	400	0.31	15.00	14.00	769.70
INUG72S	27-Aug-15	2105	Chlamydomonas spp.	14368	0.25	5.00	2.60	17.70
INUG72S	27-Aug-15	2112	Sphaerocystis schroeteri Chodat	57472	0.90	3.10	3.10	15.60
INUG72S	27-Aug-15	2121	Oocystis lacustris Chodat	43104	1.02	5.00	3.00	23.60

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
INUG72S	27-Aug-15	2137	Dictyosphaerium simplex Sukja	28736	0.14	2.10	2.10	4.80
INUG72S	27-Aug-15	2167	Elakatothrix gelatinosa Willen	28736	0.41	9.00	2.00	14.10
INUG72S	27-Aug-15	2187	Staurodesmus extensus (Andersson) Teiling	1800	1.07	15.60	14.00	594.60
INUG72S	27-Aug-15	2199	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81	6.00	6.00	37.70
INUG72S	27-Aug-15	2206	Botryococcus braunii Kutzing	600	0.86	14.00	14.00	1436.80
INUG72S	27-Aug-15	4351	Small chrysophyceae	359200	3.70	2.70	2.70	10.30
INUG72S	27-Aug-15	4352	Large chrysophyceae	14368	2.58	7.00	7.00	179.60
INUG72S	27-Aug-15	4357	Chrysococcus sp.	323280	21.14	5.00	5.00	65.40
INUG72S	27-Aug-15	4361	Kephyrion boreale Skuja	7184	0.85	6.10	6.10	118.80
INUG72S	27-Aug-15	4362	Kephyrion sp.	129312	1.66	2.90	2.90	12.80
INUG72S	27-Aug-15	4368	Mallomonas crassisquama (Asmund) Fott	200	0.21	20.50	10.00	1073.40
INUG72S	27-Aug-15	4378	Dinobryon borgei Lemmermann	7184	0.31	8.60	3.10	43.30
INUG72S	27-Aug-15	4381	Dinobryon mucronutom Nygaard	21552	2.82	10.00	5.00	130.90
INUG72S	27-Aug-15	4383	Dinobryon bavaricum Imhof	79024	17.88	12.00	6.00	226.20
INUG72S	27-Aug-15	4383	Dinobryon bavaricum Imhof	3600	12.20	0.00	0.00	3390.00
INUG72S	27-Aug-15	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184	2.88	15.60	7.00	400.20
INUG72S	27-Aug-15	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.09	0.00	0.00	2725.00
INUG72S	27-Aug-15	4388	Dinobryon sertularia Ehrenberg	21552	4.88	12.00	6.00	226.20
INUG72S	27-Aug-15	4390	Dinobryon sociale Ehrenberg	258624	58.50	12.00	6.00	226.20
INUG72S	27-Aug-15	4411	Bitrichia chodatii (Reverdin) Chodat	14368	0.72	6.00	4.00	50.30
INUG72S	27-Aug-15	4413	Chrysochromulina laurentiana Kling	50288	19.19	9.00	9.00	381.70
INUG72S	27-Aug-15	4414	Stichogloea spp.	114944	5.78	6.00	4.00	50.30
INUG72S	27-Aug-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.21	5.70	3.10	28.70
INUG72S	27-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	1200	1.42	9.10	18.20	1183.70
INUG72S	27-Aug-15	5509	Cyclotella ocellata Pant.	64656	6.50	4.00	8.00	100.50
INUG72S	27-Aug-15	5511	Rhizosolenia eriense H.L. Smith	28736	2.24	11.00	3.00	77.80
INUG72S	27-Aug-15	5514	Tabellaria flocculsa (Roth) Kutzing	400	0.47	23.00	14.00	1180.20
INUG72S	27-Aug-15	5518	Synedra acus Kutzing	400	0.04	90.00	2.00	94.20
INUG72S	27-Aug-15	5551	Cyclotella michiganiana Skvortzow	114944	2.66	2.45	4.90	23.10
INUG72S	27-Aug-15	6554	Rhodomonas minuta Skuja	14368	0.72	9.00	4.00	50.30
INUG72S	27-Aug-15	6558	Cryptomonas erosa Ehrenberg	400	0.30	21.20	10.00	740.00
INUG72S	27-Aug-15	7632	Gymnodinium sp.	7184	2.29	9.50	8.00	318.30
INUG73S	27-Aug-15	1008	Aphanocapsa sp.	7184	0.47	0.00	0.00	65.00
INUG73S	27-Aug-15	1054	Planktolyngbya limnetica	400	0.12	261.00	1.20	295.20
INUG73S	27-Aug-15	2100	Pyramidomonas tetrarhynchus Schmarda	600	0.46	15.00	14.00	769.70
INUG73S	27-Aug-15	2105	Chlamydomonas spp.	14368	0.25	5.00	2.60	17.70
INUG73S	27-Aug-15	2112	Sphaerocystis schroeteri Chodat	28736	0.45	3.10	3.10	15.60
INUG73S	27-Aug-15	2121	Oocystis lacustris Chodat	93392	2.20	5.00	3.00	23.60
INUG73S	27-Aug-15	2137	Dictyosphaerium simplex Sukja	21552	0.09	2.00	2.00	4.20
INUG73S	27-Aug-15	2167	Elakatothrix gelatinosa Willen	35920	0.51	9.00	2.00	14.10
INUG73S	27-Aug-15	2187	Staurodesmus extensus (Andersson) Teiling	2200	1.31	15.60	14.00	594.60
INUG73S	27-Aug-15	2199	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54	6.00	6.00	37.70
INUG73S	27-Aug-15	2206	Botryococcus braunii Kutzing	400	0.57	14.00	14.00	1436.80
INUG73S	27-Aug-15	4351	Small chrysophyceae	330464	3.40	2.70	2.70	10.30
INUG73S	27-Aug-15	4352	Large chrysophyceae	7184	1.29	7.00	7.00	179.60
INUG73S	27-Aug-15	4357	Chrysococcus sp.	380752	24.90	5.00	5.00	65.40
INUG73S	27-Aug-15	4361	Kephyrion boreale Skuja	21552	3.24	6.60	6.60	150.50
INUG73S	27-Aug-15	4362	Kephyrion sp.	208336	2.67	2.90	2.90	12.80
INUG73S	27-Aug-15	4378	Dinobryon borgei Lemmermann	21552	0.93	8.60	3.10	43.30
INUG73S	27-Aug-15	4381	Dinobryon mucronutom Nygaard	7184	0.94	10.00	5.00	130.90
INUG73S	27-Aug-15	4383	Dinobryon bavaricum Imhof	4200	0.27	0.00	0.00	65.00
INUG73S	27-Aug-15	4383	Dinobryon bavaricum Imhof	57472	13.00	12.00	6.00	226.20
INUG73S	27-Aug-15	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	14368	5.60	15.20	7.00	390.00
INUG73S	27-Aug-15	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.55	0.00	0.00	2725.00
INUG73S	27-Aug-15	4388	Dinobryon sertularia Ehrenberg	43104	9.75	12.00	6.00	226.20
INUG73S	27-Aug-15	4390	Dinobryon sociale Ehrenberg	330464	74.75	12.00	6.00	226.20
INUG73S	27-Aug-15	4390	Dinobryon sociale Ehrenberg	200	0.68	0.00	0.00	3390.00
INUG73S	27-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	14368	0.37	5.50	3.00	25.90
INUG73S	27-Aug-15	4411	Bitrichia chodatii (Reverdin) Chodat	43104	1.29	5.60	3.20	30.00
INUG73S	27-Aug-15	4413	Chrysochromulina laurentiana Kling	43104	16.45	9.00	9.00	381.70
INUG73S	27-Aug-15	4414	Stichogloea spp.	136496	6.87	6.00	4.00	50.30
INUG73S	27-Aug-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.21	5.70	3.10	28.70
INUG73S	27-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	200	0.24	9.10	18.20	1183.70
INUG73S	27-Aug-15	5509	Cyclotella ocellata Pant.	57472	5.78	4.00	8.00	100.50
INUG73S	27-Aug-15	5511	Rhizosolenia eriense H.L. Smith	7184	0.56	11.00	3.00	77.80
INUG73S	27-Aug-15	5514	Tabellaria flocculsa (Roth) Kutzing	400	0.47	23.00	14.00	1180.20
INUG73S	27-Aug-15	5518	Synedra acus Kutzing	600	0.06	90.00	2.00	94.20
INUG73S	27-Aug-15	5524	Asterionella formosa Hassall	600	0.06	96.00	2.00	100.50
INUG73S	27-Aug-15	5551	Cyclotella michiganiana Skvortzow	193968	4.48	2.45	4.90	23.10
INUG73S	27-Aug-15	6554	Rhodomonas minuta Skuja	114944	5.78	9.00	4.00	50.30
INUG73S	27-Aug-15	7632	Gymnodinium sp.	7184	2.19	9.10	8.00	304.90
INUG73S	27-Aug-15	7632	Gymnodinium sp.	800	7.36	26.00	26.00	9202.80
INUG73S	27-Aug-15	7639	Peridinium pusillum (Penard) Lemmermann	400	0.44	14.60	12.00	1100.80
INUG74S	1-Oct-15	1012	Aphanothece sp.	7184	0.37	0.00	0.00	52.00
INUG74S	1-Oct-15	1014	Chroococcus limneticus Lemmermann	57472	2.74	4.50	4.50	47.70
INUG74S	1-Oct-15	1054	Planktolyngbya limnetica	1400	0.27	171.00	1.20	193.40
INUG74S	1-Oct-15	2100	Pyramidomonas tetrarhynchus Schmarda	200	0.11	14.00	12.00	527.80
INUG74S	1-Oct-15	2105	Chlamydomonas spp.	14368	0.34	5.00	3.00	23.60
INUG74S	1-Oct-15	2121	Oocystis lacustris Chodat	64656	3.03	5.60	4.00	46.90
INUG74S	1-Oct-15	2145	Crucigenia quadrata Morr.	114944	0.16	2.00	2.00	1.40

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length μ	width μ	cell volume μ^3
INUG74S	1-Oct-15	2167	Elakatothrix gelatinosa Willen	71840	1.13	10.00	2.00	15.70
INUG74S	1-Oct-15	2178	Cosmarium sp.	200	0.20	18.00	18.00	1017.90
INUG74S	1-Oct-15	2187	Staurodesmus extensus (Andersson) Teiling	1600	1.04	16.30	14.00	649.20
INUG74S	1-Oct-15	2215	Tetraedron caudatum (Corda) Hansgrig	7184	0.03	3.00	3.00	4.70
INUG74S	1-Oct-15	4351	Small chrysophyceae	352016	4.96	3.00	3.00	14.10
INUG74S	1-Oct-15	4352	Large chrysophyceae	21552	4.39	7.30	7.30	203.70
INUG74S	1-Oct-15	4357	Chrysococcus sp.	524432	32.31	4.90	4.90	61.60
INUG74S	1-Oct-15	4361	Kephyrion boreale Skuja	28736	2.79	5.70	5.70	97.00
INUG74S	1-Oct-15	4362	Kephyrion sp.	150864	3.68	3.60	3.60	24.40
INUG74S	1-Oct-15	4363	Spinifiromonas sirratus***************	43104	3.75	5.50	5.50	87.10
INUG74S	1-Oct-15	4370	Mallomonas akrokomos Asmund and Kristiansen	7184	1.74	21.00	4.70	242.90
INUG74S	1-Oct-15	4378	Dinobryon borgei Lemmermann	21552	1.11	9.60	3.20	51.50
INUG74S	1-Oct-15	4381	Dinobryon mucronutom Nygaard	7184	0.94	10.00	5.00	130.90
INUG74S	1-Oct-15	4383	Dinobryon bavaricum Imhof	200	0.25	0.00	0.00	1250.00
INUG74S	1-Oct-15	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	1.02	0.00	0.00	5085.00
INUG74S	1-Oct-15	4388	Dinobryon sertularia Ehrenberg	43104	9.75	12.00	6.00	226.20
INUG74S	1-Oct-15	4390	Dinobryon sociale Ehrenberg	251440	56.88	12.00	6.00	226.20
INUG74S	1-Oct-15	4390	Dinobryon sociale Ehrenberg	3000	5.97	0.00	0.00	1991.00
INUG74S	1-Oct-15	4396	Chrysolkos skuja (Nauwerck) Willen	50288	1.42	5.60	3.10	28.20
INUG74S	1-Oct-15	4411	Bitrichia chodatii (Reverdin) Chodat	14368	0.71	5.90	4.00	49.40
INUG74S	1-Oct-15	4413	Chrysochromulina laurentiana Kling	43104	16.45	9.00	9.00	381.70
INUG74S	1-Oct-15	4414	Stichogloea spp.	150864	7.59	6.00	4.00	50.30
INUG74S	1-Oct-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.56	5.50	3.00	25.90
INUG74S	1-Oct-15	5507	Cyclotella stelligera Cleve and Grunow	1400	2.55	10.50	21.00	1818.40
INUG74S	1-Oct-15	5509	Cyclotella ocellata Pant.	50288	6.73	4.40	8.80	133.80
INUG74S	1-Oct-15	5511	Rhizosolenia eriense H.L. Smith	28736	1.83	9.00	3.00	63.60
INUG74S	1-Oct-15	5514	Tabellaria flocculsa (Roth) Kutzing	3000	3.69	24.00	14.00	1231.50
INUG74S	1-Oct-15	5518	Synedra acus Kutzing	6600	0.63	91.00	2.00	95.30
INUG74S	1-Oct-15	5551	Cyclotella michiganiana Skvortzow	215520	5.28	2.50	5.00	24.50
INUG74S	1-Oct-15	6554	Rhodomonas minuta Skuja	57472	7.94	11.00	6.00	138.20
INUG74S	1-Oct-15	6558	Cryptomonas erosa Ehrenberg	800	0.97	24.10	12.00	1211.40
INUG74S	1-Oct-15	6568	Katablepharis ovalis Skuja	14368	0.74	8.60	4.00	51.60
INUG74S	1-Oct-15	7632	Gymnodinium sp.	21552	7.94	11.00	8.00	368.60
INUG74S	1-Oct-15	7639	Peridinium pusillum (Penard) Lemmermann	200	0.19	12.60	12.00	950.00
INUG75S	1-Oct-15	1054	Planktolyngbya limnetica	600	0.10	146.00	1.20	165.10
INUG75S	1-Oct-15	1077	Pseudoanabaena sp.	14368	1.87	46.00	1.90	130.40
INUG75S	1-Oct-15	2105	Chlamydomonas spp.	7184	0.17	5.00	3.00	23.60
INUG75S	1-Oct-15	2121	Oocystis lacustris Chodat	35920	1.68	5.60	4.00	46.90
INUG75S	1-Oct-15	2145	Crucigenia quadrata Morr.	57472	0.08	2.00	2.00	1.40
INUG75S	1-Oct-15	2167	Elakatothrix gelatinosa Willen	43104	0.68	10.00	2.00	15.70
INUG75S	1-Oct-15	2178	Cosmarium sp.	200	0.28	20.00	20.00	1396.30
INUG75S	1-Oct-15	2187	Staurodesmus extensus (Andersson) Teiling	1000	0.65	16.30	14.00	649.20
INUG75S	1-Oct-15	2193	Staurodesmus paradoxum Meyen	200	0.75	30.00	24.00	3769.90
INUG75S	1-Oct-15	2215	Tetraedron caudatum (Corda) Hansgrig	7184	0.03	3.00	3.00	4.70
INUG75S	1-Oct-15	2235	Ankistrodesmus spiralis Lemmermann	57472	3.98	40.00	2.10	69.30
INUG75S	1-Oct-15	4351	Small chrysophyceae	287360	4.05	3.00	3.00	14.10
INUG75S	1-Oct-15	4352	Large chrysophyceae	21552	4.39	7.30	7.30	203.70
INUG75S	1-Oct-15	4357	Chrysococcus sp.	761504	46.91	4.90	4.90	61.60
INUG75S	1-Oct-15	4361	Kephyrion boreale Skuja	28736	2.79	5.70	5.70	97.00
INUG75S	1-Oct-15	4362	Kephyrion sp.	129312	3.16	3.60	3.60	24.40
INUG75S	1-Oct-15	4363	Spinifiromonas sirratus***************	14368	1.25	5.50	5.50	87.10
INUG75S	1-Oct-15	4370	Mallomonas akrokomos Asmund and Kristiansen	14368	3.49	21.00	4.70	242.90
INUG75S	1-Oct-15	4378	Dinobryon borgei Lemmermann	21552	1.05	9.10	3.20	48.80
INUG75S	1-Oct-15	4381	Dinobryon mucronutom Nygaard	14368	1.88	10.00	5.00	130.90
INUG75S	1-Oct-15	4383	Dinobryon bavaricum Imhof	200	0.25	0.00	0.00	1250.00
INUG75S	1-Oct-15	4388	Dinobryon sertularia Ehrenberg	28736	6.50	12.00	6.00	226.20
INUG75S	1-Oct-15	4390	Dinobryon sociale Ehrenberg	215520	48.75	12.00	6.00	226.20
INUG75S	1-Oct-15	4390	Dinobryon sociale Ehrenberg	2600	5.18	0.00	0.00	1991.00
INUG75S	1-Oct-15	4396	Chrysolkos skuja (Nauwerck) Willen	14368	0.41	5.60	3.10	28.20
INUG75S	1-Oct-15	4411	Bitrichia chodatii (Reverdin) Chodat	14368	0.71	5.90	4.00	49.40
INUG75S	1-Oct-15	4413	Chrysochromulina laurentiana Kling	28736	10.97	9.00	9.00	381.70
INUG75S	1-Oct-15	4414	Stichogloea spp.	107760	5.42	6.00	4.00	50.30
INUG75S	1-Oct-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.74	5.50	3.00	25.90
INUG75S	1-Oct-15	5507	Cyclotella stelligera Cleve and Grunow	1000	1.82	10.50	21.00	1818.40
INUG75S	1-Oct-15	5509	Cyclotella ocellata Pant.	14368	1.92	4.40	8.80	133.80
INUG75S	1-Oct-15	5511	Rhizosolenia eriense H.L. Smith	57472	3.66	9.00	3.00	63.60
INUG75S	1-Oct-15	5513	Tabellaria fenestrata (Lyngbye) Kutzing	600	0.45	80.00	6.00	754.00
INUG75S	1-Oct-15	5514	Tabellaria flocculsa (Roth) Kutzing	2200	2.78	24.60	14.00	1262.30
INUG75S	1-Oct-15	5518	Synedra acus Kutzing	7600	0.72	91.00	2.00	95.30
INUG75S	1-Oct-15	5551	Cyclotella michiganiana Skvortzow	272992	6.69	2.50	5.00	24.50
INUG75S	1-Oct-15	6554	Rhodomonas minuta Skuja	28736	3.97	11.00	6.00	138.20
INUG75S	1-Oct-15	6558	Cryptomonas erosa Ehrenberg	400	0.46	23.10	12.00	1161.10
INUG75S	1-Oct-15	6568	Katablepharis ovalis Skuja	50288	2.59	8.60	4.00	51.60
INUG75S	1-Oct-15	7632	Gymnodinium sp.	21552	7.94	11.00	8.00	368.60
PDL37S	28-Jul-15	2105	Chlamydomonas spp.	21552	0.35	5.00	2.50	16.40
PDL37S	28-Jul-15	2187	Staurodesmus extensus (Andersson) Teiling	400	0.16	14.00	12.00	410.50
PDL37S	28-Jul-15	2215	Tetraedron caudatum (Corda) Hansgrig	14368	0.07	3.00	3.00	4.70
PDL37S	28-Jul-15	4351	Small chrysophyceae	316096	3.26	2.70	2.70	10.30
PDL37S	28-Jul-15	4352	Large chrysophyceae	43104	7.74	7.00	7.00	179.60
PDL37S	28-Jul-15	4357	Chrysococcus sp.	1041680	64.17	4.90	4.90	61.60

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
PDL37S	28-Jul-15	4362	Kephyrion sp.	158048	3.86	3.60	3.60	24.40
PDL37S	28-Jul-15	4363	Spinifiromonas sirratus***************	7184	0.90	6.20	6.20	124.80
PDL37S	28-Jul-15	4378	Dinobryon borgei Lemmermann	7184	0.33	8.60	3.20	46.10
PDL37S	28-Jul-15	4381	Dinobryon mucronutom Nygaard	14368	1.62	8.60	5.00	112.60
PDL37S	28-Jul-15	4388	Dinobryon sertularia Ehrenberg	43104	9.75	12.00	6.00	226.20
PDL37S	28-Jul-15	4388	Dinobryon sertularia Ehrenberg	7600	38.65	0.00	0.00	5085.00
PDL37S	28-Jul-15	4390	Dinobryon sociale Ehrenberg	50288	11.38	12.00	6.00	226.20
PDL37S	28-Jul-15	4390	Dinobryon sociale Ehrenberg	8000	27.12	0.00	0.00	3390.00
PDL37S	28-Jul-15	4413	Chrysochromulina laurentiana Kling	71840	29.29	9.20	9.20	407.70
PDL37S	28-Jul-15	4414	Stichogloea spp.	7184	0.36	6.00	4.00	50.30
PDL37S	28-Jul-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.35	5.20	3.00	24.50
PDL37S	28-Jul-15	5507	Cyclotella stelligera Cleve and Grunow	600	0.85	9.65	19.30	1411.60
PDL37S	28-Jul-15	5509	Cyclotella ocellata Pant.	57472	5.99	4.05	8.10	104.30
PDL37S	28-Jul-15	5511	Rhizosolenia eriense H.L. Smith	17960	1.40	11.00	3.00	77.80
PDL37S	28-Jul-15	5518	Synedra acus Kutzing	4800	0.48	96.00	2.00	100.50
PDL37S	28-Jul-15	5540	Aulacoseira italica v subarctica (O. Muller) Simonsen	600	1.42	69.00	6.60	2360.60
PDL37S	28-Jul-15	5551	Cyclotella michiganiana Skvortzow	143680	3.52	2.50	5.00	24.50
PDL37S	28-Jul-15	6554	Rhodomonas minuta Skuja	28736	3.64	12.00	5.50	126.70
PDL37S	28-Jul-15	6558	Cryptomonas erosa Ehrenberg	2200	2.65	24.00	12.00	1206.40
PDL37S	28-Jul-15	6562	Cryptomonas reflexa (Marsson) Skuja	200	0.14	20.00	10.00	698.10
PDL37S	28-Jul-15	6568	Katablepharis ovalis Skuja	28736	1.35	8.20	4.00	46.90
PDL37S	28-Jul-15	7632	Gymnodinium sp.	400	2.42	22.60	22.60	6044.00
PDL37S	28-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	600	0.61	13.40	12.00	1010.30
PDL37S	28-Jul-15	7641	Peridinium aciculiferum Lemmermann	400	3.62	30.00	24.00	9047.80
PDL38S	28-Jul-15	2215	Tetraedron caudatum (Corda) Hansgrig	14368	0.07	3.00	3.00	4.70
PDL38S	28-Jul-15	4351	Small chrysophyceae	280176	2.89	2.70	2.70	10.30
PDL38S	28-Jul-15	4352	Large chrysophyceae	43104	7.74	7.00	7.00	179.60
PDL38S	28-Jul-15	4357	Chrysococcus sp.	1142256	70.36	4.90	4.90	61.60
PDL38S	28-Jul-15	4362	Kephyrion sp.	201152	3.46	3.20	3.20	17.20
PDL38S	28-Jul-15	4363	Spinifiromonas sirratus***************	35920	2.80	5.30	5.30	78.00
PDL38S	28-Jul-15	4378	Dinobryon borgei Lemmermann	14368	0.66	8.60	3.20	46.10
PDL38S	28-Jul-15	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.93	0.00	0.00	4625.00
PDL38S	28-Jul-15	4388	Dinobryon sertularia Ehrenberg	28736	6.50	12.00	6.00	226.20
PDL38S	28-Jul-15	4388	Dinobryon sertularia Ehrenberg	6600	33.56	0.00	0.00	5085.00
PDL38S	28-Jul-15	4390	Dinobryon sociale Ehrenberg	79024	17.88	12.00	6.00	226.20
PDL38S	28-Jul-15	4390	Dinobryon sociale Ehrenberg	11200	37.97	0.00	0.00	3390.00
PDL38S	28-Jul-15	4396	Chrysolkos skuja (Nauwerck) Willen	7184	0.20	5.40	3.10	27.20
PDL38S	28-Jul-15	4413	Chrysochromulina laurentiana Kling	107760	43.93	9.20	9.20	407.70
PDL38S	28-Jul-15	4414	Stichogloea spp.	28736	1.45	6.00	4.00	50.30
PDL38S	28-Jul-15	5509	Cyclotella ocellata Pant.	14368	1.50	4.05	8.10	104.30
PDL38S	28-Jul-15	5511	Rhizosolenia eriense H.L. Smith	64656	5.03	11.00	3.00	77.80
PDL38S	28-Jul-15	5518	Synedra acus Kutzing	6400	0.64	96.00	2.00	100.50
PDL38S	28-Jul-15	5551	Cyclotella michiganiana Skvortzow	122128	2.99	2.50	5.00	24.50
PDL38S	28-Jul-15	6554	Rhodomonas minuta Skuja	14368	1.69	12.00	5.30	117.70
PDL38S	28-Jul-15	6558	Cryptomonas erosa Ehrenberg	3000	3.56	23.60	12.00	1186.30
PDL38S	28-Jul-15	6568	Katablepharis ovalis Skuja	21552	1.01	8.20	4.00	46.90
PDL38S	28-Jul-15	7632	Gymnodinium sp.	7184	2.31	9.60	8.00	321.70
PDL38S	28-Jul-15	7632	Gymnodinium sp.	1800	9.50	21.60	21.60	5276.70
PDL38S	28-Jul-15	7639	Peridinium pusillum (Penard) Lemmermann	1400	1.39	13.20	12.00	995.30
PDL38S	28-Jul-15	7641	Peridinium aciculiferum Lemmermann	200	1.87	31.00	24.00	9349.40
PDL39S	26-Aug-15	1012	Aphanothece sp.	7184	0.47	0.00	0.00	66.00
PDL39S	26-Aug-15	1054	Planktolyngbya limnetica	2000	0.37	163.00	1.20	184.30
PDL39S	26-Aug-15	2105	Chlamydomonas spp.	14368	0.24	5.00	2.50	16.40
PDL39S	26-Aug-15	2112	Sphaerocystis schroeteri Chodat	86208	3.11	4.10	4.10	36.10
PDL39S	26-Aug-15	2121	Oocystis lacustris Chodat	35920	1.81	6.00	4.00	50.30
PDL39S	26-Aug-15	2167	Elakatothrix gelatinosa Willen	100576	1.58	10.00	2.00	15.70
PDL39S	26-Aug-15	2193	Staurodesmus paradoxum Meyen	200	0.67	28.30	24.00	3354.80
PDL39S	26-Aug-15	2235	Ankistrodesmus spiralis Lemmermann	7184	0.42	31.00	2.20	58.90
PDL39S	26-Aug-15	4351	Small chrysophyceae	222704	2.85	2.90	2.90	12.80
PDL39S	26-Aug-15	4352	Large chrysophyceae	7184	1.29	7.00	7.00	179.60
PDL39S	26-Aug-15	4357	Chrysococcus sp.	646560	42.29	5.00	5.00	65.40
PDL39S	26-Aug-15	4361	Kephyrion boreale Skuja	7184	0.85	6.10	6.10	118.80
PDL39S	26-Aug-15	4362	Kephyrion sp.	107760	2.22	3.40	3.40	20.60
PDL39S	26-Aug-15	4363	Spinifiromonas sirratus***************	14368	1.47	5.80	5.80	102.20
PDL39S	26-Aug-15	4378	Dinobryon borgei Lemmermann	14368	0.74	9.00	3.30	51.30
PDL39S	26-Aug-15	4381	Dinobryon mucronutom Nygaard	21552	2.82	10.00	5.00	130.90
PDL39S	26-Aug-15	4388	Dinobryon sertularia Ehrenberg	50288	11.38	12.00	6.00	226.20
PDL39S	26-Aug-15	4388	Dinobryon sertularia Ehrenberg	1600	3.18	0.00	0.00	1990.00
PDL39S	26-Aug-15	4388	Dinobryon sertularia Ehrenberg	1800	3.87	0.00	0.00	2150.00
PDL39S	26-Aug-15	4390	Dinobryon sociale Ehrenberg	179600	40.63	12.00	6.00	226.20
PDL39S	26-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	14368	0.40	5.50	3.10	27.70
PDL39S	26-Aug-15	4401	Uroglena volvox Ehrenberg	43104	4.88	6.00	6.00	113.10
PDL39S	26-Aug-15	4413	Chrysochromulina laurentiana Kling	21552	8.23	9.00	9.00	381.70
PDL39S	26-Aug-15	4414	Stichogloea spp.	7184	0.36	6.00	4.00	50.30
PDL39S	26-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	600	1.09	10.50	21.00	1818.40
PDL39S	26-Aug-15	5509	Cyclotella ocellata Pant.	64656	9.57	4.55	9.10	148.00
PDL39S	26-Aug-15	5511	Rhizosolenia eriense H.L. Smith	50288	3.20	9.00	3.00	63.60
PDL39S	26-Aug-15	5518	Synedra acus Kutzing	3400	0.32	90.00	2.00	94.20
PDL39S	26-Aug-15	5551	Cyclotella michiganiana Skvortzow	100576	2.46	2.50	5.00	24.50
PDL39S	26-Aug-15	6554	Rhodomonas minuta Skuja	21552	1.14	9.00	4.10	52.80

Station	Date	Species code	Speceis name	density cells/L	biomass mg/m^3	length µ	width µ	cell volume $µ^3$
PDL39S	26-Aug-15	6558	Cryptomonas erosa Ehrenberg	400	0.32	22.60	10.00	788.90
PDL39S	26-Aug-15	6568	Katablepharis ovalis Skuja	21552	1.04	8.30	4.00	48.10
PDL39S	26-Aug-15	7632	Gymnodinium sp.	400	2.11	21.60	21.60	5276.70
PDL39S	26-Aug-15	7639	Peridinium pusillum (Penard) Lemmermann	200	0.21	14.00	12.00	1055.60
PDL40S	26-Aug-15	1054	Planktolyngbya limnetica	3800	0.90	210.00	1.20	237.50
PDL40S	26-Aug-15	2112	Sphaerocystis schroeteri Chodat	35920	1.30	4.10	4.10	36.10
PDL40S	26-Aug-15	2137	Dictyosphaerium simplex Sukja	21552	0.14	2.30	2.30	6.40
PDL40S	26-Aug-15	2167	Elakatothrix gelatinosa Willen	14368	0.23	10.00	2.00	15.70
PDL40S	26-Aug-15	2187	Staurodesmus extensus (Andersson) Teiling	200	0.08	13.50	12.00	381.70
PDL40S	26-Aug-15	2193	Staurodesmus paradoxum Meyen	200	0.67	28.30	24.00	3354.80
PDL40S	26-Aug-15	2199	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54	6.00	6.00	37.70
PDL40S	26-Aug-15	2206	Botryococcus braunii Kutzing	400	0.21	10.00	10.00	523.60
PDL40S	26-Aug-15	2215	Tetraedron caudatum (Corda) Hansgrig	14368	0.07	3.00	3.00	4.70
PDL40S	26-Aug-15	2235	Ankistrodesmus spiralis Lemmermann	21552	1.16	31.00	2.10	53.70
PDL40S	26-Aug-15	2247	Oocystis gigas Archer	400	0.97	18.00	16.00	2412.70
PDL40S	26-Aug-15	4351	Small chrysophyceae	337648	4.32	2.90	2.90	12.80
PDL40S	26-Aug-15	4352	Large chrysophyceae	21552	3.87	7.00	7.00	179.60
PDL40S	26-Aug-15	4357	Chrysococcus sp.	531616	34.77	5.00	5.00	65.40
PDL40S	26-Aug-15	4362	Kephyrion sp.	93392	1.92	3.40	3.40	20.60
PDL40S	26-Aug-15	4378	Dinobryon borgei Lemmermann	21552	1.11	9.00	3.30	51.30
PDL40S	26-Aug-15	4381	Dinobryon mucronutom Nygaard	14368	1.88	10.00	5.00	130.90
PDL40S	26-Aug-15	4388	Dinobryon sertularia Ehrenberg	93392	21.13	12.00	6.00	226.20
PDL40S	26-Aug-15	4388	Dinobryon sertularia Ehrenberg	2600	5.59	0.00	0.00	2150.00
PDL40S	26-Aug-15	4390	Dinobryon sociale Ehrenberg	158048	35.75	12.00	6.00	226.20
PDL40S	26-Aug-15	4390	Dinobryon sociale Ehrenberg	2600	5.17	0.00	0.00	1990.00
PDL40S	26-Aug-15	4396	Chrysolkos skuja (Nauwerck) Willen	7184	0.20	5.50	3.10	27.70
PDL40S	26-Aug-15	4401	Uroglena volvox Ehrenberg	43104	4.88	6.00	6.00	113.10
PDL40S	26-Aug-15	4413	Chrysochromulina laurentiana Kling	35920	13.71	9.00	9.00	381.70
PDL40S	26-Aug-15	4414	Stichogloea spp.	7184	0.36	6.00	4.00	50.30
PDL40S	26-Aug-15	5507	Cyclotella stelligera Cleve and Grunow	400	0.73	10.50	21.00	1818.40
PDL40S	26-Aug-15	5509	Cyclotella ocellata Pant.	43104	6.38	4.55	9.10	148.00
PDL40S	26-Aug-15	5511	Rhizosolenia eriense H.L. Smith	50288	3.20	9.00	3.00	63.60
PDL40S	26-Aug-15	5518	Synedra acus Kutzing	4400	0.41	90.00	2.00	94.20
PDL40S	26-Aug-15	5551	Cyclotella michiganiana Skvortzow	114944	2.82	2.50	5.00	24.50
PDL40S	26-Aug-15	5720	Cyclotella bodanica Eulenst.	400	2.80	16.45	32.90	6992.30
PDL40S	26-Aug-15	6554	Rhodomonas minuta Skuja	21552	1.14	9.00	4.10	52.80
PDL40S	26-Aug-15	6558	Cryptomonas erosa Ehrenberg	1400	1.10	22.60	10.00	788.90
PDL40S	26-Aug-15	7632	Gymnodinium sp.	400	2.11	21.60	21.60	5276.70
PDL41S	4-Oct-15	1054	Planktolyngbya limnetica	7400	2.51	300.00	1.20	339.30
PDL41S	4-Oct-15	2105	Chlamydomonas spp.	14368	0.72	6.00	4.00	50.30
PDL41S	4-Oct-15	2112	Sphaerocystis schroeteri Chodat	64656	0.67	2.70	2.70	10.30
PDL41S	4-Oct-15	2121	Oocystis lacustris Chodat	136496	3.92	6.10	3.00	28.70
PDL41S	4-Oct-15	2130	Scenedesmus quadricauda (Turp.) Brebisson	14368	1.50	12.00	5.00	104.70
PDL41S	4-Oct-15	2137	Dictyosphaerium simplex Sukja	86208	0.36	2.00	2.00	4.20
PDL41S	4-Oct-15	2167	Elakatothrix gelatinosa Willen	21552	0.44	13.00	2.00	20.40
PDL41S	4-Oct-15	2235	Ankistrodesmus spiralis Lemmermann	21552	1.34	36.00	2.10	62.30
PDL41S	4-Oct-15	4351	Small chrysophyceae	272992	3.85	3.00	3.00	14.10
PDL41S	4-Oct-15	4352	Large chrysophyceae	14368	2.58	7.00	7.00	179.60
PDL41S	4-Oct-15	4355	Chrysochromulina parva Lackey	14368	0.94	5.00	5.00	65.40
PDL41S	4-Oct-15	4357	Chrysococcus sp.	215520	10.99	4.60	4.60	51.00
PDL41S	4-Oct-15	4362	Kephyrion sp.	122128	2.98	3.60	3.60	24.40
PDL41S	4-Oct-15	4378	Dinobryon borgei Lemmermann	28736	1.78	9.10	3.60	61.80
PDL41S	4-Oct-15	4384	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.51	0.00	0.00	2525.00
PDL41S	4-Oct-15	4388	Dinobryon sertularia Ehrenberg	50288	11.38	12.00	6.00	226.20
PDL41S	4-Oct-15	4388	Dinobryon sertularia Ehrenberg	1000	3.39	0.00	0.00	3390.00
PDL41S	4-Oct-15	4390	Dinobryon sociale Ehrenberg	114944	26.00	12.00	6.00	226.20
PDL41S	4-Oct-15	4390	Dinobryon sociale Ehrenberg	4800	16.27	0.00	0.00	3390.00
PDL41S	4-Oct-15	4396	Chrysolkos skuja (Nauwerck) Willen	21552	0.61	5.60	3.10	28.20
PDL41S	4-Oct-15	4413	Chrysochromulina laurentiana Kling	35920	13.71	9.00	9.00	381.70
PDL41S	4-Oct-15	4414	Stichogloea spp.	35920	1.81	6.00	4.00	50.30
PDL41S	4-Oct-15	4418	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.23	6.00	3.20	32.20
PDL41S	4-Oct-15	5507	Cyclotella stelligera Cleve and Grunow	1400	2.55	10.50	21.00	1818.40
PDL41S	4-Oct-15	5509	Cyclotella ocellata Pant.	21552	2.69	4.30	8.60	124.90
PDL41S	4-Oct-15	5518	Synedra acus Kutzing	2400	0.23	91.00	2.00	95.30
PDL41S	4-Oct-15	5551	Cyclotella michiganiana Skvortzow	193968	4.48	2.45	4.90	23.10
PDL41S	4-Oct-15	5720	Cyclotella bodanica Eulenst.	200	1.49	16.80	33.60	7448.10
PDL41S	4-Oct-15	6554	Rhodomonas minuta Skuja	21552	3.25	12.00	6.00	150.80
PDL41S	4-Oct-15	6558	Cryptomonas erosa Ehrenberg	600	0.71	23.40	12.00	1176.20
PDL41S	4-Oct-15	7631	Gymnodinium helveticum Penard	200	4.81	51.00	30.00	24033.20
PDL41S	4-Oct-15	7632	Gymnodinium sp.	14368	5.01	10.40	8.00	348.50
PDL41S	4-Oct-15	7632	Gymnodinium sp.	400	3.51	25.60	25.60	8784.50

APPENDIX F

Benthic Invertebrate Taxonomy, Whale Tail Pit Baseline, 2015

Raw benthic invertebrate data, Whale Tail Pit Baseline, 2015.

Program	Meadowbank Reference Lakes										Amaruq Study Lakes									
Lake Name	Inuggugayualik Lake					Pipedream Lake					Mammoth Lake					Nemo Lake				
Station	INUG					PDL					MAM					NEM				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
ROUNDWORMS																				
P. Nemata	8	2	5	5	5	3	6	1	2	2	-	1	1	4	1	-	1	4	2	3
FLATWORMS																				
P. Platyhelminthes																				
Cl. Turbellaria																				
indeterminate	-	-	-	-	-	-	-	-	-	-	1	2	-	-	1	-	1	-	1	-
ANNELIDS																				
P. Annelida																				
WORMS																				
Cl. Oligochaeta																				
F. Naididae																				
S.F. Tubificinae																				
immatures with hair chaetae	-	-	-	1	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Rhyacodrilinae																				
Rhyacodrilus coccineus	-	-	-	-	-	-	-	-	-	-	3	3	-	-	2	-	-	-	1	-
Rhyacodrilus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lumbriculidae																				
Lumbriculus	1	2	6	-	2	-	1	-	2	-	1	3	2	1	-	2	1	-	-	3
ARTHROPODS																				
P. Arthropoda																				
MITES																				
Cl. Arachnida																				
O. Acarina																				
indeterminate	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1	-	-	-	1
F. Acalyptonotidae																				
Acalyptonotus	-	-	1	-	-	-	1	-	-	-	-	-	-	1	1	1	-	2	4	4
F. Hygrobatidae																				
Hygrobates	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-
F. Lebertiidae																				
Lebertia	-	-	-	-	-	-	-	1	-	2	-	-	2	-	-	2	3	1	-	-
F. Oxidae																				
Frontipoda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxus	-	-	-	-	-	-	-	-	-	-	3	3	2	3	-	-	3	-	-	-
SEED SHRIMPS																				
Cl. Ostracoda	1	6	6	2	1	21	5	4	2	3	17	15	12	15	6	20	12	7	12	20
FAIRY SHRIMP																				
O. Notostraca																				
Lepidurus arcticus	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-
INSECTS																				
Cl. Insecta																				
CADDISFLIES																				
O. Trichoptera																				
F. Limnephilidae																				
Grensia praeterita	-	-	1	-	-	4	-	-	1	1	-	-	1	-	-	-	-	-	-	-
TRUE FLIES																				
O. Diptera																				
MIDGES																				
F. Chironomidae																				
chironomid pupae	-	-	-	-	-	-	-	-	-	-	-	**1**	**1**	-	-	**1**	**2**	**2**	-	-
S.F. Chironominae																				
Cladotanytarsus	-	2	-	1	-	-	-	-	-	-	1	5	-	1	-	-	-	-	-	-
Corynocera	-	4	3	5	-	-	-	-	-	-	12	3	2	15	9	-	-	-	-	-
Dicrotendipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Micropsectra	-	18	-	-	2	-	-	-	-	-	-	-	9	-	-	3	-	-	4	2
Microtendipes	3	22	19	31	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus	2	3	6	1	2	6	-	-	-	-	6	14	5	33	23	-	-	7	2	-
Sergentia	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Stempellinella	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Stictochironomus	5	9	26	5	7	20	13	20	6	21	5	6	7	-	-	28	45	7	38	51
Tanytarsus	-	7	11	8	8	9	-	-	-	-	95	38	17	261	184	32	43	69	18	17
S.F. Diamesinae																				
Protanypus	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae																				
Abiskomyia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius	-	-	-	1	-	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Paracladius	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Parakiefferiella	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Psectrocladius	2	4	1	-	-	7	9	3	1	2	2	1	-	1	5	5	1	3	7	10
Zalutschia	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Prodiamesinae																				
Monodiamesa	3	2	1	4	-	-	2	2	-	2	2	2	3	1	-	-	-	-	-	-
S.F. Tanypodinae																				
Ablabesmyia	-	1	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	1
Procladius	10	4	5	4	11	6	15	14	9	8	14	13	14	15	14	17	15	19	19	17
Thienemannimyia complex	-	-	-	-	-	3	2	-	-	-	-	-	-	-	-	-	4	2	3	4
F. Empididae																				
Chelifera/Neoplasta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOLLUSCS																				
P. Mollusca																				
CLAMS																				
Cl. Bivalvia																				
F. Sphaeriidae																				
Cyclocalyx/Neopisidium	14	23	15	16	17	2	14	20	9	13	27	19	18	31	7	29	20	16	21	12
Cyclocalyx	-	2	4	-	-	7	-	-	-	-	6	11	8	12	8	6	11	7	9	4
Sphaerium nitidum	2	4	2	2	3	-	-	-	-	-	-	1	-	6	2	-	1	-	-	-
R (Richness) - totals																				
Total	10	17	16	12	9	11	11	9	6	8	14	15	13	14	12	10	14	11	12	11
Oligochaete	1	1	1	1	1	0	2	0	1	0	2	2	1	1	1	1	1	0	1	1
Insect	7	13	10	9	6	9	7	6	4	6	8	8	8	7	6	5	6	6	7	7
Mollusc	2	3	3	2	2	2	1	1	1	1	2	3	2	3	3	2	3	2	2	2
Other[3]	0	0	2	0	0	0	1	2	0	1	2	2	2	3	2	2	4	3	2	1
N (Abundance) - raw																				
Total	43	109	104	79	65	66	63	63	28	51	178	125	91	382	257	126	152	136	127	125
Oligochaete	1	2	6	1	2	0	4	0	2	0	4	6	2	1	2	2	1	0	1	3
Insect	26	78	74	60	43	57	44	41	17	36	137	83	59	327	236	86	111	109	91	102
Mollusc	16	29	21	18	20	9	14	20	9	13	33	31	26	49	17	35	32	23	30	16
Other	0	0	3	0	0	0	1	2	0	2	4	5	4	5	2	3	8	4	5	4
N (Abundance) - #/m^2																				
Total	935	2370	2261	1717	1413	1435	1370	1370	609	1109	3870	2717	1978	8304	5587	2739	3304	2957	2761	2717
Oligochaete	22	43	130	22	43	0	87	0	43	0	87	130	43	22	43	43	22	0	22	65
Insect	565	1696	1609	1304	935	1239	957	891	370	783	2978	1804	1283	7109	5130	1870	2413	2370	1978	2217
Mollusc	348	630	457	391	435	196	304	435	196	283	717	674	565	1065	370	761	696	500	652	348
Other	0	0	65	0	0	0	22	43	0	43	87	109	87	109	43	65	174	87	109	87
TOTAL NUMBER OF TAXA [1]	**10**	**17**	**16**	**12**	**9**	**11**	**11**	**9**	**6**	**8**	**14**	**15**	**13**	**14**	**12**	**10**	**14**	**11**	**12**	**11**
TOTAL NUMBER OF ORGANISMS [2]	**43**	**109**	**104**	**79**	**65**	**66**	**63**	**63**	**28**	**51**	**178**	**125**	**91**	**382**	**257**	**126**	**152**	**136**	**127**	**125**

Notes:

[1] Number of taxa totals exclude P. Nemata and Cl. Ostracoda, pupae (Chironomidae) and indeterminates (Acarina).

[2] Number of organisms totals exclude P. Nemata and Cl. Ostracoda.

[3] Other taxa: (Cl. Turbellaria, F. Acalyptonotidae, F. Hygrobatidae, F. Lebertiidae, F. Oxidae, and O. Notostraca).

Raw benthic invertebrate data, Whale Tail Pit Baseline, 2015.

Program	Amaruq Study Lakes														
Lake Name	Whale Tail Lake - North Basin (deep)					Whale Tail Lake - North Basin (shallow)					Whale Tail Lake - South Basin				
Station	WTN					WTN-EX					WTS				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
ROUNDWORMS															
P. Nemata	2	-	1	-	2	1	2	1	1	1	1	-	3	2	-
FLATWORMS															
P. Platyhelminthes															
Cl. Turbellaria															
indeterminate	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
ANNELIDS															
P. Annelida															
WORMS															
Cl. Oligochaeta															
F. Naididae															
S.F. Tubificinae															
immatures with hair chaetae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Rhyacodrilinae															
Rhyacodrilus coccineus	-	-	-	2	-	1	-	6	1	-	-	-	1	-	-
Rhyacodrilus	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
F. Lumbriculidae															
Lumbriculus	-	-	-	2	2	-	-	2	2	1	-	-	-	-	-
ARTHROPODS															
P. Arthropoda															
MITES															
Cl. Arachnida															
O. Acarina															
indeterminate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Acalyptonotidae															
Acalyptonotus	4	1	2	1	1	4	2	2	1	3	-	-	2	2	1
F. Hygrobatidae															
Hygrobates	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-
F. Lebertiidae															
Lebertia	-	-	1	-	-	1	-	4	3	-	-	-	2	-	-
F. Oxidae															
Frontipoda	-	-	-	-	-	-	-	-	-	5	1	3	2	3	1
Oxus	1	-	1	2	2	1	4	5	4	-	-	-	-	-	-
SEED SHRIMPS															
Cl. Ostracoda	25	7	12	11	19	45	43	48	77	57	25	10	21	11	19
FAIRY SHRIMP															
O. Notostraca															
Lepidurus arcticus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INSECTS															
Cl. Insecta															
CADDISFLIES															
O. Trichoptera															
F. Limnephilidae															
Grensia praeterita	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
TRUE FLIES															
O. Diptera															
MIDGES															
F. Chironomidae															
chironomid pupae	-	-	-	-	**1**	-	-	-	-	**1**	-	-	-	**1**	-
S.F. Chironominae															
Cladotanytarsus	-	-	-	-	-	-	3	6	5	-	1	-	-	-	-
Corynocera	-	-	1	-	-	108	7	137	118	124	3	-	45	12	1
Dicrotendipes	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Micropsectra	1	-	1	-	4	4	9	-	7	-	2	12	14	38	1
Microtendipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus	2	-	-	-	3	-	-	-	-	-	2	4	8	1	3
Sergentia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stempellinella	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Stictochironomus	13	14	6	6	41	41	8	47	30	44	3	1	3	12	2
Tanytarsus	1	-	1	2	3	9	2	6	-	22	8	1	14	6	5
S.F. Diamesinae															
Protanypus	1	-	-	2	-	-	2	-	-	-	-	-	1	2	2
S.F. Orthocladiinae															
Abiskomyia	-	-	1	-	1	-	-	-	-	-	-	-	-	1	1
Heterotrissocladius	-	1	-	-	1	1	-	-	-	-	-	1	1	-	-
Paracladius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parakiefferiella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psectrocladius	-	-	1	-	-	2	1	-	-	4	1	3	9	1	-
Zalutschia	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
S.F. Prodiamesinae															
Monodiamesa	-	1	1	1	-	2	3	3	3	1	3	1	-	5	1
S.F. Tanypodinae															
Ablabesmyia	-	-	-	-	-	-	2	1	1	3	-	-	-	-	-
Procladius	15	10	7	9	6	26	15	20	21	24	9	10	10	11	14
Thienemannimyia complex	-	-	-	-	-	1	-	3	1	1	-	-	-	-	-
F. Empididae															
Chelifera/Neoplasta	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
MOLLUSCS															
P. Mollusca															
CLAMS															
Cl. Bivalvia															
F. Sphaeriidae															
Cyclocalyx/Neopisidium	7	1	18	15	10	54	39	38	48	39	14	18	23	15	16
Cyclocalyx	-	-	1	-	-	15	1	9	9	27	5	1	5	8	2
Sphaerium nitidum	1	-	2	1	2	2	2	3	4	-	2	2	3	1	1
R (Richness) - totals															
Total	10	6	14	11	13	16	17	17	17	15	13	12	18	15	14
Oligochaete	0	0	0	2	1	1	0	2	2	2	0	0	1	0	0
Insect	6	4	8	5	8	9	11	9	8	9	9	8	10	10	9
Mollusc	2	1	3	2	2	3	3	3	3	2	3	3	3	3	3
Other[3]	2	1	3	2	2	3	3	3	4	2	1	1	4	2	2
N (Abundance) - raw															
Total	46	28	44	43	78	272	102	294	260	301	54	57	145	119	51
Oligochaete	0	0	0	4	2	1	0	8	3	2	0	0	1	0	0
Insect	33	26	19	20	61	194	53	225	186	225	32	33	106	90	30
Mollusc	8	1	21	16	12	71	42	50	61	66	21	21	31	24	19
Other	5	1	4	3	3	6	7	11	10	8	1	3	7	5	2
N (Abundance) - #/m^2															
Total	1000	609	957	935	1696	5913	2217	6391	5652	6543	1174	1239	3152	2587	1109
Oligochaete	0	0	0	87	43	22	0	174	65	43	0	0	22	0	0
Insect	717	565	413	435	1326	4217	1152	4891	4043	4891	696	717	2304	1957	652
Mollusc	174	22	457	348	261	1543	913	1087	1326	1435	457	457	674	522	413
Other	109	22	87	65	65	130	152	239	217	174	22	65	152	109	43
TOTAL NUMBER OF TAXA [1]	**10**	**6**	**14**	**11**	**13**	**16**	**17**	**17**	**17**	**15**	**13**	**12**	**18**	**15**	**14**
TOTAL NUMBER OF ORGANISMS [2]	**46**	**28**	**44**	**43**	**78**	**272**	**102**	**294**	**260**	**301**	**54**	**57**	**145**	**119**	**51**

Notes:

[1] Number of taxa totals exclude P. Nemata and Cl. Ostracoda, pupae (Chironomidae) and indeterminates (Acarina).

[2] Number of organisms totals exclude P. Nemata and Cl. Ostracoda.

[3] Other taxa: (Cl. Turbellaria, F. Acalyptonotidae, F. Hygrobatidae, F. Lebertiidae, F. Oxidae, and O. Notostraca).

APPENDIX G

Zooplankton Taxonomy

APPENDIX G1

Zooplankton Taxonomy, Whale Tail Pit Baseline, 2015

Abbreviations Definitions

Abundance Data:

Total Taxa	Number of unique taxa present identified to lowest possible level. Does not include higher-order taxa of which there are identified lower-level taxa present.
Nauplius	Crustacean early larval stage
Presence	Taxa enumerated in sample
#/sample	Count data converted to "per sample" total value

Copepods:

III	Calanoid copepod stage 3; with 3 abdominal segments
IV	Calanoid copepod stage 4: with 4 abdominal segments
V	Calanoid copepod stage 5: with 5 abdominant segments
F	Reproductive, adult stage with 6 abdominal segments. Female.
M	Reproductive, adult stage with 6 abdominal segments. Male.

Rotifers:

Individual	Non-colonial rotifer
Colony	Colonial rotifer

Cladocerans:

J	Juvenile
F	Adult Female

Biomass Measurements:

WW	Wet weight
DW	Dry weight
mg/sample	milligrams per sample

Crustaceans:	Ln(W) (mg DW) = Ln α + β Ln (L) (Length in mm)
α	Species-specific constant in biomass estimation formula for copepods (intercept) (sources in reference column)
β	Species-specfic constant in biomass estimation formula for copepods (slope) (sources in reference column)

Rotifers:	Rotifer biomass (µg DW) = (length3 x FF) + (%BV x length3 x FF) x 10-6 x WW : DW
FF	Species-specific constant for calculation of biomass in rotifers, source of values in Reference column
%BV	Species-specific volume of portrusions that is >0 in some rotifers, term in equation for biomass estimate, source of values in reference column

Worksheets:

1. Definitions & Abbreviations	Glossary of terms and outline of report
2. Matrix - Abundance	Abundance Data in matrix format, including Total Abundance per sample
3. Matrix - Biomass	Biomass Data in matrix format, including Total Biomass per sample (wet weight and dry weight data)
4. Matrix - Presence Absence	Presence/Absence Data in matrix format, including total unique taxa count per sample
5. Data Summaries	Data summaries in matrix format, including Total Taxa count per sample, Total Abundance per sample, and total biomass(WW and DW) per sample
6. Data - Long	Abundance and Biomass data in long format with average taxon biomass inserted in order to calculate total biomass and abundance per sample
7. Measurements & Biomass	Raw length measurements and biomass conversions, including references
8. QAQC	Report on subsampling error and internal taxonomic consistency

Zooplankton abundance data matrix, Azimuth Nunavut 2015

		Biologica #	Grand Total	15-25-01	15-25-02	15-25-03	15-25-04	15-25-05	15-25-06	15-25-07	15-25-08	15-25-08 - QA	15-25-09
		Project	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut
		Client ID		WTN-01-S	WTN-02-S	WTS-01-S	WTS-02-S	NEM-01-S	NEM-02-S	MAM-01-S	MAM-02-S	MAM-02-S-QA	DUP-July-Amaruq
		Date		7/17/2015	7/17/2015	7/17/2015	7/17/2015	7/18/2015	7/18/2015	7/18/2015	7/18/2015	7/18/2015	
			Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)
Major Group	**Taxon**	**Stage**											
Cladoceran	Bosmina sp.	F	425	30	10	2		8	2	7	190	110	2
Cladoceran	Daphnia ambigua	F	2										2
Cladoceran	Daphnia middendorffiana	F	309	20	50	7	1	30	8		10	10	1
Cladoceran	Daphnia sp.	F	113	30		1	1	7	6		10	10	
Cladoceran	Holopedium gibberum	F	2168	200	560	390	80	60	100	24	200	310	180
Cladoceran	Leptodora kindtii	F	13	10				1		1			1
	Total Cladocera		**3029**	**290**	**620**	**400**	**82**	**106**	**116**	**32**	**410**	**440**	**186**
Calanoid	Calanoida indet.	I-IV	5988	210	120	50	30	1920	1750	64	120	110	400
Calanoid	Calanoida indet.	V	757							9	20	70	
Calanoid	Heterocope septentrionalis	F	392										
Calanoid	Heterocope septentrionalis	M	281										
Calanoid	Leptodiaptomus pribilofensis	F	5181										
Calanoid	Leptodiaptomus pribilofensis	I-IV	13										
Calanoid	Leptodiaptomus pribilofensis	M	5585										
Calanoid	Leptodiaptomus pribilofensis	V	154										
Calanoid	Tropocyclops prasinus mexicanus	F	3						3				
	Total Calanoida		**18354**	**210**	**120**	**50**	**30**	**1920**	**1753**	**73**	**140**	**180**	**400**
Cyclopoid	Cyclopoida indet.	F	265										
Cyclopoid	Cyclopoida indet.	I-IV	25273	1200	600	1300	1160	1020	1970	16	310	320	3420
Cyclopoid	Cyclopoida indet.	M	338						10	2			100
Cyclopoid	Cyclopoida indet.	V	4712	160	200	450	200	70	120	20	80	60	720
Cyclopoid	Cyclops scutifer	F	7583	740	320	500	400	700	410	39	830	860	560
Cyclopoid	Cyclops scutifer	I-IV	203										
Cyclopoid	Cyclops scutifer	M	4816	520	470	470	320	180	60	15	200	310	640
Cyclopoid	Cyclops scutifer	V	100										
Cyclopoid	Diacyclops thomasi	F	206										
Cyclopoid	Diacyclops thomasi	I-IV	430										
Cyclopoid	Diacyclops thomasi	M	150										
Cyclopoid	Diacyclops thomasi	V	85										
Cyclopoid	Microcyclops sp.	F	68										
	Total Cyclopoida		**44226**	**2620**	**1590**	**2720**	**2080**	**1970**	**2570**	**92**	**1420**	**1550**	**5440**
Copepod	Calanoid indet.	nauplius	64983	133	100	267	267	2200	5700	367	50	233	300
Copepod	Cyclopoid indet.	nauplius	26573	2167	2100	2700	533	2033	1567	1533	740	2333	1133
Copepod	Copepoda indet.	nauplius	1033	33	267	133	267	33	33	167			
	Total Copepod Nauplii		**92590**	**2333**	**2467**	**3100**	**1067**	**4267**	**7300**	**2067**	**790**	**2567**	**1433**
	Total Crustacean Zooplankton		**158199**	**5453**	**4797**	**6270**	**3259**	**8263**	**11739**	**2264**	**2760**	**4737**	**7459**
Rotifer	Asplanchna sp.		533	67		67							
Rotifer	Collotheca sp.		33	33									
Rotifer	Conochilus sp.		60783	4333	2067	2867	533	1200	967	2567	7000	8367	867
Rotifer	Kellicottia sp.		131933	3167	1333	3300	2400	3033	3467	1867	6400	5233	3533
Rotifer	Keratella sp.		1683										33
Rotifer	Polyarthra sp.		2917									467	
Rotifer	Polyarthra sp.		767				100	100		133	200		233
Rotifer	Rotifer indet.		500	267		67	0	33	100	33			
Rotifer	Synchaeta sp.		533			67	167				33	100	167
	Total Rotifers		**199683**	**7867**	**3400**	**6367**	**3200**	**4367**	**4533**	**4600**	**13633**	**14167**	**4833**
	Total Zooplankton		**357882**	**13320**	**8197**	**12637**	**6459**	**12629**	**16272**	**6864**	**16393**	**18903**	**12293**

Zooplankton abundance data matrix, Azimuth Nunavut 2015

		Biologica #	15-25-10	15-25-11	15-25-12	15-25-13	15-25-14	15-25-26	15-25-15	15-25-16	15-25-16-QA	15-25-17	15-25-18
		Project	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut
		Client ID	WTN-03-S	WTN-04-S	WTN-05-S	WTN-06-S	WTS-03-S	DUP-1	WTS-04-S	WTS-05-S	WTS-05-S-QA	WTS-06-S	NEM-03-S
		Date	8/22/2015	8/22/2015	9/18/2015	9/18/2015	8/22/2015	8/22/2015	8/21/2015	9/18/2015	9/18/2015	9/18/2015	8/23/2015
			Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)	Total Abundance (#/sample)
Major Group	**Taxon**	**Stage**											
Cladoceran	Bosmina sp.	F											10
Cladoceran	Daphnia ambigua	F											
Cladoceran	Daphnia middendorffiana	F	20	3				3	5	10	5	10	30
Cladoceran	Daphnia sp.	F			4	10		3		5	5		
Cladoceran	Holopedium gibberum	F	40	7				16					
Cladoceran	Leptodora kindtii	F											
	Total Cladocera		**60**	**10**	**4**	**10**	**0**	**23**	**5**	**15**	**10**	**10**	**40**
Calanoid	Calanoida indet.	I-IV		3		15	15						640
Calanoid	Calanoida indet.	V				30	30		5	15	5	13	300
Calanoid	Heterocope septentrionalis	F	10	13		35	15	23	25	10	5	3	
Calanoid	Heterocope septentrionalis	M	15	3		55	20	17		5	15		
Calanoid	Leptodiaptomus pribilofensis	F	150	93	16	250	115	103	135	50	35	70	530
Calanoid	Leptodiaptomus pribilofensis	I-IV						13					
Calanoid	Leptodiaptomus pribilofensis	M	120	33	10	195	150	77	145	25	40	13	760
Calanoid	Leptodiaptomus pribilofensis	V	15	7		5		10					
Calanoid	Tropocyclops prasinus mexicanus	F											
	Total Calanoida		**310**	**153**	**26**	**585**	**345**	**243**	**310**	**105**	**100**	**100**	**2230**
Cyclopoid	Cyclopoida indet.	F									230	30	
Cyclopoid	Cyclopoida indet.	I-IV	490	330	284	1040	525	543	540	420		333	1600
Cyclopoid	Cyclopoida indet.	M		3							190	17	
Cyclopoid	Cyclopoida indet.	V	155	117	62	480	180	47	130	110		140	60
Cyclopoid	Cyclops scutifer	F	115	40	76	500	75	57	50	250		183	90
Cyclopoid	Cyclops scutifer	I-IV											
Cyclopoid	Cyclops scutifer	M	10	3	82	625		3	5	220		230	
Cyclopoid	Cyclops scutifer	V											
Cyclopoid	Diacyclops thomasi	F			8	45				30	25	50	
Cyclopoid	Diacyclops thomasi	I-IV									430		
Cyclopoid	Diacyclops thomasi	M			14	60			5	5	15	23	
Cyclopoid	Diacyclops thomasi	V									85		
Cyclopoid	Microcyclops sp.	F											
	Total Cyclopoida		**770**	**493**	**526**	**2750**	**780**	**650**	**730**	**1035**	**975**	**1007**	**1750**
Copepod	Calanoid indet.	nauplius	3367	4133	1133	4833	3100	2200	1700	1333	1433	833	4667
Copepod	Cyclopoid indet.	nauplius	100	167	233	600	100	100	900	800	800	600	133
Copepod	Copepoda indet.	nauplius											
	Total Copepod Nauplii		**3467**	**4300**	**1367**	**5433**	**3200**	**2300**	**2600**	**2133**	**2233**	**1433**	**4800**
	Total Crustacean Zooplankton		**4607**	**4957**	**1923**	**8778**	**4325**	**3216**	**3645**	**3288**	**3318**	**2550**	**8820**
Rotifer	Asplanchna sp.				100				100				
Rotifer	Collotheca sp.												
Rotifer	Conochilus sp.		4617	2600	1867	4267	2800	2167	2300	300	200	467	833
Rotifer	Kellicottia sp.		5667	5433	3500	13933	9467	2833	7000	3233	4167	3900	3367
Rotifer	Keratella sp.			100		200	200	100		100	67		
Rotifer	Polyarthra sp.		233	300	150	200	200	200	100	133	100	233	
Rotifer	Polyarthra sp.												
Rotifer	Rotifer indet.												
Rotifer	Synchaeta sp.												
	Total Rotifers		**10517**	**8433**	**5617**	**18600**	**12667**	**5300**	**9500**	**3767**	**4534**	**4600**	**4200**
	Total Zooplankton		**15123**	**13390**	**7539**	**27378**	**16992**	**8516**	**13145**	**7055**	**7852**	**7150**	**13020**

Zooplankton abundance data matrix, Azimuth Nunavut 2015

		Biologica #	**15-25-19**	**15-25-20**	**15-25-21**	**15-25-22**	**15-25-23**	**15-25-24**	**15-25-24-QA**	**15-25-25**	**15-25-27**
		Project	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**
		Client ID	**NEM-04-S**	**NEM-05-S**	**NEM-06-S**	**MAM-03-S**	**MAM-04-S**	**MAM-05-S**	**MAM-05-S-QA**	**MAM-06-S**	**DUP-1-September**
		Date	**8/23/2015**	**9/19/2015**	**9/19/2015**	**8/24/2015**	**8/24/2015**	**9/19/2015**	**9/19/2015**	**9/19/2015**	**9/19/2015**
			Total Abundance (#/sample)	**Total Abundance (#/sample)**	**Total Abundance (#/sample)**	**Total Abundance (#/sample)**	**Total Abundance (#/sample)**	**Total Abundance (#/sample)**	**Total Abundance (#/sample)**	**Total Abundance (#/sample)**	**Total Abundance (#/sample)**
Major Group	**Taxon**	**Stage**									
Cladoceran	Bosmina sp.	F		1	10	33		3	3		3
Cladoceran	Daphnia ambigua	F									
Cladoceran	Daphnia middendorffiana	F		3		67	1			2	3
Cladoceran	Daphnia sp.	F						3	3	4	5
Cladoceran	Holopedium gibberum	F		1							
Cladoceran	Leptodora kindtii	F									
	Total Cladocera		**0**	**5**	**10**	**100**	**1**	**7**	**7**	**6**	**10**
Calanoid	Calanoida indet.	I-IV	530				4		7		
Calanoid	Calanoida indet.	V	240				1		3		
Calanoid	Heterocope septentrionalis	F	10	10	15	100	91	7		2	8
Calanoid	Heterocope septentrionalis	M				67	46	10	17	4	3
Calanoid	Leptodiaptomus pribilofensis	F	450	950	450	1300	5	150	157	94	63
Calanoid	Leptodiaptomus pribilofensis	I-IV									
Calanoid	Leptodiaptomus pribilofensis	M	470	710	535	2200	4	20	30	20	43
Calanoid	Leptodiaptomus pribilofensis	V				100	4			6	8
Calanoid	Tropocyclops prasinus mexicanus	F									
	Total Calanoida		**1700**	**1670**	**1000**	**3767**	**155**	**187**	**213**	**126**	**123**
Cyclopoid	Cyclopoida indet.	F								2	3
Cyclopoid	Cyclopoida indet.	I-IV	1550	1150	510	3500	145	397	343	256	
Cyclopoid	Cyclopoida indet.	M								8	8
Cyclopoid	Cyclopoida indet.	V	60	110	105	767	18	37	43	12	
Cyclopoid	Cyclops scutifer	F	60	20	15	233	12	113	107	80	148
Cyclopoid	Cyclops scutifer	I-IV									203
Cyclopoid	Cyclops scutifer	M	10				1	107	90	42	203
Cyclopoid	Cyclops scutifer	V									100
Cyclopoid	Diacyclops thomasi	F						7	13	8	15
Cyclopoid	Diacyclops thomasi	I-IV									
Cyclopoid	Diacyclops thomasi	M						7	17	4	10
Cyclopoid	Diacyclops thomasi	V									
Cyclopoid	Microcyclops sp.	F				67	1				
	Total Cyclopoida		**1680**	**1280**	**630**	**4567**	**177**	**667**	**613**	**412**	**688**
Copepod	Calanoid indet.	nauplius	5700	5400	4067	2033	2467	2100	2067	1100	367
Copepod	Cyclopoid indet.	nauplius	100	433	667	867	433	367	567	667	300
Copepod	Copepoda indet.	nauplius								100	
	Total Copepod Nauplii		**5800**	**5833**	**4733**	**2900**	**2900**	**2467**	**2633**	**1867**	**667**
	Total Crustacean Zooplankton		**9180**	**8788**	**6373**	**11333**	**3233**	**3327**	**3467**	**2411**	**1487**
Rotifer	Asplanchna sp.					100	100				
Rotifer	Collotheca sp.										
Rotifer	Conochilus sp.		633	100	100	3033	1667	333	433	500	500
Rotifer	Kellicottia sp.		3167	3300	4100	5133	3733	3567	3733	2567	3133
Rotifer	Keratella sp.			150	133	100	100	100	100		100
Rotifer	Polyarthra sp.			100					100	100	167
Rotifer	Polyarthra sp.										
Rotifer	Rotifer indet.										
Rotifer	Synchaeta sp.										
	Total Rotifers		**3800**	**3650**	**4333**	**8367**	**5600**	**4000**	**4367**	**3167**	**3900**
	Total Zooplankton		**12980**	**12438**	**10707**	**19700**	**8833**	**7327**	**7833**	**5577**	**5387**

Zooplankton DW and WW biomass data matrix, Azimuth Nunavut 2015

		Biologica #	Grand Total		15-25-01		15-25-02		15-25-03	
		Project	Nunavut		Nunavut		Nunavut		Nunavut	
		Client ID			WTN-01-S		WTN-02-S		WTS-01-S	
		Date			7/17/2015		7/17/2015		7/17/2015	
			Total Biomass		Total Biomass		Total Biomass		Total Biomass	
			WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)
Major Group	**Taxon**	**Stage**								
Cladoceran	Bosmina sp.	F	18.85	3.77	1.33	0.27	0.44	0.09	0.09	0.02
Cladoceran	Daphnia ambigua	F	0.03	0.00						
Cladoceran	Daphnia middendorffiana	F	32.77	6.55	2.12	0.42	5.30	1.06	0.74	0.15
Cladoceran	Daphnia sp.	F	2.26	0.45	0.60	0.12			0.02	0.00
Cladoceran	Holopedium gibberum	F	27.06	5.41	2.50	0.50	6.99	1.40	4.87	0.97
Cladoceran	Leptodora kindtii	F	2.71	0.54	2.08	0.42				
	Total Cladocera		**83.67**	**16.73**	**8.63**	**1.73**	**12.74**	**2.55**	**5.72**	**1.14**
Calanoid	Calanoida indet.	I-IV	728.69	28.76	25.56	1.01	14.60	0.58	6.08	0.24
Calanoid	Calanoida indet.	V	345.94	10.11						
Calanoid	Heterocope septentrionalis	F	184.88	36.98						
Calanoid	Heterocope septentrionalis	M	128.39	25.68						
Calanoid	Leptodiaptomus pribilofensis	F	2442.44	80.94						
Calanoid	Leptodiaptomus pribilofensis	I-IV	6.10	0.06						
Calanoid	Leptodiaptomus pribilofensis	M	2553.33	74.64						
Calanoid	Leptodiaptomus pribilofensis	V	70.48	2.06						
Calanoid	Tropocyclops prasinus mexicanus	F	1.37	0.04						
	Total Calanoida		**6461.63**	**259.27**	**25.56**	**1.01**	**14.60**	**0.58**	**6.08**	**0.24**
Cyclopoid	Cyclopoida indet.	F	6.67	1.33						
Cyclopoid	Cyclopoida indet.	I-IV	175.56	35.11	8.34	1.67	4.17	0.83	9.03	1.81
Cyclopoid	Cyclopoida indet.	M	8.51	1.70						
Cyclopoid	Cyclopoida indet.	V	118.80	23.76	4.03	0.81	5.04	1.01	11.35	2.27
Cyclopoid	Cyclops scutifer	F	274.33	54.87	26.77	5.35	11.58	2.32	18.09	3.62
Cyclopoid	Cyclops scutifer	I-IV	1.41	0.28						
Cyclopoid	Cyclops scutifer	M	124.87	24.97	13.48	2.70	12.19	2.44	12.19	2.44
Cyclopoid	Cyclops scutifer	V	2.52	0.21						
Cyclopoid	Diacyclops thomasi	F	6.48	1.30						
Cyclopoid	Diacyclops thomasi	I-IV	2.99	0.60						
Cyclopoid	Diacyclops thomasi	M	3.12	0.62						
Cyclopoid	Diacyclops thomasi	V	2.14	0.43						
Cyclopoid	Microcyclops sp.	F	0.33	0.07						
	Total Cyclopoida		**727.73**	**145.26**	**52.63**	**10.53**	**32.97**	**6.59**	**50.65**	**10.13**
Copepod	Calanoid	nauplius	23.63	1.30	1.93	0.00	1.87	0.00	2.40	0.01
Copepod	Cyclopoid	nauplius	6.50	4.73	0.01	0.39	0.01	0.37	0.03	0.48
Copepod	Copepoda indet.	nauplius	0.73	0.15	0.02	0.00	0.19	0.04	0.09	0.02
	Total Copepod Nauplii		**30.87**	**6.17**	**1.96**	**0.39**	**2.07**	**0.41**	**2.52**	**0.50**
	Total Crustacean Zooplankton		**7303.90**	**427.44**	**88.78**	**13.65**	**62.39**	**10.13**	**64.98**	**12.02**
Rotifer	Asplanchna sp.		1.07	0.04	0.13	0.01			0.13	0.01
Rotifer	Collotheca sp.		0.36	0.04	0.36	0.04				
Rotifer	Conochilus sp.		88.83	8.88	6.33	0.63	3.02	0.30	4.19	0.42
Rotifer	Kellicottia sp.		1652.06	165.21	39.65	3.97	16.70	1.67	41.32	4.13
Rotifer	Keratella sp.		1.78	0.18						
Rotifer	Polyarthra sp.		2.64	0.26						
Rotifer	Rotifer indet.		0.00	0.00	0.00	0.00			0.00	0.00
Rotifer	Synchaeta sp.		50.07	5.01					6.26	0.63
	Total Rotifera		**1796.80**	**179.61**	**46.48**	**4.64**	**19.72**	**1.97**	**51.90**	**5.18**
	Total Zooplankton		**9100.70**	**607.05**	**135.26**	**18.29**	**82.10**	**12.10**	**116.88**	**17.20**

Zooplankton DW and WW biomass data matrix, Azimuth Nunavut 2015

		Biologica #	**15-25-04**		**15-25-05**		**15-25-06**		**15-25-07**		**15-25-08**	
		Project	**Nunavut**		**Nunavut**		**Nunavut**		**Nunavut**		**Nunavut**	
		Client ID	**WTS-02-S**		**NEM-01-S**		**NEM-02-S**		**MAM-01-S**		**MAM-02-S**	
		Date	**7/17/2015**		**7/18/2015**		**7/18/2015**		**7/18/2015**		**7/18/2015**	
			Total Biomass		**Total Biomass**		**Total Biomass**		**Total Biomass**		**Total Biomass**	
			WW (mg/sample)	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**
Major Group	**Taxon**	**Stage**										
Cladoceran	Bosmina sp.	F			0.36	0.07	0.09	0.02	0.31	0.06	8.44	1.69
Cladoceran	Daphnia ambigua	F										
Cladoceran	Daphnia middendorffiana	F	0.11	0.02	3.18	0.64	0.85	0.17			1.06	0.21
Cladoceran	Daphnia sp.	F	0.02	0.00	0.14	0.03	0.12	0.02			0.20	0.04
Cladoceran	Holopedium gibberum	F	1.00	0.20	0.75	0.15	1.25	0.25	0.30	0.06	2.50	0.50
Cladoceran	Leptodora kindtii	F			0.21	0.04			0.21	0.04		
	Total Cladocera		**1.12**	**0.22**	**4.64**	**0.93**	**2.31**	**0.46**	**0.82**	**0.16**	**12.19**	**2.44**
Calanoid	Calanoida indet.	I-IV	3.65	0.14	233.65	9.22	212.96	8.40	7.79	0.31	14.60	0.58
Calanoid	Calanoida indet.	V							4.11	0.12	9.14	0.27
Calanoid	Heterocope septentrionalis	F										
Calanoid	Heterocope septentrionalis	M										
Calanoid	Leptodiaptomus pribilofensis	F										
Calanoid	Leptodiaptomus pribilofensis	I-IV										
Calanoid	Leptodiaptomus pribilofensis	M										
Calanoid	Leptodiaptomus pribilofensis	V										
Calanoid	Tropocyclops prasinus mexicanus	F					1.37	0.04				
	Total Calanoida		**3.65**	**0.14**	**233.65**	**9.22**	**214.33**	**8.45**	**11.90**	**0.43**	**23.75**	**0.84**
Cyclopoid	Cyclopoida indet.	F										
Cyclopoid	Cyclopoida indet.	I-IV	8.06	1.61	7.09	1.42	13.68	2.74	0.11	0.02	2.15	0.43
Cyclopoid	Cyclopoida indet.	M					0.25	0.05	0.05	0.01		
Cyclopoid	Cyclopoida indet.	V	5.04	1.01	1.76	0.35	3.03	0.61	0.50	0.10	2.02	0.40
Cyclopoid	Cyclops scutifer	F	14.47	2.89	25.32	5.06	14.83	2.97	1.41	0.28	30.03	6.01
Cyclopoid	Cyclops scutifer	I-IV										
Cyclopoid	Cyclops scutifer	M	8.30	1.66	4.67	0.93	1.56	0.31	0.39	0.08	5.19	1.04
Cyclopoid	Cyclops scutifer	V										
Cyclopoid	Diacyclops thomasi	F										
Cyclopoid	Diacyclops thomasi	I-IV										
Cyclopoid	Diacyclops thomasi	M										
Cyclopoid	Diacyclops thomasi	V										
Cyclopoid	Microcyclops sp.	F										
	Total Cyclopoida		**35.87**	**7.17**	**38.84**	**7.77**	**33.35**	**6.67**	**2.47**	**0.49**	**39.38**	**7.88**
Copepod	Calanoid	nauplius	0.47	0.01	1.81	0.04	1.39	0.11	1.36	0.01	0.66	0.00
Copepod	Cyclopoid	nauplius	0.03	0.09	0.22	0.36	0.57	0.28	0.04	0.27	0.01	0.13
Copepod	Copepoda indet.	nauplius	0.19	0.04	0.02	0.00	0.02	0.00	0.12	0.02		
	Total Copepod Nauplii		**0.69**	**0.14**	**2.05**	**0.41**	**1.99**	**0.40**	**1.52**	**0.30**	**0.66**	**0.13**
	Total Crustacean Zooplankton		**41.34**	**7.68**	**279.18**	**18.33**	**251.98**	**15.97**	**16.71**	**1.39**	**75.99**	**11.29**
Rotifer	Asplanchna sp.											
Rotifer	Collotheca sp.											
Rotifer	Conochilus sp.		0.78	0.08	1.75	0.18	1.41	0.14	3.75	0.38	10.23	1.02
Rotifer	Kellicottia sp.		30.05	3.01	37.98	3.80	43.41	4.34	23.37	2.34	80.14	8.01
Rotifer	Keratella sp.											
Rotifer	Polyarthra sp.		0.07	0.01	0.07	0.01			0.10	0.01	0.14	0.01
Rotifer	Rotifer indet.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Rotifer	Synchaeta sp.		15.65	1.56							3.13	0.31
	Total Rotifera		**46.55**	**4.66**	**39.81**	**3.98**	**44.82**	**4.48**	**27.22**	**2.72**	**93.64**	**9.36**
	Total Zooplankton		**87.89**	**12.34**	**318.99**	**22.31**	**296.80**	**20.46**	**43.93**	**4.11**	**169.63**	**20.66**

Zooplankton DW and WW biomass data matrix, Azimuth Nunavut 2015

		Biologica #	**15-25-08 - QA**		**15-25-09**		**15-25-10**		**15-25-11**		**15-25-12**	
		Project	**Nunavut**		**Nunavut**		**Nunavut**		**Nunavut**		**Nunavut**	
		Client ID	**MAM-02-S**		**DUP-July-Amaruq**		**WTN-03-S**		**WTN-04-S**		**WTN-05-S**	
		Date	**7/18/2015**		**(blank)**		**8/22/2015**		**8/22/2015**		**9/18/2015**	
			Total Biomass		**Total Biomass**		**Total Biomass**		**Total Biomass**		**Total Biomass**	
			WW (mg/sample)	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**
Major Group	**Taxon**	**Stage**										
Cladoceran	Bosmina sp.	F	4.88	0.98	0.09	0.02						
Cladoceran	Daphnia ambigua	F			0.03	0.00						
Cladoceran	Daphnia middendorffiana	F	1.06	0.21	0.11	0.02	2.12	0.42	0.35	0.07		
Cladoceran	Daphnia sp.	F	0.20	0.04							0.08	0.02
Cladoceran	Holopedium gibberum	F	3.87	0.77	2.25	0.45	0.50	0.10	0.08	0.02		
Cladoceran	Leptodora kindtii	F			0.21	0.04						
	Total Cladocera		**10.02**	**2.00**	**2.68**	**0.53**	**2.62**	**0.52**	**0.44**	**0.09**	**0.08**	**0.02**
Calanoid	Calanoida indet.	I-IV	13.39	0.53	48.68	1.92			0.41	0.02		
Calanoid	Calanoida indet.	V	32.00	0.94								
Calanoid	Heterocope septentrionalis	F					4.71	0.94	6.29	1.26		
Calanoid	Heterocope septentrionalis	M					6.86	1.37	1.52	0.30		
Calanoid	Leptodiaptomus pribilofensis	F					70.72	2.34	44.00	1.46	7.54	0.25
Calanoid	Leptodiaptomus pribilofensis	I-IV										
Calanoid	Leptodiaptomus pribilofensis	M					54.86	1.60	15.24	0.45	4.57	0.13
Calanoid	Leptodiaptomus pribilofensis	V					6.86	0.20	3.05	0.09		
Calanoid	Tropocyclops prasinus mexicanus	F										
	Total Calanoida		**45.39**	**1.46**	**48.68**	**1.92**	**144.01**	**6.46**	**70.50**	**3.57**	**12.11**	**0.38**
Cyclopoid	Cyclopoida indet.	F										
Cyclopoid	Cyclopoida indet.	I-IV	2.22	0.44	23.76	4.75	3.40	0.68	2.29	0.46	1.97	0.39
Cyclopoid	Cyclopoida indet.	M			2.52	0.50			0.08	0.02		
Cyclopoid	Cyclopoida indet.	V	1.51	0.30	18.15	3.63	3.91	0.78	2.94	0.59	1.56	0.31
Cyclopoid	Cyclops scutifer	F	31.11	6.22	20.26	4.05	4.16	0.83	1.45	0.29	2.75	0.55
Cyclopoid	Cyclops scutifer	I-IV										
Cyclopoid	Cyclops scutifer	M	8.04	1.61	16.60	3.32	0.26	0.05	0.09	0.02	2.13	0.43
Cyclopoid	Cyclops scutifer	V										
Cyclopoid	Diacyclops thomasi	F									0.25	0.05
Cyclopoid	Diacyclops thomasi	I-IV										
Cyclopoid	Diacyclops thomasi	M									0.29	0.06
Cyclopoid	Diacyclops thomasi	V										
Cyclopoid	Microcyclops sp.	F										
	Total Cyclopoida		**42.89**	**8.58**	**81.29**	**16.26**	**11.73**	**2.35**	**6.85**	**1.37**	**8.96**	**1.79**
Copepod	Calanoid	nauplius	2.07	0.00	1.01	0.01	0.09	0.07	0.15	0.08	0.21	0.02
Copepod	Cyclopoid	nauplius	0.02	0.41	0.03	0.20	0.34	0.02	0.41	0.03	0.11	0.04
Copepod	Copepoda indet.	nauplius										
	Total Copepod Nauplii		**2.10**	**0.42**	**1.04**	**0.21**	**0.43**	**0.09**	**0.56**	**0.11**	**0.32**	**0.06**
	Total Crustacean Zooplankton		**100.39**	**12.46**	**133.68**	**18.92**	**158.79**	**9.42**	**78.35**	**5.14**	**21.47**	**2.25**
Rotifer	Asplanchna sp.										0.20	0.01
Rotifer	Collotheca sp.											
Rotifer	Conochilus sp.		12.23	1.22	1.27	0.13	6.75	0.67	3.80	0.38	2.73	0.27
Rotifer	Kellicottia sp.		65.53	6.55	44.24	4.42	70.96	7.10	68.04	6.80	43.83	4.38
Rotifer	Keratella sp.				0.04	0.00			0.11	0.01		
Rotifer	Polyarthra sp.		0.33	0.03	0.17	0.02	0.17	0.02	0.21	0.02	0.11	0.01
Rotifer	Rotifer indet.											
Rotifer	Synchaeta sp.		9.39	0.94	15.65	1.56						
	Total Rotifera		**87.48**	**8.75**	**61.36**	**6.14**	**77.87**	**7.79**	**72.16**	**7.22**	**46.86**	**4.67**
	Total Zooplankton		**187.87**	**21.21**	**195.04**	**25.06**	**236.66**	**17.21**	**150.51**	**12.36**	**68.33**	**6.93**

Zooplankton DW and WW biomass data matrix, Azimuth Nunavut 2015

		Biologica #	15-25-13		15-25-14		15-25-15		15-25-16		15-25-16-QA	
		Project	Nunavut		Nunavut		Nunavut		Nunavut		Nunavut	
		Client ID	WTN-06-S		**WTS-03-S		WTS-04-S		WTS-05-S		WTS-05-S	
		Date	9/18/2015		8/22/2015		8/21/2015		9/18/2015		9/18/2015	
			Total Biomass		Total Biomass		Total Biomass		Total Biomass		Total Biomass	
			WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)
Major Group	**Taxon**	**Stage**										
Cladoceran	Bosmina sp.	F										
Cladoceran	Daphnia ambigua	F										
Cladoceran	Daphnia middendorffiana	F					0.53	0.11	1.06	0.21	0.53	0.11
Cladoceran	Daphnia sp.	F	0.20	0.04					0.10	0.02	0.20	0.10
Cladoceran	Holopedium gibberum	F										
Cladoceran	Leptodora kindtii	F										
	Total Cladocera		**0.20**	**0.04**	**0.00**	**0.00**	**0.53**	**0.11**	**1.16**	**0.23**	**0.73**	**0.21**
Calanoid	Calanoida indet.	I-IV	1.83	0.07	1.83	0.07						
Calanoid	Calanoida indet.	V	13.72	0.40	13.72	0.40	2.29	0.07	6.86	0.20	2.29	0.07
Calanoid	Heterocope septentrionalis	F	16.50	3.30	7.07	1.41	11.79	2.36	4.71	0.94	2.36	0.42
Calanoid	Heterocope septentrionalis	M	25.15	5.03	9.14	1.83			2.29	0.46	6.86	1.37
Calanoid	Leptodiaptomus pribilofensis	F	117.86	3.91	54.22	1.80	63.64	2.11	23.57	0.78	16.50	0.55
Calanoid	Leptodiaptomus pribilofensis	I-IV										
Calanoid	Leptodiaptomus pribilofensis	M	89.15	2.61	68.58	2.00	66.29	1.94	11.43	0.33	18.29	0.53
Calanoid	Leptodiaptomus pribilofensis	V	2.29	0.07								
Calanoid	Tropocyclops prasinus mexicanus	F										
	Total Calanoida		**266.48**	**15.38**	**154.55**	**7.52**	**144.01**	**6.47**	**48.86**	**2.72**	**46.29**	**2.94**
Cyclopoid	Cyclopoida indet.	F									5.80	1.16
Cyclopoid	Cyclopoida indet.	I-IV	7.22	1.44	3.65	0.73	3.75	0.75	2.92	0.58		
Cyclopoid	Cyclopoida indet.	M									4.79	0.96
Cyclopoid	Cyclopoida indet.	V	12.10	2.42	4.54	0.91	3.28	0.66	2.77	0.55		
Cyclopoid	Cyclops scutifer	F	18.09	3.62	2.71	0.54	1.81	0.36	9.04	1.81		
Cyclopoid	Cyclops scutifer	I-IV										
Cyclopoid	Cyclops scutifer	M	16.21	3.24			0.13	0.03	5.70	1.14		
Cyclopoid	Cyclops scutifer	V										
Cyclopoid	Diacyclops thomasi	F	1.42	0.28					0.94	0.19	0.79	0.16
Cyclopoid	Diacyclops thomasi	I-IV									2.99	0.60
Cyclopoid	Diacyclops thomasi	M	1.25	0.25			0.10	0.02	0.10	0.02	0.31	0.06
Cyclopoid	Diacyclops thomasi	V									2.14	0.43
Cyclopoid	Microcyclops sp.	F										
	Total Cyclopoida		**56.29**	**11.26**	**10.90**	**2.18**	**9.07**	**1.81**	**21.49**	**4.30**	**16.82**	**3.36**
Copepod	Calanoid	nauplius	0.53	0.10	0.09	0.06	0.80	0.03	0.71	0.03	0.71	0.14
Copepod	Cyclopoid	nauplius	0.48	0.11	0.31	0.02	0.17	0.16	0.13	0.14	0.14	0.03
Copepod	Copepoda indet.	nauplius										
	Total Copepod Nauplii		**1.02**	**0.20**	**0.40**	**0.08**	**0.97**	**0.19**	**0.84**	**0.17**	**0.85**	**0.17**
	Total Crustacean Zooplankton		**323.99**	**26.88**	**165.85**	**9.78**	**154.58**	**8.59**	**72.35**	**7.41**	**64.69**	**6.68**
Rotifer	Asplanchna sp.						0.20	0.01				
Rotifer	Collotheca sp.											
Rotifer	Conochilus sp.		6.24	0.62	4.09	0.41	3.36	0.34	0.44	0.04	0.29	0.03
Rotifer	Kellicottia sp.		174.47	17.45	118.54	11.85	87.65	8.77	40.49	4.05	52.17	5.22
Rotifer	Keratella sp.		0.21	0.02	0.21	0.02			0.11	0.01	0.07	0.01
Rotifer	Polyarthra sp.		0.14	0.01	0.14	0.01	0.07	0.01	0.10	0.01	0.07	0.01
Rotifer	Rotifer indet.											
Rotifer	Synchaeta sp.											
	Total Rotifera		**181.06**	**18.11**	**122.99**	**12.30**	**91.29**	**9.12**	**41.13**	**4.11**	**52.61**	**5.26**
	Total Zooplankton		**505.05**	**44.99**	**288.84**	**22.08**	**245.87**	**17.70**	**113.48**	**11.53**	**117.30**	**11.94**

Zooplankton DW and WW biomass data matrix, Azimuth Nunavut 2015

		Biologica #	**15-25-17**		**15-25-18**		**15-25-19**		**15-25-20**		**15-25-21**	
		Project	**Nunavut**		**Nunavut**		**Nunavut**		**Nunavut**		**Nunavut**	
		Client ID	**WTS-06-S**		**NEM-03-S**		**NEM-04-S**		**NEM-05-S**		**NEM-06-S**	
		Date	**9/18/2015**		**8/23/2015**		**8/23/2015**		**9/19/2015**		**9/19/2015**	
			Total Biomass		**Total Biomass**		**Total Biomass**		**Total Biomass**		**Total Biomass**	
			WW (mg/sample)	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**	**WW (mg/sample)**	**DW (mg/sample)**
Major Group	**Taxon**	**Stage**										
Cladoceran	Bosmina sp.	F			0.44	0.09			0.04	0.01	0.44	0.09
Cladoceran	Daphnia ambigua	F										
Cladoceran	Daphnia middendorffiana	F	1.06	0.21	3.18	0.64			0.32	0.06		
Cladoceran	Daphnia sp.	F										
Cladoceran	Holopedium gibberum	F							0.01	0.00		
Cladoceran	Leptodora kindtii	F										
	Total Cladocera		**1.06**	**0.21**	**3.63**	**0.73**	**0.00**	**0.00**	**0.38**	**0.08**	**0.44**	**0.09**
Calanoid	Calanoida indet.	I-IV			77.88	3.07	64.50	2.55				
Calanoid	Calanoida indet.	V	6.10	0.18	137.16	4.01	109.73	3.21				
Calanoid	Heterocope septentrionalis	F	1.57	0.31			4.71	0.94	4.71	0.94	7.07	1.41
Calanoid	Heterocope septentrionalis	M										
Calanoid	Leptodiaptomus pribilofensis	F	33.00	1.09	249.86	8.28	212.15	7.03	447.87	14.84	212.15	7.03
Calanoid	Leptodiaptomus pribilofensis	I-IV										
Calanoid	Leptodiaptomus pribilofensis	M	6.10	0.18	347.46	10.16	214.88	6.28	324.61	9.49	244.60	7.15
Calanoid	Leptodiaptomus pribilofensis	V										
Calanoid	Tropocyclops prasinus mexicanus	F										
	Total Calanoida		**46.76**	**1.76**	**812.37**	**25.52**	**605.96**	**20.01**	**777.19**	**25.27**	**463.82**	**15.59**
Cyclopoid	Cyclopoida indet.	F	0.76	0.15								
Cyclopoid	Cyclopoida indet.	I-IV	2.32	0.46	11.11	2.22	10.77	2.15	7.99	1.60	3.54	0.71
Cyclopoid	Cyclopoida indet.	M	0.42	0.08								
Cyclopoid	Cyclopoida indet.	V	3.53	0.71	1.51	0.30	1.51	0.30	2.77	0.55	2.65	0.53
Cyclopoid	Cyclops scutifer	F	6.63	1.33	3.26	0.65	2.17	0.43	0.72	0.14	0.54	0.11
Cyclopoid	Cyclops scutifer	I-IV										
Cyclopoid	Cyclops scutifer	M	5.96	1.19			0.26	0.05				
Cyclopoid	Cyclops scutifer	V										
Cyclopoid	Diacyclops thomasi	F	1.57	0.31								
Cyclopoid	Diacyclops thomasi	I-IV										
Cyclopoid	Diacyclops thomasi	M	0.49	0.10								
Cyclopoid	Diacyclops thomasi	V										
Cyclopoid	Microcyclops sp.	F										
	Total Cyclopoida		**21.68**	**4.34**	**15.88**	**3.18**	**14.71**	**2.94**	**11.49**	**2.30**	**6.73**	**1.35**
Copepod	Calanoid	nauplius	0.53	0.02	0.12	0.09	0.09	0.11	0.39	0.11	0.59	0.08
Copepod	Cyclopoid	nauplius	0.08	0.11	0.47	0.02	0.57	0.02	0.54	0.08	0.41	0.12
Copepod	Copepoda indet.	nauplius										
	Total Copepod Nauplii		**0.62**	**0.12**	**0.59**	**0.12**	**0.66**	**0.13**	**0.93**	**0.19**	**1.00**	**0.20**
	Total Crustacean Zooplankton		**70.12**	**6.44**	**832.46**	**29.54**	**621.33**	**23.08**	**789.97**	**27.83**	**471.99**	**17.23**
Rotifer	Asplanchna sp.											
Rotifer	Collotheca sp.											
Rotifer	Conochilus sp.		0.68	0.07	1.22	0.12	0.93	0.09	0.15	0.01	0.15	0.01
Rotifer	Kellicottia sp.		48.84	4.88	42.16	4.22	39.65	3.97	41.32	4.13	51.34	5.13
Rotifer	Keratella sp.								0.16	0.02	0.14	0.01
Rotifer	Polyarthra sp.		0.17	0.02					0.07	0.01		
Rotifer	Rotifer indet.											
Rotifer	Synchaeta sp.											
	Total Rotifera		**49.68**	**4.97**	**43.37**	**4.34**	**40.58**	**4.06**	**41.70**	**4.17**	**51.63**	**5.16**
	Total Zooplankton		**119.80**	**11.40**	**875.84**	**33.88**	**661.91**	**27.14**	**831.67**	**32.00**	**523.62**	**22.39**

Zooplankton DW and WW biomass data matrix, Azimuth Nunavut 2015

		Biologica #	15-25-22		15-25-23		15-25-24		15-25-24-QA		15-25-25	
		Project	Nunavut		Nunavut		Nunavut		Nunavut		Nunavut	
		Client ID	MAM-03-S		MAM-04-S		MAM-05-S		MAM-05-S		MAM-06-S	
		Date	8/24/2015		8/24/2015		9/19/2015		9/19/2015		9/19/2015	
			Total Biomass		Total Biomass		Total Biomass		Total Biomass		Total Biomass	
			WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)
Major Group	**Taxon**	**Stage**										
Cladoceran	Bosmina sp.	F	1.48	0.30			0.15	0.03	0.15	0.03		
Cladoceran	Daphnia ambigua	F										
Cladoceran	Daphnia middendorffiana	F	7.07	1.41	0.11	0.02					0.21	0.04
Cladoceran	Daphnia sp.	F					0.07	0.01	0.07	0.01	0.08	0.02
Cladoceran	Holopedium gibberum	F										
Cladoceran	Leptodora kindtii	F										
	Total Cladocera		**8.55**	**1.71**	**0.11**	**0.02**	**0.21**	**0.04**	**0.21**	**0.04**	**0.29**	**0.06**
Calanoid	Calanoida indet.	I-IV			0.49	0.02			0.81	0.03		
Calanoid	Calanoida indet.	V			0.46	0.01			1.52	0.04		
Calanoid	Heterocope septentrionalis	F	47.14	9.43	42.90	8.58	3.14	0.63			0.94	0.19
Calanoid	Heterocope septentrionalis	M	30.48	6.10	21.03	4.21	4.57	0.91	7.62	1.52	1.83	0.37
Calanoid	Leptodiaptomus pribilofensis	F	612.87	20.31	2.36	0.08	70.72	2.34	73.86	2.45	44.32	1.47
Calanoid	Leptodiaptomus pribilofensis	I-IV										
Calanoid	Leptodiaptomus pribilofensis	M	1005.82	29.40	1.83	0.05	9.14	0.27	13.72	0.40	9.14	0.27
Calanoid	Leptodiaptomus pribilofensis	V	45.72	1.34	1.83	0.05					2.74	0.08
Calanoid	Tropocyclops prasinus mexicanus	F										
	Total Calanoida		**1742.03**	**66.57**	**70.89**	**13.00**	**87.57**	**4.15**	**97.53**	**4.45**	**58.97**	**2.37**
Cyclopoid	Cyclopoida indet.	F									0.05	0.01
Cyclopoid	Cyclopoida indet.	I-IV	24.31	4.86	1.01	0.20	2.76	0.55	2.39	0.48	1.78	0.36
Cyclopoid	Cyclopoida indet.	M									0.20	0.04
Cyclopoid	Cyclopoida indet.	V	19.33	3.87	0.45	0.09	0.92	0.18	1.09	0.22	0.30	0.06
Cyclopoid	Cyclops scutifer	F	8.44	1.69	0.43	0.09	4.10	0.82	3.86	0.77	2.89	0.58
Cyclopoid	Cyclops scutifer	I-IV										
Cyclopoid	Cyclops scutifer	M			0.03	0.01	2.77	0.55	2.33	0.47	1.09	0.22
Cyclopoid	Cyclops scutifer	V										
Cyclopoid	Diacyclops thomasi	F					0.21	0.04	0.42	0.08	0.25	0.05
Cyclopoid	Diacyclops thomasi	I-IV										
Cyclopoid	Diacyclops thomasi	M					0.14	0.03	0.35	0.07	0.08	0.02
Cyclopoid	Diacyclops thomasi	V										
Cyclopoid	Microcyclops sp.	F	0.32	0.06	0.00	0.00						
	Total Cyclopoida		**52.41**	**10.48**	**1.93**	**0.39**	**10.89**	**2.18**	**10.44**	**2.09**	**6.65**	**1.33**
Copepod	Calanoid	nauplius	0.77	0.04	0.39	0.05	0.33	0.04	0.50	0.04	0.59	0.02
Copepod	Cyclopoid	nauplius	0.20	0.15	0.25	0.08	0.21	0.07	0.21	0.10	0.11	0.12
Copepod	Copepoda indet.	nauplius									0.07	0.01
	Total Copepod Nauplii		**0.97**	**0.19**	**0.63**	**0.13**	**0.54**	**0.11**	**0.71**	**0.14**	**0.77**	**0.15**
	Total Crustacean Zooplankton		**1803.96**	**78.96**	**73.55**	**13.54**	**99.22**	**6.48**	**108.89**	**6.72**	**66.69**	**3.91**
Rotifer	Asplanchna sp.		0.20	0.01	0.20	0.01						
Rotifer	Collotheca sp.											
Rotifer	Conochilus sp.		4.43	0.44	2.44	0.24	0.49	0.05	0.63	0.06	0.73	0.07
Rotifer	Kellicottia sp.		64.28	6.43	46.75	4.67	44.66	4.47	46.75	4.67	32.14	3.21
Rotifer	Keratella sp.		0.11	0.01	0.11	0.01	0.11	0.01	0.11	0.01		
Rotifer	Polyarthra sp.								0.07	0.01	0.07	0.01
Rotifer	Rotifer indet.											
Rotifer	Synchaeta sp.											
	Total Rotifera		**69.02**	**6.89**	**49.49**	**4.94**	**45.25**	**4.53**	**47.56**	**4.76**	**32.94**	**3.29**
	Total Zooplankton		**1872.98**	**85.85**	**123.04**	**18.47**	**144.47**	**11.01**	**156.45**	**11.48**	**99.63**	**7.21**

Zooplankton DW and WW biomass data matrix, Azimuth Nunavut 2015

		Biologica #	15-25-26		15-25-27	
		Project	Nunavut		Nunavut	
		Client ID	**DUP-1		DUP-1-September	
		Date	9/24/2015		9/19/2015	
			Total Biomass		Total Biomass	
			WW (mg/sample)	DW (mg/sample)	WW (mg/sample)	DW (mg/sample)
Major Group	**Taxon**	**Stage**				
Cladoceran	Bosmina sp.	F			0.11	0.02
Cladoceran	Daphnia ambigua	F				
Cladoceran	Daphnia middendorffiana	F	0.35	0.07	0.27	0.05
Cladoceran	Daphnia sp.	F	0.07	0.01	0.10	0.02
Cladoceran	Holopedium gibberum	F	0.20	0.04		
Cladoceran	Leptodora kindtii	F				
	Total Cladocera		**0.62**	**0.12**	**0.48**	**0.10**
Calanoid	Calanoida indet.	I-IV				
Calanoid	Calanoida indet.	V				
Calanoid	Heterocope septentrionalis	F	11.00	2.20	3.54	0.71
Calanoid	Heterocope septentrionalis	M	7.62	1.52	1.14	0.23
Calanoid	Leptodiaptomus pribilofensis	F	48.72	1.61	29.46	0.98
Calanoid	Leptodiaptomus pribilofensis	I-IV	6.10	0.06		
Calanoid	Leptodiaptomus pribilofensis	M	35.05	1.02	19.43	0.57
Calanoid	Leptodiaptomus pribilofensis	V	4.57	0.13	3.43	0.10
Calanoid	Tropocyclops prasinus mexicanus	F				
	Total Calanoida		**113.05**	**6.56**	**57.00**	**2.58**
Cyclopoid	Cyclopoida indet.	F			0.06	0.01
Cyclopoid	Cyclopoida indet.	I-IV	3.77	0.75		
Cyclopoid	Cyclopoida indet.	M			0.19	0.04
Cyclopoid	Cyclopoida indet.	V	1.18	0.24		
Cyclopoid	Cyclops scutifer	F	2.05	0.41	5.34	1.07
Cyclopoid	Cyclops scutifer	I-IV			1.41	0.28
Cyclopoid	Cyclops scutifer	M	0.09	0.02	5.25	1.05
Cyclopoid	Cyclops scutifer	V			2.52	0.21
Cyclopoid	Diacyclops thomasi	F			0.47	0.09
Cyclopoid	Diacyclops thomasi	I-IV				
Cyclopoid	Diacyclops thomasi	M			0.21	0.04
Cyclopoid	Diacyclops thomasi	V				
Cyclopoid	Microcyclops sp.	F				
	Total Cyclopoida		**7.09**	**1.42**	**15.45**	**2.80**
Copepod	Calanoid	nauplius	0.09	0.04	0.27	0.01
Copepod	Cyclopoid	nauplius	0.22	0.02	0.04	0.05
Copepod	Copepoda indet.	nauplius				
	Total Copepod Nauplii		**0.31**	**0.06**	**0.30**	**0.06**
	Total Crustacean Zooplankton		**121.07**	**8.16**	**73.23**	**5.54**
Rotifer	Asplanchna sp.					
Rotifer	Collotheca sp.					
Rotifer	Conochilus sp.		3.17	0.32	0.73	0.07
Rotifer	Kellicottia sp.		35.48	3.55	39.24	3.92
Rotifer	Keratella sp.		0.11	0.01	0.11	0.01
Rotifer	Polyarthra sp.		0.14	0.01	0.12	0.01
Rotifer	Rotifer indet.					
Rotifer	Synchaeta sp.					
	Total Rotifera		**38.89**	**3.89**	**40.19**	**4.02**
	Total Zooplankton		**159.96**	**12.05**	**113.42**	**9.56**

Zooplankton per-sample taxonomic presence/absence, zooplankton taxonomic richness, Azimuth Nunavut 2015

	Biologica #	Grand Total	15-25-01	15-25-02	15-25-03	15-25-04	15-25-05	15-25-06
	Project	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut
	Client ID		WTN-01-S	WTN-02-S	WTS-01-S	WTS-02-S	NEM-01-S	NEM-02-S
	Date		7/17/2015	7/17/2015	7/17/2015	7/17/2015	7/18/2015	7/18/2015
		Presence	Presence	Presence	Presence	Presence	Presence	Presence
		Present - Shaded	Present - Shaded	Present - Shaded	Present - Shaded	Present - Shaded	Present - Shaded	Present - Shaded
Major Group	Taxon							
Cladoceran	Bosmina sp.	■	■	■	■		■	■
Cladoceran	Daphnia ambigua	■						
Cladoceran	Daphnia middendorffiana	■	■	■	■	■	■	■
Cladoceran	Daphnia sp.	■	■		■	■	■	■
Cladoceran	Holopedium gibberum	■	■	■	■	■	■	■
Cladoceran	Leptodora kindtii	■	■				■	
Calanoid	Heterocope septentrionalis	■						
Calanoid	Leptodiaptomus pribilofensis	■						
Calanoid	Tropocyclops prasinus mexicanus	■						■
Cyclopoid	Cyclops scutifer	■						
Cyclopoid	Diacyclops thomasi	■						
Cyclopoid	Microcyclops sp.	■						
Rotifer	Asplanchna sp.	■	■		■			
Rotifer	Collotheca sp.	■	■					
Rotifer	Conochilus sp.	■	■	■	■	■	■	■
Rotifer	Kellicottia sp.	■	■	■	■	■	■	■
Rotifer	Keratella sp.	■						
Rotifer	Polyarthra sp.	■						
Rotifer	Rotifer indet.	■	■		■		■	■
Rotifer	Synchaeta sp.	■			■	■		
	Total Zooplankton	20	10	5	9	6	8	8

Zooplankton per-sample taxonomic presence/absence, zooplankton taxonomic richness, Azimuth Nunavut 2015

	Biologica #	**15-25-07**	**15-25-08**	**15-25-08 - QA**	**15-25-09**	**15-25-10**	**15-25-11**	**15-25-12**
	Project	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**
	Client ID	**MAM-01-S**	**MAM-02-S**	**MAM-02-S**	**DUP-July-Amaruq**	**WTN-03-S**	**WTN-04-S**	**WTN-05-S**
	Date	**7/18/2015**	**7/18/2015**	**7/18/2015**		**8/22/2015**	**8/22/2015**	**9/18/2015**
		Presence	**Presence**	**Presence**	**Presence**	**Presence**	**Presence**	**Presence**
		Present - Shaded	**Present - Shaded**	**Present - Shaded**	**Present - Shaded**	**Present - Shaded**	**Present - Shaded**	**Present - Shaded**
Major Group	Taxon							
Cladoceran	Bosmina sp.	■	■	■	■			
Cladoceran	Daphnia ambigua				■			
Cladoceran	Daphnia middendorffiana		■	■	■	■	■	
Cladoceran	Daphnia sp.		■	■				■
Cladoceran	Holopedium gibberum	■	■	■	■	■	■	
Cladoceran	Leptodora kindtii	■			■			
Calanoid	Heterocope septentrionalis					■	■	
Calanoid	Leptodiaptomus pribilofensis					■	■	
Calanoid	Tropocyclops prasinus mexicanus							
Cyclopoid	Cyclops scutifer							
Cyclopoid	Diacyclops thomasi							
Cyclopoid	Microcyclops sp.							
Rotifer	Asplanchna sp.							■
Rotifer	Collotheca sp.							
Rotifer	Conochilus sp.	■	■	■	■	■	■	■
Rotifer	Kellicottia sp.	■	■	■	■	■	■	■
Rotifer	Keratella sp.				■		■	
Rotifer	Polyarthra sp.			■		■	■	■
Rotifer	Rotifer indet.	■						
Rotifer	Synchaeta sp.		■	■	■			
	Total Zooplankton	6	7	8	9	7	8	5

Zooplankton per-sample taxonomic presence/absence, zooplankton taxonomic richness, Azimuth Nunavut 2015

	Biologica #	15-25-13	15-25-14	15-25-26	15-25-15	15-25-16	15-25-16-QA	15-25-17
	Project	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut	Nunavut
	Client ID	WTN-06-S	WTS-03-S	DUP-1	WTS-04-S	WTS-05-S	WTS-05-S	WTS-06-S
	Date	9/18/2015	8/22/2015	8/22/2015	8/21/2015	9/18/2015	9/18/2015	9/18/2015
		Presence	Presence	Presence	Presence	Presence	Presence	Presence
		Present - Shaded	Present - Shaded	Present - Shaded	Present - Shaded	Present - Shaded	Present - Shaded	Present - Shaded
Major Group	Taxon							
Cladoceran	Bosmina sp.							
Cladoceran	Daphnia ambigua							
Cladoceran	Daphnia middendorffiana			■	■	■	■	■
Cladoceran	Daphnia sp.	■		■		■	■	
Cladoceran	Holopedium gibberum			■				
Cladoceran	Leptodora kindtii							
Calanoid	Heterocope septentrionalis	■	■	■	■	■	■	■
Calanoid	Leptodiaptomus pribilofensis	■		■				
Calanoid	Tropocyclops prasinus mexicanus							
Cyclopoid	Cyclops scutifer							
Cyclopoid	Diacyclops thomasi						■	
Cyclopoid	Microcyclops sp.							
Rotifer	Asplanchna sp.				■			
Rotifer	Collotheca sp.							
Rotifer	Conochilus sp.	■	■	■	■	■	■	■
Rotifer	Kellicottia sp.	■	■	■	■	■	■	■
Rotifer	Keratella sp.	■	■	■		■	■	
Rotifer	Polyarthra sp.	■	■	■	■	■	■	■
Rotifer	Rotifer indet.							
Rotifer	Synchaeta sp.							
	Total Zooplankton	7	5	9	6	7	8	5

Zooplankton per-sample taxonomic presence/absence, zooplankton taxonomic richness, Azimuth Nunavut 2015

	Biologica #	**15-25-18**	**15-25-19**	**15-25-20**	**15-25-21**	**15-25-22**	**15-25-23**	**15-25-24**
	Project	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**	**Nunavut**
	Client ID	**NEM-03-S**	**NEM-04-S**	**NEM-05-S**	**NEM-06-S**	**MAM-03-S**	**MAM-04-S**	**MAM-05-S**
	Date	**8/23/2015**	**8/23/2015**	**9/19/2015**	**9/19/2015**	**8/24/2015**	**8/24/2015**	**9/19/2015**
		Presence	**Presence**	**Presence**	**Presence**	**Presence**	**Presence**	**Presence**
		Present - Shaded	**Present - Shaded**	**Present - Shaded**	**Present - Shaded**	**Present - Shaded**	**Present - Shaded**	**Present - Shaded**
Major Group	Taxon							
Cladoceran	Bosmina sp.	■		■	■	■		■
Cladoceran	Daphnia ambigua							
Cladoceran	Daphnia middendorffiana	■		■		■	■	
Cladoceran	Daphnia sp.							■
Cladoceran	Holopedium gibberum			■				
Cladoceran	Leptodora kindtii							
Calanoid	Heterocope septentrionalis		■	■	■	■	■	■
Calanoid	Leptodiaptomus pribilofensis					■	■	
Calanoid	Tropocyclops prasinus mexicanus							
Cyclopoid	Cyclops scutifer							
Cyclopoid	Diacyclops thomasi							
Cyclopoid	Microcyclops sp.					■	■	
Rotifer	Asplanchna sp.					■	■	
Rotifer	Collotheca sp.							
Rotifer	Conochilus sp.	■	■	■	■	■	■	■
Rotifer	Kellicottia sp.	■	■	■	■	■	■	■
Rotifer	Keratella sp.			■	■	■	■	■
Rotifer	Polyarthra sp.			■				
Rotifer	Rotifer indet.							
Rotifer	Synchaeta sp.							
	Total Zooplankton	4	3	8	5	9	8	6

Zooplankton per-sample taxonomic presence/absence, zooplankton taxonomic richness, Azimuth Nunavut 2015

	Biologica #	**15-25-24-QA**	**15-25-25**	**15-25-27**
	Project	**Nunavut**	**Nunavut**	**Nunavut**
	Client ID	**MAM-05-S**	**MAM-06-S**	**DUP-1-September**
	Date	**9/19/2015**	**9/19/2015**	**9/19/2015**
		Presence	**Presence**	**Presence**
		Present - Shaded	**Present - Shaded**	**Present - Shaded**
Major Group	Taxon			
Cladoceran	Bosmina sp.	■		■
Cladoceran	Daphnia ambigua			
Cladoceran	Daphnia middendorffiana		■	■
Cladoceran	Daphnia sp.	■	■	■
Cladoceran	Holopedium gibberum			
Cladoceran	Leptodora kindtii			
Calanoid	Heterocope septentrionalis		■	■
Calanoid	Leptodiaptomus pribilofensis		■	■
Calanoid	Tropocyclops prasinus mexicanus			
Cyclopoid	Cyclops scutifer			■
Cyclopoid	Diacyclops thomasi			
Cyclopoid	Microcyclops sp.			
Rotifer	Asplanchna sp.			
Rotifer	Collotheca sp.			
Rotifer	Conochilus sp.	■	■	■
Rotifer	Kellicottia sp.	■	■	■
Rotifer	Keratella sp.	■		■
Rotifer	Polyarthra sp.	■	■	■
Rotifer	Rotifer indet.			
Rotifer	Synchaeta sp.			
	Total Zooplankton	6	7	10

Total Zooplankton WW/DW Biomass (mg/sample), Abundance (#/sample), and taxonomic richness (total taxa/sample), Azimuth Nunavut 2015

Biologica #	Grand Total			15-25-01			15-25-02		
Project	Nunavut			Nunavut			Nunavut		
Client ID				WTN-01-S			WTN-02-S		
Date				7/17/2015			7/17/2015		
	Total Biomass		Total Abundance	Total Biomass		Total Abundance	Total Biomass		Total Abundance
	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)
Total Cladocera	83.67	16.73	3029	8.63	1.73	290	12.74	2.55	620
Total Calanoida	6461.63	259.27	18353.83333	25.56	1.01	210	14.60	0.58	120
Total Cyclopoida	727.74	145.26	44226.16667	52.63	10.53	2620	32.97	6.59	1590
Total Copepod Nauplii	30.87	6.17	92590	1.96	0.39	2333.333333	2.07	0.41	2466.666667
Total Rotifera	1796.80	179.61	199683.3333	46.48	4.64	7866.666667	19.72	1.97	3400
Total Zooplankton	9100.71	607.05	357882.3333	135.26	18.29	13320	82.10	12.10	8196.666667

Total Zooplankton WW/DW Biomass (mg/sample), Abundance (#/sample), and taxonomic richness (total taxa/sample), Azimuth Nunavut 2015

Biologica #	15-25-03			15-25-04			15-25-05		
Project	Nunavut			Nunavut			Nunavut		
Client ID	WTS-01-S			WTS-02-S			NEM-01-S		
Date	7/17/2015			7/17/2015			7/18/2015		
	Total Biomass		Total Abundance	Total Biomass		Total Abundance	Total Biomass		Total Abundance
	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)
Total Cladocera	5.72	1.14	400	1.12	0.22	82	4.64	0.93	106
Total Calanoida	6.08	0.24	50	3.65	0.14	30	233.65	9.22	1920
Total Cyclopoida	50.65	10.13	2720	35.87	7.17	2080	38.84	7.77	1970
Total Copepod Nauplii	2.52	0.50	3100	0.69	0.14	1066.666667	2.05	0.41	4266.666667
Total Rotifera	51.90	5.18	6366.666667	46.55	4.66	3200	39.81	3.98	4366.666667
Total Zooplankton	116.88	17.20	12636.66667	87.89	12.34	6458.666667	318.99	22.31	12629.33333

Total Zooplankton WW/DW Biomass (mg/sample), Abundance (#/sample), and taxonomic richness (total taxa/sample), Azimuth Nunavut 2015

Biologica #	15-25-06			15-25-07			15-25-08		
Project	Nunavut			Nunavut			Nunavut		
Client ID	NEM-02-S			MAM-01-S			MAM-02-S		
Date	7/18/2015			7/18/2015			7/18/2015		
	Total Biomass		Total Abundance	Total Biomass		Total Abundance	Total Biomass		Total Abundance
	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)
Total Cladocera	2.31	0.46	116	0.82	0.16	32	12.19	2.44	410
Total Calanoida	214.33	8.45	1753	11.90	0.43	73	23.75	0.84	140
Total Cyclopoida	33.35	6.67	2570	2.47	0.49	92	39.38	7.88	1420
Total Copepod Nauplii	1.99	0.40	7300	1.52	0.30	2066.666667	0.66	0.13	790
Total Rotifera	44.82	4.48	4533.333333	27.22	2.72	4600	93.64	9.36	13633.33333
Total Zooplankton	296.80	20.46	16272.33333	43.93	4.11	6863.666667	169.63	20.66	16393.33333

Total Zooplankton WW/DW Biomass (mg/sample), Abundance (#/sample), and taxonomic richness (total taxa/sample), Azimuth Nunavut 2015

Biologica #	15-25-08 - QA			15-25-09			15-25-10		
Project	Nunavut			Nunavut			Nunavut		
Client ID	MAM-02-S-QA			DUP-July-Amaruq			WTN-03-S		
Date	7/18/2015			(blank)			8/22/2015		
	Total Biomass			Total Biomass		Total Abundance	Total Biomass		Total Abundance
	WW (mg/sample)	DW (mg/sample)	Total Abundance (#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)
Total Cladocera	10.02	2.00	440	2.68	0.53	186	2.62	0.52	60
Total Calanoida	45.39	1.46	180	48.68	1.92	400	144.01	6.46	310
Total Cyclopoida	42.89	8.58	1550	81.29	16.26	5440	11.73	2.35	770
Total Copepod Nauplii	2.10	0.42	2566.67	1.04	0.21	1433.33	0.43	0.09	3466.67
Total Rotifera	87.48	8.75	14166.67	61.36	6.14	4833.33	77.87	7.79	10517.00
Total Zooplankton	187.87	21.21	18903.33	195.04	25.06	12292.67	236.66	17.21	15123.33

Total Zooplankton WW/DW Biomass (mg/sample), Abundance (#/sample), and taxonomic richness (total taxa/sample), Azimuth Nunavut 2015

Biologica #	15-25-11			15-25-12			15-25-13		
Project	Nunavut			Nunavut			Nunavut		
Client ID	WTN-04-S			WTN-05-S			WTN-06-S		
Date	8/22/2015			9/18/2015			9/18/2015		
	Total Biomass		Total Abundance	Total Biomass		Total Abundance	Total Biomass		Total Abundance
	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)
Total Cladocera	0.44	0.09	10	0.08	0.02	4	0.20	0.04	10
Total Calanoida	70.50	3.57	153.3333333	12.11	0.38	26	266.48	15.38	585
Total Cyclopoida	6.85	1.37	493.3333333	8.96	1.79	526	56.29	11.26	2750
Total Copepod Nauplii	0.56	0.11	4300	0.32	0.06	1366.666667	1.02	0.20	5433.333333
Total Rotifera	72.16	7.22	8433.333333	46.86	4.67	5616.666667	181.06	18.11	18600
Total Zooplankton	150.51	12.36	13390	68.33	6.93	7539.333333	505.05	44.99	27378.33333

Total Zooplankton WW/DW Biomass (mg/sample), Abundance (#/sample), and taxonomic richness (total taxa/sample), Azimuth Nunavut 2015

Biologica #	15-25-14			15-25-26			15-25-15		
Project	Nunavut			Nunavut			Nunavut		
Client ID	WTS-03-S			DUP-1			WTS-04-S		
Date	8/22/2015			8/22/2015			8/21/2015		
	Total Biomass		Total Abundance	Total Biomass		Total Abundance	Total Biomass		Total Abundance
	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)
Total Cladocera	0.00	0.00	0	0.62	0.12	22.66666667	0.53	0.11	5
Total Calanoida	154.55	7.52	345	113.05	6.56	243.3333333	144.01	6.47	310
Total Cyclopoida	10.90	2.18	780	7.09	1.42	650	9.07	1.81	730
Total Copepod Nauplii	0.40	0.08	3200	0.31	0.06	2300	0.97	0.19	2600
Total Rotifera	122.99	12.30	12666.66667	38.89	3.89	5300	91.29	9.12	9500
Total Zooplankton	288.84	22.08	16991.66667	159.96	12.05	8516	245.87	17.70	13145

Total Zooplankton WW/DW Biomass (mg/sample), Abundance (#/sample), and taxonomic richness (total taxa/sample), Azimuth Nunavut 2015

Biologica #	15-25-16			15-25-16-QA			15-25-17		
Project	Nunavut			Nunavut			Nunavut		
Client ID	WTS-05-S			WTS-05-S-QA			WTS-06-S		
Date	9/18/2015			9/18/2015			9/18/2015		
	Total Biomass		Total Abundance	Total Biomass		Total Abundance	Total Biomass		Total Abundance
	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)
Total Cladocera	1.16	0.23	15	0.73	0.21	10	1.06	0.21	10
Total Calanoida	48.86	2.72	105	46.29	2.94	100	46.76	1.76	100
Total Cyclopoida	21.49	4.30	1035	16.82	3.36	975	21.68	4.34	1006.666667
Total Copepod Nauplii	0.84	0.17	2133.333333	0.85	0.17	2233	0.62	0.12	1433.333333
Total Rotifera	41.13	4.11	3766.666667	52.61	5.26	4534	49.68	4.97	4600
Total Zooplankton	113.48	11.53	7055	117.30	11.94	7852	119.80	11.40	7150

Total Zooplankton WW/DW Biomass (mg/sample), Abundance (#/sample), and taxonomic richness (total taxa/sample), Azimuth Nunavut 2015

Biologica #	15-25-18			15-25-19			15-25-20		
Project	Nunavut			Nunavut			Nunavut		
Client ID	NEM-03-S			NEM-04-S			NEM-05-S		
Date	8/23/2015			8/23/2015			9/19/2015		
	Total Biomass		Total Abundance	Total Biomass		Total Abundance	Total Biomass		Total Abundance
	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)
Total Cladocera	3.63	0.73	40	0.00	0.00	0	0.38	0.08	5
Total Calanoida	812.37	25.52	2230	605.96	20.01	1700	777.19	25.27	1670
Total Cyclopoida	15.88	3.18	1750	14.71	2.94	1680	11.49	2.30	1280
Total Copepod Nauplii	0.59	0.12	4800	0.66	0.13	5800	0.93	0.19	5833.333333
Total Rotifera	43.37	4.34	4200	40.58	4.06	3800	41.70	4.17	3650
Total Zooplankton	875.84	33.88	13020	661.91	27.14	12980	831.67	32.00	12438.33333

Total Zooplankton WW/DW Biomass (mg/sample), Abundance (#/sample), and taxonomic richness (total taxa/sample), Azimuth Nunavut 2015

Biologica #	15-25-21			15-25-22			15-25-23		
Project	Nunavut			Nunavut			Nunavut		
Client ID	NEM-06-S			MAM-03-S			MAM-04-S		
Date	9/19/2015			8/24/2015			8/24/2015		
	Total Biomass		Total Abundance	Total Biomass		Total Abundance	Total Biomass		Total Abundance
	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)
Total Cladocera	0.44	0.09	10	8.55	1.71	100	0.11	0.02	1
Total Calanoida	463.82	15.59	1000	1742.03	66.57	3766.666667	70.89	13.00	155
Total Cyclopoida	6.73	1.35	630	52.41	10.48	4566.666667	1.93	0.39	177
Total Copepod Nauplii	1.00	0.20	4733.333333	0.97	0.19	2900	0.63	0.13	2900
Total Rotifera	51.63	5.16	4333.333333	69.02	6.89	8366.666667	49.49	4.94	5600
Total Zooplankton	523.62	22.39	10706.66667	1872.98	85.85	19700	123.04	18.47	8833

Total Zooplankton WW/DW Biomass (mg/sample), Abundance (#/sample), and taxonomic richness (total taxa/sample), Azimuth Nunavut 2015

Biologica #	15-25-24			15-25-24-QA			15-25-25		
Project	Nunavut			Nunavut			Nunavut		
Client ID	MAM-05-S			MAM-05-S-QA			MAM-06-S		
Date	9/19/2015			9/19/2015			9/19/2015		
	Total Biomass		Total Abundance	Total Biomass		Total Abundance	Total Biomass		Total Abundance
	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)	WW (mg/sample)	DW (mg/sample)	(#/sample)
Total Cladocera	0.21	0.04	6.666666667	0.21	0.04	6.666666667	0.29	0.06	6
Total Calanoida	87.57	4.15	186.6666667	97.53	4.45	213.3333333	58.97	2.37	126
Total Cyclopoida	10.89	2.18	666.6666667	10.44	2.09	613.3333333	6.65	1.33	412
Total Copepod Nauplii	0.54	0.11	2466.666667	0.71	0.14	2633.333333	0.77	0.15	1866.666667
Total Rotifera	45.25	4.53	4000	47.56	4.76	4366.666667	32.94	3.29	3166.666667
Total Zooplankton	144.47	11.01	7326.666667	156.45	11.48	7833.333333	99.63	7.21	5577.333333

Total Zooplankton WW/DW Biomass (mg/sample), Abundance (#/sample), and taxonomic richness (total taxa/sample), Azimuth Nunavut 2015

Biologica #		**15-25-27**	
Project		**Nunavut**	
Client ID		**DUP-1-September**	
Date		**9/19/2015**	
	Total Biomass		**Total Abundance**
	WW (mg/sample)	**DW (mg/sample)**	**(#/sample)**
Total Cladocera	0.48	0.10	10
Total Calanoida	57.00	2.58	122.5
Total Cyclopoida	15.45	2.80	687.5
Total Copepod Nauplii	0.30	0.06	666.6666667
Total Rotifera	40.19	4.02	3900
Total Zooplankton	113.42	9.56	5386.666667

Zooplankton raw count data for abundance calculations and biomass calculations, Azimuth Nunavut 2015

Client	Project	Year	Biologica #	Split	Date	Client ID	Fraction	Major Group	Groupcode	Family	Taxon	Stage	Raw Abundance	Split Multiplier	Total Abundance	Mean DW Biomass_mg	Mean WW Biomass_mg	Biomass assumptions	Total DW Biomass_mg	Total WW Biomass _mg
Azimuth	Nunavut	2015	15-25-01	3/100	7/17/2015	WTN-01-S		Rotifer	ROTI		Asplanchna sp.	n/a	2	33.33333333	66.66666667	7.80401E-05	0.002001028		0.005202672	0.13340184
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cladoceran	CRCL		Bosmina sp.	F	3	10	30	0.008880563	0.044402816		0.266416894	1.33208447
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Calanoid	CRCO		Calanoida indet.	I-IV	21	10	210	0.004802846	0.121691779		1.008597743	25.55527369
Azimuth	Nunavut	2015	15-25-01	3/100	7/17/2015	WTN-01-S		Calanoid	CRCO		Calanoida indet.	nauplius	65	33.33333333	2166.666667	0.000177853	0.000889266		0.385348494	1.926742472
Azimuth	Nunavut	2015	15-25-01	3/100	7/17/2015	WTN-01-S		Rotifer	ROTI		Collotheca sp.	n/a	1	33.33333333	33.33333333	0.001085142	0.010851422		0.036171408	0.36171408
Azimuth	Nunavut	2015	15-25-01	3/100	7/17/2015	WTN-01-S		Rotifer	ROTI		Conochilus sp.	n/a	130	33.33333333	4333.333333	0.000146136	0.001461355		0.633254044	6.33254044
Azimuth	Nunavut	2015	15-25-01	3/100	7/17/2015	WTN-01-S		Copepod	CRCO		Copepoda indet.	nauplius	1	33.33333333	33.33333333	0.000142032	0.000710161		0.004734405	0.023672026
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	120	10	1200	0.001389335	0.006946677		1.66720246	8.336012298
Azimuth	Nunavut	2015	15-25-01	3/100	7/17/2015	WTN-01-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	4	33.33333333	133.3333333	2.00168E-05	0.000100084		0.002668912	0.013344558
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cyclopoid	CRCO		Cyclopoida indet.	V	16	10	160	0.005042793	0.025213967		0.806846937	4.034234683
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cyclopoid	CRCO		Cyclops scutifer	F	74	10	740	0.007235588	0.036177938		5.354334856	26.77167428
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cyclopoid	CRCO		Cyclops scutifer	M	52	10	520	0.005185998	0.025929991		2.69671903	13.48359515
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	10	10	0.021219637	0.106098184		0.212196369	1.060981843
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	10	10	0.021219637	0.106098184		0.212196369	1.060981843
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cladoceran	CRCL		Daphnia sp.	F	2	10	20	0.003999883	0.019999416		0.079997665	0.399988323
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cladoceran	CRCL		Daphnia sp.	F	1	10	10	0.003999883	0.019999416		0.039998832	0.199994162
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cladoceran	CRCL		Holopedium gibberum	F	7	10	70	0.002497062	0.012485309		0.174794323	0.873971617
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cladoceran	CRCL		Holopedium gibberum	F	13	10	130	0.002497062	0.012485309		0.324618029	1.623090147
Azimuth	Nunavut	2015	15-25-01	3/100	7/17/2015	WTN-01-S		Rotifer	ROTI		Kellicottia sp.	n/a	95	33.33333333	3166.666667	0.001252192	0.012521918		3.965274142	39.65274142
Azimuth	Nunavut	2015	15-25-01	1/10	7/17/2015	WTN-01-S		Cladoceran	CRCL		Leptodora kindtii	F	1	10	10	0.041665665	0.208328325		0.416656649	2.083283246
Azimuth	Nunavut	2015	15-25-01	3/100	7/17/2015	WTN-01-S		Rotifer	ROTI		Rotifer indet.	n/a	8	33.33333333	266.6666667	0	0		0	0
Azimuth	Nunavut	2015	15-25-02	1/10	7/17/2015	WTN-02-S		Cladoceran	CRCL		Bosmina sp.	F	1	10	10	0.008880563	0.044402816		0.088805631	0.444028157
Azimuth	Nunavut	2015	15-25-02	1/10	7/17/2015	WTN-02-S		Calanoid	CRCO		Calanoida indet.	I-IV	12	10	120	0.004802846	0.121691779		0.576341568	14.60301354
Azimuth	Nunavut	2015	15-25-02	3/100	7/17/2015	WTN-02-S		Calanoid	CRCO		Calanoida indet.	nauplius	63	33.33333333	2100	0.000177853	0.000889266		0.373491618	1.867458089
Azimuth	Nunavut	2015	15-25-02	3/100	7/17/2015	WTN-02-S		Rotifer	ROTI		Conochilus sp.	n/a	62	33.33333333	2066.666667	0.000146136	0.001461355		0.302013467	3.020134671
Azimuth	Nunavut	2015	15-25-02	3/100	7/17/2015	WTN-02-S		Copepod	CRCO		Copepoda indet.	nauplius	8	33.33333333	266.6666667	0.000142032	0.000710161		0.037875241	0.189376207
Azimuth	Nunavut	2015	15-25-02	1/10	7/17/2015	WTN-02-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	60	10	600	0.001389335	0.006946677		0.83360123	4.168006149
Azimuth	Nunavut	2015	15-25-02	3/100	7/17/2015	WTN-02-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	3	33.33333333	100	2.00168E-05	0.000100084		0.002001684	0.010008419
Azimuth	Nunavut	2015	15-25-02	1/10	7/17/2015	WTN-02-S		Cyclopoid	CRCO		Cyclopoida indet.	V	20	10	200	0.005042793	0.025213967		1.008558671	5.042793353
Azimuth	Nunavut	2015	15-25-02	1/10	7/17/2015	WTN-02-S		Cyclopoid	CRCO		Cyclops scutifer	F	32	10	320	0.007235588	0.036177938		2.315388046	11.57694023
Azimuth	Nunavut	2015	15-25-02	1/10	7/17/2015	WTN-02-S		Cyclopoid	CRCO		Cyclops scutifer	M	47	10	470	0.005185998	0.025929991		2.437419123	12.18709561
Azimuth	Nunavut	2015	15-25-02	1/10	7/17/2015	WTN-02-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	10	10	0.021219637	0.106098184		0.212196369	1.060981843
Azimuth	Nunavut	2015	15-25-02	1/10	7/17/2015	WTN-02-S		Cladoceran	CRCL		Daphnia middendorffiana	F	4	10	40	0.021219637	0.106098184		0.848785474	4.243927371
Azimuth	Nunavut	2015	15-25-02	1/10	7/17/2015	WTN-02-S		Cladoceran	CRCL		Holopedium gibberum	F	21	10	210	0.002497062	0.012485309		0.52438297	2.621914852
Azimuth	Nunavut	2015	15-25-02	1/10	7/17/2015	WTN-02-S		Cladoceran	CRCL		Holopedium gibberum	F	35	10	350	0.002497062	0.012485309		0.873971617	4.369858087
Azimuth	Nunavut	2015	15-25-02	3/100	7/17/2015	WTN-02-S		Rotifer	ROTI		Kellicottia sp.	n/a	40	33.33333333	1333.333333	0.001252192	0.012521918		1.669589113	16.69589113
Azimuth	Nunavut	2015	15-25-03	3/100	7/17/2015	WTS-01-S		Rotifer	ROTI		Asplanchna sp.	n/a	2	33.33333333	66.66666667	7.80401E-05	0.002001028		0.005202672	0.13340184
Azimuth	Nunavut	2015	15-25-03	1	7/17/2015	WTS-01-S		Cladoceran	CRCL		Bosmina sp.	F	2	1	2	0.008880563	0.044402816		0.017761126	0.088805631
Azimuth	Nunavut	2015	15-25-03	1/10	7/17/2015	WTS-01-S		Calanoid	CRCO		Calanoida indet.	I-IV	5	10	50	0.004802846	0.121691779		0.24014232	6.084588975
Azimuth	Nunavut	2015	15-25-03	3/100	7/17/2015	WTS-01-S		Calanoid	CRCO		Calanoida indet.	nauplius	81	33.33333333	2700	0.000177853	0.000889266		0.480203508	2.401017542
Azimuth	Nunavut	2015	15-25-03	3/100	7/17/2015	WTS-01-S		Rotifer	ROTI		Conochilus sp.	n/a	86	33.33333333	2866.666667	0.000146136	0.001461355		0.418921906	4.18921906
Azimuth	Nunavut	2015	15-25-03	3/100	7/17/2015	WTS-01-S		Copepod	CRCO		Copepoda indet.	nauplius	4	33.33333333	133.3333333	0.000142032	0.000710161		0.018937621	0.094688103
Azimuth	Nunavut	2015	15-25-03	1/10	7/17/2015	WTS-01-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	130	10	1300	0.001389335	0.006946677		1.806135998	9.03067999
Azimuth	Nunavut	2015	15-25-03	3/100	7/17/2015	WTS-01-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	8	33.33333333	266.6666667	2.00168E-05	0.000100084		0.005337823	0.026689116
Azimuth	Nunavut	2015	15-25-03	1/10	7/17/2015	WTS-01-S		Cyclopoid	CRCO		Cyclopoida indet.	V	45	10	450	0.005042793	0.025213967		2.269257009	11.34628504
Azimuth	Nunavut	2015	15-25-03	1/10	7/17/2015	WTS-01-S		Cyclopoid	CRCO		Cyclops scutifer	F	50	10	500	0.007235588	0.036177938		3.617793822	18.08896911
Azimuth	Nunavut	2015	15-25-03	1/10	7/17/2015	WTS-01-S		Cyclopoid	CRCO		Cyclops scutifer	M	47	10	470	0.005185998	0.025929991		2.437419123	12.18709561
Azimuth	Nunavut	2015	15-25-03	1	7/17/2015	WTS-01-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	1	1	0.021219637	0.106098184		0.021219637	0.106098184
Azimuth	Nunavut	2015	15-25-03	1	7/17/2015	WTS-01-S		Cladoceran	CRCL		Daphnia middendorffiana	F	6	1	6	0.021219637	0.106098184		0.127317821	0.636589106
Azimuth	Nunavut	2015	15-25-03	1	7/17/2015	WTS-01-S		Cladoceran	CRCL		Daphnia sp.	F	1	1	1	0.003999883	0.019999416		0.003999883	0.019999416
Azimuth	Nunavut	2015	15-25-03	1/10	7/17/2015	WTS-01-S		Cladoceran	CRCL		Holopedium gibberum	F	15	10	150	0.002497062	0.012485309		0.374559265	1.872796323
Azimuth	Nunavut	2015	15-25-03	1/10	7/17/2015	WTS-01-S		Cladoceran	CRCL		Holopedium gibberum	F	24	10	240	0.002497062	0.012485309		0.599294823	2.996474117
Azimuth	Nunavut	2015	15-25-03	3/100	7/17/2015	WTS-01-S		Rotifer	ROTI		Kellicottia sp.	n/a	99	33.33333333	3300	0.001252192	0.012521918		4.132233053	41.32233053
Azimuth	Nunavut	2015	15-25-03	3/100	7/17/2015	WTS-01-S		Rotifer	ROTI		Rotifer indet.	n/a	2	33.33333333	66.66666667	0	0		0	0
Azimuth	Nunavut	2015	15-25-03	3/100	7/17/2015	WTS-01-S		Rotifer	ROTI		Synchaeta sp.	n/a	2	33.33333333	66.66666667	0.009388446	0.093884464		0.625896425	6.258964251
Azimuth	Nunavut	2015	15-25-04	1/10	7/17/2015	WTS-02-S		Calanoid	CRCO		Calanoida indet.	I-IV	3	10	30	0.004802846	0.121691779		0.144085392	3.650753385
Azimuth	Nunavut	2015	15-25-04	3/100	7/17/2015	WTS-02-S		Calanoid	CRCO		Calanoida indet.	nauplius	16	33.33333333	533.3333333	0.000177853	0.000889266		0.094855014	0.47427507
Azimuth	Nunavut	2015	15-25-04	3/100	7/17/2015	WTS-02-S		Rotifer	ROTI		Conochilus sp.	n/a	16	33.33333333	533.3333333	0.000146136	0.001461355		0.077938959	0.779389593
Azimuth	Nunavut	2015	15-25-04	3/100	7/17/2015	WTS-02-S		Copepod	CRCO		Copepoda indet.	nauplius	8	33.33333333	266.6666667	0.000142032	0.000710161		0.037875241	0.189376207
Azimuth	Nunavut	2015	15-25-04	1/10	7/17/2015	WTS-02-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	116	10	1160	0.001389335	0.006946677		1.611629044	8.058145222
Azimuth	Nunavut	2015	15-25-04	3/100	7/17/2015	WTS-02-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	8	33.33333333	266.6666667	2.00168E-05	0.000100084		0.005337823	0.026689116
Azimuth	Nunavut	2015	15-25-04	1/10	7/17/2015	WTS-02-S		Cyclopoid	CRCO		Cyclopoida indet.	V	20	10	200	0.005042793	0.025213967		1.008558671	5.042793353
Azimuth	Nunavut	2015	15-25-04	1/10	7/17/2015	WTS-02-S		Cyclopoid	CRCO		Cyclops scutifer	F	40	10	400	0.007235588	0.036177938		2.894235057	14.47117529
Azimuth	Nunavut	2015	15-25-04	1/10	7/17/2015	WTS-02-S		Cyclopoid	CRCO		Cyclops scutifer	M	32	10	320	0.005185998	0.025929991		1.659519403	8.297597014
Azimuth	Nunavut	2015	15-25-04	1	7/17/2015	WTS-02-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	1	1	0.021219637	0.106098184		0.021219637	0.106098184
Azimuth	Nunavut	2015	15-25-04	1	7/17/2015	WTS-02-S		Cladoceran	CRCL		Daphnia sp.	F	1	1	1	0.003999883	0.019999416		0.003999883	0.019999416
Azimuth	Nunavut	2015	15-25-04	1/10	7/17/2015	WTS-02-S		Cladoceran	CRCL		Holopedium gibberum	F	2	10	20	0.002497062	0.012485309		0.049941235	0.249706176
Azimuth	Nunavut	2015	15-25-04	1/10	7/17/2015	WTS-02-S		Cladoceran	CRCL		Holopedium gibberum	F	6	10	60	0.002497062	0.012485309		0.149823706	0.749118529
Azimuth	Nunavut	2015	15-25-04	3/100	7/17/2015	WTS-02-S		Rotifer	ROTI		Kellicottia sp.	n/a	72	33.33333333	2400	0.001252192	0.012521918		3.005260403	30.05260403
Azimuth	Nunavut	2015	15-25-04	3/100	7/17/2015	WTS-02-S		Rotifer	ROTI		Polyarthra sp.	n/a	3	33.33333333	100	7.16125E-05	0.000716125		0.007161253	0.071612533
Azimuth	Nunavut	2015	15-25-04	3/100	7/17/2015	WTS-02-S		Rotifer	ROTI		Rotifer indet.	n/a		33.33333333	0	0	0		0	0
Azimuth	Nunavut	2015	15-25-04	3/100	7/17/2015	WTS-02-S		Rotifer	ROTI		Synchaeta sp.	n/a	5	33.33333333	166.6666667	0.009388446	0.093884464		1.564741063	15.64741063
Azimuth	Nunavut	2015	15-25-05	1	7/18/2015	NEM-01-S		Cladoceran	CRCL		Bosmina sp.	F	6	1	6	0.008880563	0.044402816		0.053283379	0.266416894

Zooplankton raw count data for abundance calculations and biomass calculations, Azimuth Nunavut 2015

Client	Project	Year	Biologica #	Split	Date	Client ID	Fraction	Major Group	Groupcode	Family	Taxon	Stage	Raw Abundance	Split Multiplier	Total Abundance	Mean DW Biomass_mg	Mean WW Biomass_mg	Biomass assumptions	Total DW Biomass_mg	Total WW Biomass _mg
Azimuth	Nunavut	2015	15-25-05	1	7/18/2015	NEM-01-S		Cladoceran	CRCL		Bosmina sp.	F	2	1	2	0.008880563	0.044402816		0.017761126	0.088805631
Azimuth	Nunavut	2015	15-25-05	1/10	7/18/2015	NEM-01-S		Calanoid	CRCO		Calanoida indet.	I-IV	192	10	1920	0.004802846	0.121691779		9.221465081	233.6482166
Azimuth	Nunavut	2015	15-25-05	3/100	7/18/2015	NEM-01-S		Calanoid	CRCO		Calanoida indet.	nauplius	61	33.33333333	2033.333333	0.000177853	0.000889266		0.361634741	1.808173705
Azimuth	Nunavut	2015	15-25-05	3/100	7/18/2015	NEM-01-S		Rotifer	ROTI		Conochilus sp.	n/a	36	33.33333333	1200	0.000146136	0.001461355		0.175362658	1.753626583
Azimuth	Nunavut	2015	15-25-05	3/100	7/18/2015	NEM-01-S		Copepod	CRCO		Copepoda indet.	nauplius	1	33.33333333	33.33333333	0.000142032	0.000710161		0.004734405	0.023672026
Azimuth	Nunavut	2015	15-25-05	1/10	7/18/2015	NEM-01-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	102	10	1020	0.001389335	0.006946677		1.417122091	7.085610453
Azimuth	Nunavut	2015	15-25-05	3/100	7/18/2015	NEM-01-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	66	33.33333333	2200	2.00168E-05	0.000100084		0.044037042	0.22018521
Azimuth	Nunavut	2015	15-25-05	1/10	7/18/2015	NEM-01-S		Cyclopoid	CRCO		Cyclopoida indet.	V	7	10	70	0.005042793	0.025213967		0.352995535	1.764977674
Azimuth	Nunavut	2015	15-25-05	1/10	7/18/2015	NEM-01-S		Cyclopoid	CRCO		Cyclops scutifer	F	70	10	700	0.007235588	0.036177938		5.06491135	25.32455675
Azimuth	Nunavut	2015	15-25-05	1/10	7/18/2015	NEM-01-S		Cyclopoid	CRCO		Cyclops scutifer	M	18	10	180	0.005185998	0.025929991		0.933479664	4.66739832
Azimuth	Nunavut	2015	15-25-05	1	7/18/2015	NEM-01-S		Cladoceran	CRCL		Daphnia middendorffiana	F	16	1	16	0.021219637	0.106098184		0.33951419	1.697570948
Azimuth	Nunavut	2015	15-25-05	1	7/18/2015	NEM-01-S		Cladoceran	CRCL		Daphnia middendorffiana	F	14	1	14	0.021219637	0.106098184		0.297074916	1.48537458
Azimuth	Nunavut	2015	15-25-05	1	7/18/2015	NEM-01-S		Cladoceran	CRCL		Daphnia sp.	F	7	1	7	0.003999883	0.019999416		0.027999183	0.139995913
Azimuth	Nunavut	2015	15-25-05	1/10	7/18/2015	NEM-01-S		Cladoceran	CRCL		Holopedium gibberum	F	2	10	20	0.002497062	0.012485309		0.049941235	0.249706176
Azimuth	Nunavut	2015	15-25-05	1/10	7/18/2015	NEM-01-S		Cladoceran	CRCL		Holopedium gibberum	F	4	10	40	0.002497062	0.012485309		0.099882471	0.499412353
Azimuth	Nunavut	2015	15-25-05	3/100	7/18/2015	NEM-01-S		Rotifer	ROTI		Kellicottia sp.	n/a	91	33.33333333	3033.333333	0.001252192	0.012521918		3.798315231	37.98315231
Azimuth	Nunavut	2015	15-25-05	1	7/18/2015	NEM-01-S		Cladoceran	CRCL		Leptodora kindtii	F	1	1	1	0.041665665	0.208328325		0.041665665	0.208328325
Azimuth	Nunavut	2015	15-25-05	3/100	7/18/2015	NEM-01-S		Rotifer	ROTI		Polyarthra sp.	n/a	3	33.33333333	100	7.16125E-05	0.000716125		0.007161253	0.071612533
Azimuth	Nunavut	2015	15-25-05	3/100	7/18/2015	NEM-01-S		Rotifer	ROTI		Rotifer indet.	n/a	1	33.33333333	33.33333333	0	0		0	0
Azimuth	Nunavut	2015	15-25-06	1	7/18/2015	NEM-02-S		Cladoceran	CRCL		Bosmina sp.	F	2	1	2	0.008880563	0.044402816		0.017761126	0.088805631
Azimuth	Nunavut	2015	15-25-06	1/10	7/18/2015	NEM-02-S		Calanoid	CRCO		Calanoida indet.	I-IV	175	10	1750	0.004802846	0.121691779		8.404981194	212.9606141
Azimuth	Nunavut	2015	15-25-06	3/100	7/18/2015	NEM-02-S		Calanoid	CRCO		Calanoida indet.	nauplius	47	33.33333333	1566.666667	0.000177853	0.000889266		0.278636604	1.393183018
Azimuth	Nunavut	2015	15-25-06	3/100	7/18/2015	NEM-02-S		Rotifer	ROTI		Conochilus sp.	n/a	29	33.33333333	966.6666667	0.000146136	0.001461355		0.141264364	1.412643637
Azimuth	Nunavut	2015	15-25-06	3/100	7/18/2015	NEM-02-S		Copepod	CRCO		Copepoda indet.	nauplius	1	33.33333333	33.33333333	0.000142032	0.000710161		0.004734405	0.023672026
Azimuth	Nunavut	2015	15-25-06	1/10	7/18/2015	NEM-02-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	197	10	1970	0.001389335	0.006946677		2.736990705	13.68495352
Azimuth	Nunavut	2015	15-25-06	1/10	7/18/2015	NEM-02-S		Cyclopoid	CRCO		Cyclopoida indet.	M	1	10	10	0.005042793	0.025213967		0.050427934	0.252139668
Azimuth	Nunavut	2015	15-25-06	3/100	7/18/2015	NEM-02-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	171	33.33333333	5700	2.00168E-05	0.000100084		0.114095973	0.570479864
Azimuth	Nunavut	2015	15-25-06	1/10	7/18/2015	NEM-02-S		Cyclopoid	CRCO		Cyclopoida indet.	V	1	10	10	0.005042793	0.025213967		0.050427934	0.252139668
Azimuth	Nunavut	2015	15-25-06	1/10	7/18/2015	NEM-02-S		Cyclopoid	CRCO		Cyclopoida indet.	V	11	10	110	0.005042793	0.025213967		0.554707269	2.773536344
Azimuth	Nunavut	2015	15-25-06	1/10	7/18/2015	NEM-02-S		Cyclopoid	CRCO		Cyclops scutifer	F	41	10	410	0.007235588	0.036177938		2.966590934	14.83295467
Azimuth	Nunavut	2015	15-25-06	1/10	7/18/2015	NEM-02-S		Cyclopoid	CRCO		Cyclops scutifer	M	6	10	60	0.005185998	0.025929991		0.311159888	1.55579944
Azimuth	Nunavut	2015	15-25-06	1	7/18/2015	NEM-02-S		Cladoceran	CRCL		Daphnia middendorffiana	F	2	1	2	0.021219637	0.106098184		0.042439274	0.212196369
Azimuth	Nunavut	2015	15-25-06	1	7/18/2015	NEM-02-S		Cladoceran	CRCL		Daphnia middendorffiana	F	6	1	6	0.021219637	0.106098184		0.127317821	0.636589106
Azimuth	Nunavut	2015	15-25-06	1	7/18/2015	NEM-02-S		Cladoceran	CRCL		Daphnia sp.	F	6	1	6	0.003999883	0.019999416		0.023999299	0.119996497
Azimuth	Nunavut	2015	15-25-06	1/10	7/18/2015	NEM-02-S		Cladoceran	CRCL		Holopedium gibberum	F	5	10	50	0.002497062	0.012485309		0.124853088	0.624265441
Azimuth	Nunavut	2015	15-25-06	1/10	7/18/2015	NEM-02-S		Cladoceran	CRCL		Holopedium gibberum	F	5	10	50	0.002497062	0.012485309		0.124853088	0.624265441
Azimuth	Nunavut	2015	15-25-06	3/100	7/18/2015	NEM-02-S		Rotifer	ROTI		Kellicottia sp.	n/a	104	33.33333333	3466.666667	0.001252192	0.012521918		4.340931693	43.40931693
Azimuth	Nunavut	2015	15-25-06	3/100	7/18/2015	NEM-02-S		Rotifer	ROTI		Rotifer indet.	n/a	3	33.33333333	100	0	0		0	0
Azimuth	Nunavut	2015	15-25-06	1	7/18/2015	NEM-02-S		Calanoid	CRCO		Tropocyclops prasinus mexicanus	F	3	1	3	0.013365482	0.457190372		0.040096445	1.371571116
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Cladoceran	CRCL		Bosmina sp.	F	7	1	7	0.008880563	0.044402816		0.062163942	0.31081971
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Calanoid	CRCO		Calanoida indet.	I-IV	2	1	2	0.004802846	0.121691779		0.009605693	0.243383559
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Calanoid	CRCO		Calanoida indet.	I-IV	62	1	62	0.004802846	0.121691779		0.297776477	7.544890328
Azimuth	Nunavut	2015	15-25-07	3/100	7/18/2015	MAM-01-S		Calanoid	CRCO		Calanoida indet.	nauplius	46	33.33333333	1533.333333	0.000177853	0.000889266		0.272708165	1.363540827
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Calanoid	CRCO		Calanoida indet.	V	9	1	9	0.013365482	0.457190372		0.120289334	4.114713347
Azimuth	Nunavut	2015	15-25-07	3/100	7/18/2015	MAM-01-S		Rotifer	ROTI		Conochilus sp.	n/a	77	33.33333333	2566.666667	0.000146136	0.001461355		0.375081241	3.750812414
Azimuth	Nunavut	2015	15-25-07	3/100	7/18/2015	MAM-01-S		Copepod	CRCO		Copepoda indet.	nauplius	5	33.33333333	166.6666667	0.000142032	0.000710161		0.023672026	0.118360129
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	16	1	16	0.001389335	0.006946677		0.022229366	0.111146831
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Cyclopoid	CRCO		Cyclopoida indet.	M	2	1	2	0.005042793	0.025213967		0.010085587	0.050427934
Azimuth	Nunavut	2015	15-25-07	3/100	7/18/2015	MAM-01-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	11	33.33333333	366.6666667	2.00168E-05	0.000100084		0.007339507	0.036697535
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Cyclopoid	CRCO		Cyclopoida indet.	V	7	1	7	0.005042793	0.025213967		0.035299553	0.176497767
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Cyclopoid	CRCO		Cyclopoida indet.	V	13	1	13	0.005042793	0.025213967		0.065556314	0.327781568
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Cyclopoid	CRCO		Cyclops scutifer	F	39	1	39	0.007235588	0.036177938		0.282187918	1.41093959
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Cyclopoid	CRCO		Cyclops scutifer	M	15	1	15	0.005185998	0.025929991		0.077789972	0.38894986
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Cladoceran	CRCL		Holopedium gibberum	F	7	1	7	0.002497062	0.012485309		0.017479432	0.087397162
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Cladoceran	CRCL		Holopedium gibberum	F	17	1	17	0.002497062	0.012485309		0.04245005	0.21225025
Azimuth	Nunavut	2015	15-25-07	3/100	7/18/2015	MAM-01-S		Rotifer	ROTI		Kellicottia sp.	n/a	56	33.33333333	1866.666667	0.001252192	0.012521918		2.337424758	23.37424758
Azimuth	Nunavut	2015	15-25-07	1	7/18/2015	MAM-01-S		Cladoceran	CRCL		Leptodora kindtii	F	1	1	1	0.041665665	0.208328325		0.041665665	0.208328325
Azimuth	Nunavut	2015	15-25-07	3/100	7/18/2015	MAM-01-S		Rotifer	ROTI		Polyarthra sp.	n/a	4	33.33333333	133.3333333	7.16125E-05	0.000716125		0.009548338	0.095483378
Azimuth	Nunavut	2015	15-25-07	3/100	7/18/2015	MAM-01-S		Rotifer	ROTI		Rotifer indet.	n/a	1	33.33333333	33.33333333	0	0		0	0
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Cladoceran	CRCL		Bosmina sp.	F	18	10	180	0.008880563	0.044402816		1.598501364	7.992506822
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Cladoceran	CRCL		Bosmina sp.	F	1	10	10	0.008880563	0.044402816		0.088805631	0.444028157
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Calanoid	CRCO		Calanoida indet.	I-IV	4	10	40	0.004802846	0.121691779		0.192113856	4.86767118
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Calanoid	CRCO		Calanoida indet.	I-IV	8	10	80	0.004802846	0.121691779		0.384227712	9.735342359
Azimuth	Nunavut	2015	15-25-08	3/100	7/18/2015	MAM-02-S		Calanoid	CRCO		Calanoida indet.	nauplius	74	10	740	0.000177853	0.000889266		0.131611332	0.65805666
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Calanoid	CRCO		Calanoida indet.	V	2	10	20	0.013365482	0.457190372		0.267309631	9.143807437
Azimuth	Nunavut	2015	15-25-08	3/100	7/18/2015	MAM-02-S		Rotifer	ROTI		Conochilus sp.	n/a	210	33.33333333	7000	0.000146136	0.001461355		1.02294884	10.2294884
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	31	10	310	0.001389335	0.006946677		0.430693969	2.153469844
Azimuth	Nunavut	2015	15-25-08	3/100	7/18/2015	MAM-02-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	5	10	50	2.00168E-05	0.000100084		0.001000842	0.005004209
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Cyclopoid	CRCO		Cyclopoida indet.	V	8	10	80	0.005042793	0.025213967		0.403423468	2.017117341
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Cyclopoid	CRCO		Cyclops scutifer	F	83	10	830	0.007235588	0.036177938		6.005537744	30.02768872
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Cyclopoid	CRCO		Cyclops scutifer	M	20	10	200	0.005185998	0.025929991		1.037199627	5.185998134
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	10	10	0.021219637	0.106098184		0.212196369	1.060981843
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Cladoceran	CRCL		Daphnia sp.	F	1	10	10	0.003999883	0.019999416		0.039998832	0.199994162

Zooplankton raw count data for abundance calculations and biomass calculations, Azimuth Nunavut 2015

Client	Project	Year	Biologica #	Split	Date	Client ID	Fraction	Major Group	Groupcode	Family	Taxon	Stage	Raw Abundance	Split Multiplier	Total Abundance	Mean DW Biomass_mg	Mean WW Biomass_mg	Biomass assumptions	Total DW Biomass_mg	Total WW Biomass _mg
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Cladoceran	CRCL		Holopedium gibberum	F	15	10	150	0.002497062	0.012485309		0.374559265	1.872796323
Azimuth	Nunavut	2015	15-25-08	1/10	7/18/2015	MAM-02-S		Cladoceran	CRCL		Holopedium gibberum	F	5	10	50	0.002497062	0.012485309		0.124853088	0.624265441
Azimuth	Nunavut	2015	15-25-08	3/100	7/18/2015	MAM-02-S		Rotifer	ROTI		Kellicottia sp.	n/a	192	33.33333333	6400	0.001252192	0.012521918		8.01402774	80.1402774
Azimuth	Nunavut	2015	15-25-08	3/100	7/18/2015	MAM-02-S		Rotifer	ROTI		Polyarthra sp.	n/a	6	33.33333333	200	7.16125E-05	0.000716125		0.014322507	0.143225066
Azimuth	Nunavut	2015	15-25-08	3/100	7/18/2015	MAM-02-S		Rotifer	ROTI		Synchaeta sp.	n/a	1	33.33333333	33.33333333	0.009388446	0.093884464		0.312948213	3.129482126
Azimuth	Nunavut	2015	15-25-08 - QA	1/10	7/18/2015	MAM-02-S-QA		Cladoceran	CRCL		Bosmina sp.	F	11	10	110	0.008880563	0.044402816		0.976861945	4.884309725
Azimuth	Nunavut	2015	15-25-08 - QA	1/10	7/18/2015	MAM-02-S-QA		Calanoid	CRCO		Calanoida indet.	I-IV	11	10	110	0.004802846	0.121691779		0.528313104	13.38609574
Azimuth	Nunavut	2015	15-25-08 - QA	3/100	7/18/2015	MAM-02-S-QA		Calanoid	CRCO		Calanoida indet.	nauplius	70	33.33333333	2333.333333	0.000177853	0.000889266		0.414990686	2.074953432
Azimuth	Nunavut	2015	15-25-08 - QA	1/10	7/18/2015	MAM-02-S-QA		Calanoid	CRCO		Calanoida indet.	V	7	10	70	0.013365482	0.457190372		0.935583709	32.00332603
Azimuth	Nunavut	2015	15-25-08 - QA	3/100	7/18/2015	MAM-02-S-QA		Rotifer	ROTI		Conochilus sp.	n/a	248	33.33333333	8266.666667	0.000146136	0.001461355		1.208053869	12.08053869
Azimuth	Nunavut	2015	15-25-08 - QA	1/100	7/18/2015	MAM-02-S-QA		Rotifer	ROTI		Conochilus sp.	n/a	1	100	100	0.000146136	0.001461355		0.014613555	0.146135549
Azimuth	Nunavut	2015	15-25-08 - QA	1/10	7/18/2015	MAM-02-S-QA		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	32	10	320	0.001389335	0.006946677		0.444587323	2.222936613
Azimuth	Nunavut	2015	15-25-08 - QA	3/100	7/18/2015	MAM-02-S-QA		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	7	33.33333333	233.3333333	2.00168E-05	0.000100084		0.004670595	0.023352977
Azimuth	Nunavut	2015	15-25-08 - QA	1/10	7/18/2015	MAM-02-S-QA		Cyclopoid	CRCO		Cyclopoida indet.	V	6	10	60	0.005042793	0.025213967		0.302567601	1.512838006
Azimuth	Nunavut	2015	15-25-08 - QA	1/10	7/18/2015	MAM-02-S-QA		Cyclopoid	CRCO		Cyclops scutifer	F	86	10	860	0.007235588	0.036177938		6.222605373	31.11302687
Azimuth	Nunavut	2015	15-25-08 - QA	1/10	7/18/2015	MAM-02-S-QA		Cyclopoid	CRCO		Cyclops scutifer	M	31	10	310	0.005185998	0.025929991		1.607659421	8.038297107
Azimuth	Nunavut	2015	15-25-08 - QA	1/10	7/18/2015	MAM-02-S-QA		Cladoceran	CRCL		Daphnia middendorffiana	F	1	10	10	0.021219637	0.106098184		0.212196369	1.060981843
Azimuth	Nunavut	2015	15-25-08 - QA	1/10	7/18/2015	MAM-02-S-QA		Cladoceran	CRCL		Daphnia sp.	F	1	10	10	0.003999883	0.019999416		0.039998832	0.199994162
Azimuth	Nunavut	2015	15-25-08 - QA	1/10	7/18/2015	MAM-02-S-QA		Cladoceran	CRCL		Holopedium gibberum	F	20	10	200	0.002497062	0.012485309		0.499412353	2.497061764
Azimuth	Nunavut	2015	15-25-08 - QA	1/10	7/18/2015	MAM-02-S-QA		Cladoceran	CRCL		Holopedium gibberum	F	11	10	110	0.002497062	0.012485309		0.274676794	1.37338397
Azimuth	Nunavut	2015	15-25-08 - QA	3/100	7/18/2015	MAM-02-S-QA		Rotifer	ROTI		Kellicottia sp.	n/a	157	33.33333333	5233.333333	0.001252192	0.012521918		6.553137267	65.53137267
Azimuth	Nunavut	2015	15-25-08 - QA	3/100	7/18/2015	MAM-02-S-QA		Rotifer	ROTI		Polyarthra sp.	n/a	14	33.33333333	466.6666667	7.16125E-05	0.000716125		0.033419182	0.334191822
Azimuth	Nunavut	2015	15-25-08 - QA	1/100	7/18/2015	MAM-02-S-QA		Rotifer	ROTI		Synchaeta sp.	n/a	1	100	100	0.009388446	0.093884464		0.938844638	9.388446377
Azimuth	Nunavut	2015	15-25-09	1		DUP-July-Amaruq		Cladoceran	CRCL		Bosmina sp.	F	2	1	2	0.008880563	0.044402816		0.017761126	0.088805631
Azimuth	Nunavut	2015	15-25-09	2/10		DUP-July-Amaruq		Calanoid	CRCO		Calanoida indet.	I-IV	20	20	400	0.004802846	0.121691779		1.921138559	48.6767118
Azimuth	Nunavut	2015	15-25-09	3/100		DUP-July-Amaruq		Calanoid	CRCO		Calanoida indet.	nauplius	34	33.33333333	1133.333333	0.000177853	0.000889266		0.201566905	1.007834524
Azimuth	Nunavut	2015	15-25-09	3/100		DUP-July-Amaruq		Rotifer	ROTI		Conochilus sp.	n/a	26	33.33333333	866.6666667	0.000146136	0.001461355		0.126650809	1.266508088
Azimuth	Nunavut	2015	15-25-09	2/10		DUP-July-Amaruq		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	171	20	3420	0.001389335	0.006946677		4.75152701	23.75763505
Azimuth	Nunavut	2015	15-25-09	2/10		DUP-July-Amaruq		Cyclopoid	CRCO		Cyclopoida indet.	M	5	20	100	0.005042793	0.025213967		0.504279335	2.521396677
Azimuth	Nunavut	2015	15-25-09	3/100		DUP-July-Amaruq		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	9	33.33333333	300	2.00168E-05	0.000100084		0.006005051	0.030025256
Azimuth	Nunavut	2015	15-25-09	2/10		DUP-July-Amaruq		Cyclopoid	CRCO		Cyclopoida indet.	V	3	20	60	0.005042793	0.025213967		0.302567601	1.512838006
Azimuth	Nunavut	2015	15-25-09	2/10		DUP-July-Amaruq		Cyclopoid	CRCO		Cyclopoida indet.	V	33	20	660	0.005042793	0.025213967		3.328243613	16.64121807
Azimuth	Nunavut	2015	15-25-09	2/10		DUP-July-Amaruq		Cyclopoid	CRCO		Cyclops scutifer	F	28	20	560	0.007235588	0.036177938		4.05192908	20.2596454
Azimuth	Nunavut	2015	15-25-09	2/10		DUP-July-Amaruq		Cyclopoid	CRCO		Cyclops scutifer	M	32	20	640	0.005185998	0.025929991		3.319038806	16.59519403
Azimuth	Nunavut	2015	15-25-09	1		DUP-July-Amaruq		Cladoceran	CRCL		Daphnia ambigua	F	2	1	2	0.002148681	0.012892088		0.004297363	0.025784177
Azimuth	Nunavut	2015	15-25-09	1		DUP-July-Amaruq		Cladoceran	CRCL		Daphnia middendorffiana	F	1	1	1	0.021219637	0.106098184		0.021219637	0.106098184
Azimuth	Nunavut	2015	15-25-09	2/10		DUP-July-Amaruq		Cladoceran	CRCL		Holopedium gibberum	F	3	20	60	0.002497062	0.012485309		0.149823706	0.749118529
Azimuth	Nunavut	2015	15-25-09	2/10		DUP-July-Amaruq		Cladoceran	CRCL		Holopedium gibberum	F	6	20	120	0.002497062	0.012485309		0.299647412	1.498237059
Azimuth	Nunavut	2015	15-25-09	3/100		DUP-July-Amaruq		Rotifer	ROTI		Kellicottia sp.	n/a	106	33.33333333	3533.333333	0.001252192	0.012521918		4.424411148	44.24411148
Azimuth	Nunavut	2015	15-25-09	3/100		DUP-July-Amaruq		Rotifer	ROTI		Keratella sp.	n/a	1	33.33333333	33.33333333	0.000105538	0.001055381		0.003517938	0.035179375
Azimuth	Nunavut	2015	15-25-09	1		DUP-July-Amaruq		Cladoceran	CRCL		Leptodora kindtii	F	1	1	1	0.041665665	0.208328325		0.041665665	0.208328325
Azimuth	Nunavut	2015	15-25-09	3/100		DUP-July-Amaruq		Rotifer	ROTI		Polyarthra sp.	n/a	7	33.33333333	233.3333333	7.16125E-05	0.000716125		0.016709591	0.167095911
Azimuth	Nunavut	2015	15-25-09	3/100		DUP-July-Amaruq		Rotifer	ROTI		Synchaeta sp.	n/a	5	33.33333333	166.6666667	0.009388446	0.093884464		1.564741063	15.64741063
Azimuth	Nunavut	2015	15-25-10	3/100	8/22/2015	WTN-03-S		Calanoid	CRCO		Calanoida indet.	nauplius	3	33.33333333	100	0.000177853	0.000889266		0.017785315	0.088926576
Azimuth	Nunavut	2015	15-25-10	3/100	8/22/2015	WTN-03-S		Rotifer	ROTI		Conochilus sp.	n/a	134	33.33333333	4466.666667	0.000146136	0.001461355		0.652738784	6.527387838
Azimuth	Nunavut	2015	15-25-10	2/100	8/22/2015	WTN-03-S		Rotifer	ROTI		Conochilus sp.	n/a	3	50	150	0.000146136	0.001461355		0.021920332	0.219203323
Azimuth	Nunavut	2015	15-25-10	2/10	8/22/2015	WTN-03-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	98	5	490	0.001389335	0.006946677		0.680774338	3.403871688
Azimuth	Nunavut	2015	15-25-10	3/100	8/22/2015	WTN-03-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	101	33.33333333	3366.666667	2.00168E-05	0.000100084		0.067390019	0.336950095
Azimuth	Nunavut	2015	15-25-10	2/10	8/22/2015	WTN-03-S		Cyclopoid	CRCO		Cyclopoida indet.	V	31	5	155	0.005042793	0.025213967		0.78163297	3.908164849
Azimuth	Nunavut	2015	15-25-10	2/10	8/22/2015	WTN-03-S		Cyclopoid	CRCO		Cyclops scutifer	F	23	5	115	0.007235588	0.036177938		0.832092579	4.160462895
Azimuth	Nunavut	2015	15-25-10	2/10	8/22/2015	WTN-03-S		Cyclopoid	CRCO		Cyclops scutifer	M	2	5	10	0.005185998	0.025929991		0.051859981	0.259299907
Azimuth	Nunavut	2015	15-25-10	2/10	8/22/2015	WTN-03-S		Cladoceran	CRCL		Daphnia middendorffiana	F	4	5	20	0.021219637	0.106098184		0.424392737	2.121963685
Azimuth	Nunavut	2015	15-25-10	2/10	8/22/2015	WTN-03-S		Calanoid	CRCO		Heterocope septentrionalis	F	2	5	10	0.094287498	0.471437491		0.942874982	4.714374911
Azimuth	Nunavut	2015	15-25-10	2/10	8/22/2015	WTN-03-S		Calanoid	CRCO		Heterocope septentrionalis	M	3	5	15	0.091438074	0.457190372		1.371571116	6.857855578
Azimuth	Nunavut	2015	15-25-10	2/10	8/22/2015	WTN-03-S		Cladoceran	CRCL		Holopedium gibberum	F	8	5	40	0.002497062	0.012485309		0.099882471	0.499412353
Azimuth	Nunavut	2015	15-25-10	3/100	8/22/2015	WTN-03-S		Rotifer	ROTI		Kellicottia sp.	n/a	170	33.33333333	5666.666667	0.001252192	0.012521918		7.095753728	70.95753728
Azimuth	Nunavut	2015	15-25-10	2/10	8/22/2015	WTN-03-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	30	5	150	0.015622034	0.471437491		2.343305172	70.71562366
Azimuth	Nunavut	2015	15-25-10	2/10	8/22/2015	WTN-03-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	24	5	120	0.013365482	0.457190372		1.603857788	54.86284462
Azimuth	Nunavut	2015	15-25-10	2/10	8/22/2015	WTN-03-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	V	3	5	15	0.013365482	0.457190372		0.200482223	6.857855578
Azimuth	Nunavut	2015	15-25-10	3/100	8/22/2015	WTN-03-S		Rotifer	ROTI		Polyarthra sp.	n/a	7	33.33333333	233.3333333	7.16125E-05	0.000716125		0.016709591	0.167095911
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Calanoid	CRCO		Calanoida indet.	I-IV	1	3.333333333	3.333333333	0.004802846	0.121691779		0.016009488	0.405639265
Azimuth	Nunavut	2015	15-25-11	3/100	8/22/2015	WTN-04-S		Calanoid	CRCO		Calanoida indet.	nauplius	5	33.33333333	166.6666667	0.000177853	0.000889266		0.029642192	0.148210959
Azimuth	Nunavut	2015	15-25-11	3/100	8/22/2015	WTN-04-S		Rotifer	ROTI		Conochilus sp.	n/a	78	33.33333333	2600	0.000146136	0.001461355		0.379952426	3.799524264
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	99	3.333333333	330	0.001389335	0.006946677		0.458480676	2.292403382
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Cyclopoid	CRCO		Cyclopoida indet.	M	1	3.333333333	3.333333333	0.005042793	0.025213967		0.016809311	0.084046556
Azimuth	Nunavut	2015	15-25-11	3/100	8/22/2015	WTN-04-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	124	33.33333333	4133.333333	2.00168E-05	0.000100084		0.082736261	0.413681305
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Cyclopoid	CRCO		Cyclopoida indet.	V	35	3.333333333	116.6666667	0.005042793	0.025213967		0.588325891	2.941629456
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Cyclopoid	CRCO		Cyclops scutifer	F	12	3.333333333	40	0.007235588	0.036177938		0.289423506	1.447117529
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Cyclopoid	CRCO		Cyclops scutifer	M	1	3.333333333	3.333333333	0.005185998	0.025929991		0.01728666	0.086433302
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	3.333333333	3.333333333	0.021219637	0.106098184		0.070732123	0.353660614
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Calanoid	CRCO		Heterocope septentrionalis	F	4	3.333333333	13.33333333	0.094287498	0.471437491		1.257166643	6.285833215
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Calanoid	CRCO		Heterocope septentrionalis	M	1	3.333333333	3.333333333	0.091438074	0.457190372		0.304793581	1.523967906
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Cladoceran	CRCL		Holopedium gibberum	F	2	3.333333333	6.666666667	0.002497062	0.012485309		0.016647078	0.083235392

Zooplankton raw count data for abundance calculations and biomass calculations, Azimuth Nunavut 2015

Client	Project	Year	Biologica #	Split	Date	Client ID	Fraction	Major Group	Groupcode	Family	Taxon	Stage	Raw Abundance	Split Multiplier	Total Abundance	Mean DW Biomass_mg	Mean WW Biomass_mg	Biomass assumptions	Total DW Biomass_mg	Total WW Biomass _mg
Azimuth	Nunavut	2015	15-25-11	3/100	8/22/2015	WTN-04-S		Rotifer	ROTI		Kellicottia sp.	n/a	163	33.33333333	5433.333333	0.001252192	0.012521918		6.803575633	68.03575633
Azimuth	Nunavut	2015	15-25-11	1/100	8/22/2015	WTN-04-S		Rotifer	ROTI		Keratella sp.	n/a	1	100	100	0.000105538	0.001055381		0.010553813	0.105538125
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	28	3.333333333	93.33333333	0.015622034	0.471437491		1.458056552	44.0008325
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	10	3.333333333	33.33333333	0.013365482	0.457190372		0.445516052	15.23967906
Azimuth	Nunavut	2015	15-25-11	3/10	8/22/2015	WTN-04-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	V	2	3.333333333	6.666666667	0.013365482	0.457190372		0.08910321	3.047935812
Azimuth	Nunavut	2015	15-25-11	3/100	8/22/2015	WTN-04-S		Rotifer	ROTI		Polyarthra sp.	n/a	9	33.33333333	300	7.16125E-05	0.000716125		0.02148376	0.2148376
Azimuth	Nunavut	2015	15-25-12	1/100	9/18/2015	WTN-05-S		Rotifer	ROTI		Asplanchna sp.	n/a	1	100	100	7.80401E-05	0.002001028		0.007804008	0.20010276
Azimuth	Nunavut	2015	15-25-12	3/100	9/18/2015	WTN-05-S		Calanoid	CRCO		Calanoida indet.	nauplius	7	33.33333333	233.3333333	0.000177853	0.000889266		0.041499069	0.207495343
Azimuth	Nunavut	2015	15-25-12	3/100	9/18/2015	WTN-05-S		Rotifer	ROTI		Conochilus sp.	n/a	56	33.33333333	1866.666667	0.000146136	0.001461355		0.272786357	2.727863574
Azimuth	Nunavut	2015	15-25-12	1/2	9/18/2015	WTN-05-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	142	2	284	0.001389335	0.006946677		0.394571249	1.972856244
Azimuth	Nunavut	2015	15-25-12	3/100	9/18/2015	WTN-05-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	34	33.33333333	1133.333333	2.00168E-05	0.000100084		0.022685749	0.113428745
Azimuth	Nunavut	2015	15-25-12	1/2	9/18/2015	WTN-05-S		Cyclopoid	CRCO		Cyclopoida indet.	V	31	2	62	0.005042793	0.025213967		0.312653188	1.563265939
Azimuth	Nunavut	2015	15-25-12	1/2	9/18/2015	WTN-05-S		Cyclopoid	CRCO		Cyclops scutifer	F	38	2	76	0.007235588	0.036177938		0.549904661	2.749523304
Azimuth	Nunavut	2015	15-25-12	1/2	9/18/2015	WTN-05-S		Cyclopoid	CRCO		Cyclops scutifer	M	41	2	82	0.005185998	0.025929991		0.425251847	2.126259235
Azimuth	Nunavut	2015	15-25-12	1/2	9/18/2015	WTN-05-S		Cladoceran	CRCL		Daphnia sp.	F	2	2	4	0.003999883	0.019999416		0.015999533	0.079997665
Azimuth	Nunavut	2015	15-25-12	1/2	9/18/2015	WTN-05-S		Cyclopoid	CRCO		Diacyclops thomasi	F	4	2	8	0.006289189	0.031445943		0.050313509	0.251567547
Azimuth	Nunavut	2015	15-25-12	1/2	9/18/2015	WTN-05-S		Cyclopoid	CRCO		Diacyclops thomasi	M	7	2	14	0.004170636	0.020853182		0.05838891	0.291944551
Azimuth	Nunavut	2015	15-25-12	3/100	9/18/2015	WTN-05-S		Rotifer	ROTI		Kellicottia sp.	n/a	105	33.33333333	3500	0.001252192	0.012521918		4.38267142	43.8267142
Azimuth	Nunavut	2015	15-25-12	1/2	9/18/2015	WTN-05-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	8	2	16	0.015622034	0.471437491		0.249952552	7.542999858
Azimuth	Nunavut	2015	15-25-12	1/2	9/18/2015	WTN-05-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	5	2	10	0.013365482	0.457190372		0.133654816	4.571903718
Azimuth	Nunavut	2015	15-25-12	2/100	9/18/2015	WTN-05-S		Rotifer	ROTI		Polyarthra sp.	n/a	3	50	150	7.16125E-05	0.000716125		0.01074188	0.1074188
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Calanoid	CRCO		Calanoida indet.	I-IV	3	5	15	0.004802846	0.121691779		0.072042696	1.825376692
Azimuth	Nunavut	2015	15-25-13	3/100	9/18/2015	WTN-06-S		Calanoid	CRCO		Calanoida indet.	nauplius	15	33.33333333	500	0.000177853	0.000889266		0.088926576	0.444632878
Azimuth	Nunavut	2015	15-25-13	3/100	9/18/2015	WTN-06-S		Calanoid	CRCO		Calanoida indet.	nauplius	3	33.33333333	100	0.000177853	0.000889266		0.017785315	0.088926576
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Calanoid	CRCO		Calanoida indet.	V	6	5	30	0.013365482	0.457190372		0.400964447	13.71571116
Azimuth	Nunavut	2015	15-25-13	3/100	9/18/2015	WTN-06-S		Rotifer	ROTI		Conochilus sp.	n/a	44	33.33333333	1466.666667	0.000146136	0.001461355		0.214332138	2.14332138
Azimuth	Nunavut	2015	15-25-13	3/100	9/18/2015	WTN-06-S		Rotifer	ROTI		Conochilus sp.	n/a	84	33.33333333	2800	0.000146136	0.001461355		0.409179536	4.091795361
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	103	5	515	0.001389335	0.006946677		0.715507722	3.577538611
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	105	5	525	0.001389335	0.006946677		0.729401076	3.64700538
Azimuth	Nunavut	2015	15-25-13	3/100	9/18/2015	WTN-06-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	52	33.33333333	1733.333333	2.00168E-05	0.000100084		0.034695851	0.173479257
Azimuth	Nunavut	2015	15-25-13	3/100	9/18/2015	WTN-06-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	93	33.33333333	3100	2.00168E-05	0.000100084		0.062052196	0.310260978
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Cyclopoid	CRCO		Cyclopoida indet.	V	60	5	300	0.005042793	0.025213967		1.512838006	7.56419003
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Cyclopoid	CRCO		Cyclopoida indet.	V	36	5	180	0.005042793	0.025213967		0.907702804	4.538514018
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Cyclopoid	CRCO		Cyclops scutifer	F	85	5	425	0.007235588	0.036177938		3.075124748	15.37562374
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Cyclopoid	CRCO		Cyclops scutifer	F	15	5	75	0.007235588	0.036177938		0.542669073	2.713345366
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Cyclopoid	CRCO		Cyclops scutifer	M	125	5	625	0.005185998	0.025929991		3.241248834	16.20624417
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Cladoceran	CRCL		Daphnia sp.	F	2	5	10	0.003999883	0.019999416		0.039998832	0.199994162
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Cyclopoid	CRCO		Diacyclops thomasi	F	9	5	45	0.006289189	0.031445943		0.283013491	1.415067454
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Cyclopoid	CRCO		Diacyclops thomasi	M	12	5	60	0.004170636	0.020853182		0.250238186	1.251190931
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Calanoid	CRCO		Heterocope septentrionalis	F	4	5	20	0.094287498	0.471437491		1.885749964	9.428749822
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Calanoid	CRCO		Heterocope septentrionalis	F	3	5	15	0.094287498	0.471437491		1.414312473	7.071562366
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Calanoid	CRCO		Heterocope septentrionalis	M	7	5	35	0.091438074	0.457190372		3.200332603	16.00166301
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Calanoid	CRCO		Heterocope septentrionalis	M	4	5	20	0.091438074	0.457190372		1.828761487	9.143807437
Azimuth	Nunavut	2015	15-25-13	3/100	9/18/2015	WTN-06-S		Rotifer	ROTI		Kellicottia sp.	n/a	134	33.33333333	4466.666667	0.001252192	0.012521918		5.593123527	55.93123527
Azimuth	Nunavut	2015	15-25-13	3/100	9/18/2015	WTN-06-S		Rotifer	ROTI		Kellicottia sp.	n/a	284	33.33333333	9466.666667	0.001252192	0.012521918		11.8540827	118.540827
Azimuth	Nunavut	2015	15-25-13	1/100	9/18/2015	WTN-06-S		Rotifer	ROTI		Keratella sp.	n/a	2	100	200	0.000105538	0.001055381		0.021107625	0.21107625
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	27	5	135	0.015622034	0.471437491		2.108974655	63.6440613
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	23	5	115	0.015622034	0.471437491		1.796533965	54.21531148
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	9	5	45	0.013365482	0.457190372		0.60144667	20.57356673
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	30	5	150	0.013365482	0.457190372		2.004822235	68.57855578
Azimuth	Nunavut	2015	15-25-13	2/10	9/18/2015	WTN-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	V	1	5	5	0.013365482	0.457190372		0.066827408	2.285951859
Azimuth	Nunavut	2015	15-25-13	3/100	9/18/2015	WTN-06-S		Rotifer	ROTI		Polyarthra sp.	n/a	6	33.33333333	200	7.16125E-05	0.000716125		0.014322507	0.143225066
Azimuth	Nunavut	2015	15-25-14	2/10	8/22/2015	WTS-03-S		Calanoid	CRCO		Calanoida indet.	I-IV	3	5	15	0.004802846	0.121691779		0.072042696	1.825376692
Azimuth	Nunavut	2015	15-25-14	3/100	8/22/2015	WTS-03-S		Calanoid	CRCO		Calanoida indet.	nauplius	3	33.33333333	100	0.000177853	0.000889266		0.017785315	0.088926576
Azimuth	Nunavut	2015	15-25-14	2/10	8/22/2015	WTS-03-S		Calanoid	CRCO		Calanoida indet.	V	6	5	30	0.013365482	0.457190372		0.400964447	13.71571116
Azimuth	Nunavut	2015	15-25-14	3/100	8/22/2015	WTS-03-S		Rotifer	ROTI		Conochilus sp.	n/a	84	33.33333333	2800	0.000146136	0.001461355		0.409179536	4.091795361
Azimuth	Nunavut	2015	15-25-14	2/10	8/22/2015	WTS-03-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	105	5	525	0.001389335	0.006946677		0.729401076	3.64700538
Azimuth	Nunavut	2015	15-25-14	3/100	8/22/2015	WTS-03-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	93	33.33333333	3100	2.00168E-05	0.000100084		0.062052196	0.310260978
Azimuth	Nunavut	2015	15-25-14	2/10	8/22/2015	WTS-03-S		Cyclopoid	CRCO		Cyclopoida indet.	V	36	5	180	0.005042793	0.025213967		0.907702804	4.538514018
Azimuth	Nunavut	2015	15-25-14	2/10	8/22/2015	WTS-03-S		Cyclopoid	CRCO		Cyclops scutifer	F	15	5	75	0.007235588	0.036177938		0.542669073	2.713345366
Azimuth	Nunavut	2015	15-25-14	2/10	8/22/2015	WTS-03-S		Calanoid	CRCO		Heterocope septentrionalis	F	3	5	15	0.094287498	0.471437491		1.414312473	7.071562366
Azimuth	Nunavut	2015	15-25-14	2/10	8/22/2015	WTS-03-S		Calanoid	CRCO		Heterocope septentrionalis	M	4	5	20	0.091438074	0.457190372		1.828761487	9.143807437
Azimuth	Nunavut	2015	15-25-14	3/100	8/22/2015	WTS-03-S		Rotifer	ROTI		Kellicottia sp.	n/a	284	33.33333333	9466.666667	0.001252192	0.012521918		11.8540827	118.540827
Azimuth	Nunavut	2015	15-25-14	1/100	8/22/2015	WTS-03-S		Rotifer	ROTI		Keratella sp.	n/a	2	100	200	0.000105538	0.001055381		0.021107625	0.21107625
Azimuth	Nunavut	2015	15-25-14	2/10	8/22/2015	WTS-03-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	23	5	115	0.015622034	0.471437491		1.796533965	54.21531148
Azimuth	Nunavut	2015	15-25-14	2/10	8/22/2015	WTS-03-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	30	5	150	0.013365482	0.457190372		2.004822235	68.57855578
Azimuth	Nunavut	2015	15-25-14	3/100	8/22/2015	WTS-03-S		Rotifer	ROTI		Polyarthra sp.	n/a	6	33.33333333	200	7.16125E-05	0.000716125		0.014322507	0.143225066
Azimuth	Nunavut	2015	15-25-15	2/100	8/21/2015	WTS-04-S		Rotifer	ROTI		Asplanchna sp.	n/a	2	50	100	7.80401E-05	0.002001028		0.007804008	0.20010276
Azimuth	Nunavut	2015	15-25-15	3/100	8/21/2015	WTS-04-S		Calanoid	CRCO		Calanoida indet.	nauplius	27	33.33333333	900	0.000177853	0.000889266		0.160067836	0.800339181
Azimuth	Nunavut	2015	15-25-15	2/10	8/21/2015	WTS-04-S		Calanoid	CRCO		Calanoida indet.	V	1	5	5	0.013365482	0.457190372		0.066827408	2.285951859
Azimuth	Nunavut	2015	15-25-15	3/100	8/21/2015	WTS-04-S		Rotifer	ROTI		Conochilus sp.	n/a	66	33.33333333	2200	0.000146136	0.001461355		0.321498207	3.214982069
Azimuth	Nunavut	2015	15-25-15	2/100	8/21/2015	WTS-04-S		Rotifer	ROTI		Conochilus sp.	n/a	2	50	100	0.000146136	0.001461355		0.014613555	0.146135549
Azimuth	Nunavut	2015	15-25-15	2/10	8/21/2015	WTS-04-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	108	5	540	0.001389335	0.006946677		0.750241107	3.751205534

Zooplankton raw count data for abundance calculations and biomass calculations, Azimuth Nunavut 2015

Client	Project	Year	Biologica #	Split	Date	Client ID	Fraction	Major Group	Groupcode	Family	Taxon	Stage	Raw Abundance	Split Multiplier	Total Abundance	Mean DW Biomass_mg	Mean WW Biomass_mg	Biomass assumptions	Total DW Biomass_mg	Total WW Biomass _mg
Azimuth	Nunavut	2015	15-25-15	3/100	8/21/2015	WTS-04-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	51	33.33333333	1700	2.00168E-05	0.000100084		0.034028623	0.170143117
Azimuth	Nunavut	2015	15-25-15	2/10	8/21/2015	WTS-04-S		Cyclopoid	CRCO		Cyclopoida indet.	V	26	5	130	0.005042793	0.025213967		0.655563136	3.27781568
Azimuth	Nunavut	2015	15-25-15	2/10	8/21/2015	WTS-04-S		Cyclopoid	CRCO		Cyclops scutifer	F	10	5	50	0.007235588	0.036177938		0.361779382	1.808896911
Azimuth	Nunavut	2015	15-25-15	2/10	8/21/2015	WTS-04-S		Cyclopoid	CRCO		Cyclops scutifer	M	1	5	5	0.005185998	0.025929991		0.025929991	0.129649953
Azimuth	Nunavut	2015	15-25-15	2/10	8/21/2015	WTS-04-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	5	5	0.021219637	0.106098184		0.106098184	0.530490921
Azimuth	Nunavut	2015	15-25-15	2/10	8/21/2015	WTS-04-S		Cyclopoid	CRCO		Diacyclops thomasi	M	1	5	5	0.004170636	0.020853182		0.020853182	0.104265911
Azimuth	Nunavut	2015	15-25-15	2/10	8/21/2015	WTS-04-S		Calanoid	CRCO		Heterocope septentrionalis	F	5	5	25	0.094287498	0.471437491		2.357187455	11.78593728
Azimuth	Nunavut	2015	15-25-15	3/100	8/21/2015	WTS-04-S		Rotifer	ROTI		Kellicottia sp.	n/a	210	33.33333333	7000	0.001252192	0.012521918		8.765342841	87.65342841
Azimuth	Nunavut	2015	15-25-15	2/10	8/21/2015	WTS-04-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	27	5	135	0.015622034	0.471437491		2.108974655	63.6440613
Azimuth	Nunavut	2015	15-25-15	2/10	8/21/2015	WTS-04-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	29	5	145	0.013365482	0.457190372		1.937994827	66.29260392
Azimuth	Nunavut	2015	15-25-15	2/100	8/21/2015	WTS-04-S		Rotifer	ROTI		Polyarthra sp.	n/a	2	50	100	7.16125E-05	0.000716125		0.007161253	0.071612533
Azimuth	Nunavut	2015	15-25-16	3/100	9/18/2015	WTS-05-S		Calanoid	CRCO		Calanoida indet.	nauplius	24	33.33333333	800	0.000177853	0.000889266		0.142282521	0.711412605
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Calanoid	CRCO		Calanoida indet.	V	3	5	15	0.013365482	0.457190372		0.200482223	6.857855578
Azimuth	Nunavut	2015	15-25-16	3/100	9/18/2015	WTS-05-S		Rotifer	ROTI		Conochilus sp.	n/a	9	33.33333333	300	0.000146136	0.001461355		0.043840665	0.438406646
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	84	5	420	0.001389335	0.006946677		0.583520861	2.917604304
Azimuth	Nunavut	2015	15-25-16	3/100	9/18/2015	WTS-05-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	40	33.33333333	1333.333333	2.00168E-05	0.000100084		0.026689116	0.133445582
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Cyclopoid	CRCO		Cyclopoida indet.	V	22	5	110	0.005042793	0.025213967		0.554707269	2.773536344
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Cyclopoid	CRCO		Cyclops scutifer	F	50	5	250	0.007235588	0.036177938		1.808896911	9.044484554
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Cyclopoid	CRCO		Cyclops scutifer	M	44	5	220	0.005185998	0.025929991		1.140919589	5.704597947
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Cladoceran	CRCL		Daphnia middendorffiana	F	2	5	10	0.021219637	0.106098184		0.212196369	1.060981843
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Cladoceran	CRCL		Daphnia sp.	F	1	5	5	0.003999883	0.019999416		0.019999416	0.099997081
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Cyclopoid	CRCO		Diacyclops thomasi	F	6	5	30	0.006289189	0.031445943		0.18867566	0.943378302
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Cyclopoid	CRCO		Diacyclops thomasi	M	1	5	5	0.004170636	0.020853182		0.020853182	0.104265911
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Calanoid	CRCO		Heterocope septentrionalis	F	2	5	10	0.094287498	0.471437491		0.942874982	4.714374911
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Calanoid	CRCO		Heterocope septentrionalis	M	1	5	5	0.091438074	0.457190372		0.457190372	2.285951859
Azimuth	Nunavut	2015	15-25-16	3/100	9/18/2015	WTS-05-S		Rotifer	ROTI		Kellicottia sp.	n/a	97	33.33333333	3233.333333	0.001252192	0.012521918		4.048753598	40.48753598
Azimuth	Nunavut	2015	15-25-16	3/100	9/18/2015	WTS-05-S		Rotifer	ROTI		Keratella sp.	n/a	3	33.33333333	100	0.000105538	0.001055381		0.010553813	0.105538125
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	10	5	50	0.015622034	0.471437491		0.781101724	23.57187455
Azimuth	Nunavut	2015	15-25-16	2/10	9/18/2015	WTS-05-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	5	5	25	0.013365482	0.457190372		0.334137039	11.4297593
Azimuth	Nunavut	2015	15-25-16	3/100	9/18/2015	WTS-05-S		Rotifer	ROTI		Polyarthra sp.	n/a	4	33.33333333	133.3333333	7.16125E-05	0.000716125		0.009548338	0.095483378
Azimuth	Nunavut	2015	15-25-16-QA	3/100	9/18/2015	WTS-05-S-QA		Calanoid	CRCO		Calanoida indet.	nauplius	24	33.33333333	800	0.000177853	0.000889266		0.142282521	0.711412605
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Calanoid	CRCO		Calanoida indet.	V	1	5	5	0.013365482	0.457190372		0.066827408	2.285951859
Azimuth	Nunavut	2015	15-25-16-QA	3/100	9/18/2015	WTS-05-S-QA		Rotifer	ROTI		Conochilus sp.	n/a	6	33.33333333	200	0.000146136	0.001461355		0.02922711	0.292271097
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Cyclopoid	CRCO		Cyclopoida indet.	F	46	5	230	0.005042793	0.025213967		1.159842471	5.799212356
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Cyclopoid	CRCO		Cyclopoida indet.	M	38	5	190	0.005042793	0.025213967		0.958130737	4.790653685
Azimuth	Nunavut	2015	15-25-16-QA	3/100	9/18/2015	WTS-05-S-QA		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	43	33.33333333	1433.333333	2.00168E-05	0.000100084		0.0286908	0.143454001
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Cladoceran	CRCL		Daphnia middendorffiana	F	1	5	5	0.021219637	0.106098184		0.106098184	0.530490921
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Cladoceran	CRCL		Daphnia sp.	F	1	5	5	0.003999883	0.019999416		0.019999416	0.099997081
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Cyclopoid	CRCO		Diacyclops thomasi	F	5	5	25	0.006289189	0.031445943		0.157229717	0.786148585
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Cyclopoid	CRCO		Diacyclops thomasi	I-IV	86	5	430	0.001389335	0.006946677		0.597414215	2.987071074
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Cyclopoid	CRCO		Diacyclops thomasi	M	3	5	15	0.004170636	0.020853182		0.062559547	0.312797733
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Cyclopoid	CRCO		Diacyclops thomasi	V	17	5	85	0.005042793	0.025213967		0.428637435	2.143187175
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Calanoid	CRCO		Heterocope septentrionalis	F	1	5	5	0.094287498	0.471437491		0.471437491	2.357187455
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Calanoid	CRCO		Heterocope septentrionalis	M	3	5	15	0.091438074	0.457190372		1.371571116	6.857855578
Azimuth	Nunavut	2015	15-25-16-QA	3/100	9/18/2015	WTS-05-S-QA		Rotifer	ROTI		Kellicottia sp.	n/a	125	33.33333333	4166.666667	0.001252192	0.012521918		5.217465977	52.17465977
Azimuth	Nunavut	2015	15-25-16-QA	3/100	9/18/2015	WTS-05-S-QA		Rotifer	ROTI		Keratella sp.	n/a	2	33.33333333	66.66666667	0.000105538	0.001055381		0.007035875	0.07035875
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	7	5	35	0.015622034	0.471437491		0.546771207	16.50031219
Azimuth	Nunavut	2015	15-25-16-QA	2/10	9/18/2015	WTS-05-S-QA		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	8	5	40	0.013365482	0.457190372		0.534619263	18.28761487
Azimuth	Nunavut	2015	15-25-16-QA	3/100	9/18/2015	WTS-05-S-QA		Rotifer	ROTI		Polyarthra sp.	n/a	3	33.33333333	100	7.16125E-05	0.000716125		0.007161253	0.071612533
Azimuth	Nunavut	2015	15-25-17	3/100	9/18/2015	WTS-06-S		Calanoid	CRCO		Calanoida indet.	nauplius	18	33.33333333	600	0.000177853	0.000889266		0.106711891	0.533559454
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Calanoid	CRCO		Calanoida indet.	V	4	3.333333333	13.33333333	0.013365482	0.457190372		0.178206421	6.095871625
Azimuth	Nunavut	2015	15-25-17	3/100	9/18/2015	WTS-06-S		Rotifer	ROTI		Conochilus sp.	n/a	14	33.33333333	466.6666667	0.000146136	0.001461355		0.068196589	0.681965894
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Cyclopoid	CRCO		Cyclopoida indet.	F	9	3.333333333	30	0.005042793	0.025213967		0.151283801	0.756419003
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	100	3.333333333	333.3333333	0.001389335	0.006946677		0.463111794	2.315558972
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Cyclopoid	CRCO		Cyclopoida indet.	M	5	3.333333333	16.66666667	0.005042793	0.025213967		0.084046556	0.420232779
Azimuth	Nunavut	2015	15-25-17	3/100	9/18/2015	WTS-06-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	25	33.33333333	833.3333333	2.00168E-05	0.000100084		0.016680698	0.083403489
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Cyclopoid	CRCO		Cyclopoida indet.	V	42	3.333333333	140	0.005042793	0.025213967		0.705991069	3.529955347
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Cyclopoid	CRCO		Cyclops scutifer	F	55	3.333333333	183.3333333	0.007235588	0.036177938		1.326524401	6.632622006
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Cyclopoid	CRCO		Cyclops scutifer	M	69	3.333333333	230	0.005185998	0.025929991		1.192779571	5.963897854
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Cladoceran	CRCL		Daphnia middendorffiana	F	2	3.333333333	6.666666667	0.021219637	0.106098184		0.141464246	0.707321228
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	3.333333333	3.333333333	0.021219637	0.106098184		0.070732123	0.353660614
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Cyclopoid	CRCO		Diacyclops thomasi	F	15	3.333333333	50	0.006289189	0.031445943		0.314459434	1.572297171
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Cyclopoid	CRCO		Diacyclops thomasi	M	7	3.333333333	23.33333333	0.004170636	0.020853182		0.09731485	0.486574251
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Calanoid	CRCO		Heterocope septentrionalis	F	1	3.333333333	3.333333333	0.094287498	0.471437491		0.314291661	1.571458304
Azimuth	Nunavut	2015	15-25-17	3/100	9/18/2015	WTS-06-S		Rotifer	ROTI		Kellicottia sp.	n/a	117	33.33333333	3900	0.001252192	0.012521918		4.883548154	48.83548154
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	21	3.333333333	70	0.015622034	0.471437491		1.093542414	33.00062438
Azimuth	Nunavut	2015	15-25-17	3/10	9/18/2015	WTS-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	4	3.333333333	13.33333333	0.013365482	0.457190372		0.178206421	6.095871625
Azimuth	Nunavut	2015	15-25-17	3/100	9/18/2015	WTS-06-S		Rotifer	ROTI		Polyarthra sp.	n/a	7	33.33333333	233.3333333	7.16125E-05	0.000716125		0.016709591	0.167095911
Azimuth	Nunavut	2015	15-25-18	1/10	8/23/2015	NEM-03-S		Cladoceran	CRCL		Bosmina sp.	F	1	10	10	0.008880563	0.044402816		0.088805631	0.444028157
Azimuth	Nunavut	2015	15-25-18	1/10	8/23/2015	NEM-03-S		Calanoid	CRCO		Calanoida indet.	I-IV	64	10	640	0.004802846	0.121691779		3.073821694	77.88273887
Azimuth	Nunavut	2015	15-25-18	3/100	8/23/2015	NEM-03-S		Calanoid	CRCO		Calanoida indet.	nauplius	4	33.33333333	133.3333333	0.000177853	0.000889266		0.023713754	0.118568768
Azimuth	Nunavut	2015	15-25-18	1/10	8/23/2015	NEM-03-S		Calanoid	CRCO		Calanoida indet.	V	30	10	300	0.013365482	0.457190372		4.009644469	137.1571116
Azimuth	Nunavut	2015	15-25-18	3/100	8/23/2015	NEM-03-S		Rotifer	ROTI		Conochilus sp.	n/a	22	33.33333333	733.3333333	0.000146136	0.001461355		0.107166069	1.07166069

Zooplankton raw count data for abundance calculations and biomass calculations, Azimuth Nunavut 2015

Client	Project	Year	Biologica #	Split	Date	Client ID	Fraction	Major Group	Groupcode	Family	Taxon	Stage	Raw Abundance	Split Multiplier	Total Abundance	Mean DW Biomass_mg	Mean WW Biomass_mg	Biomass assumptions	Total DW Biomass_mg	Total WW Biomass _mg
Azimuth	Nunavut	2015	15-25-18	2/100	8/23/2015	NEM-03-S		Rotifer	ROTI		Conochilus sp.	n/a	2	50	100	0.000146136	0.001461355		0.014613555	0.146135549
Azimuth	Nunavut	2015	15-25-18	1/10	8/23/2015	NEM-03-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	160	10	1600	0.001389335	0.006946677		2.222936613	11.11468306
Azimuth	Nunavut	2015	15-25-18	3/100	8/23/2015	NEM-03-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	140	33.33333333	4666.666667	2.00168E-05	0.000100084		0.093411907	0.467059537
Azimuth	Nunavut	2015	15-25-18	1/100	8/23/2015	NEM-03-S		Cyclopoid	CRCO		Cyclopoida indet.	V	6	10	60	0.005042793	0.025213967		0.302567601	1.512838006
Azimuth	Nunavut	2015	15-25-18	1/10	8/23/2015	NEM-03-S		Cyclopoid	CRCO		Cyclops scutifer	F	9	10	90	0.007235588	0.036177938		0.651202888	3.25601444
Azimuth	Nunavut	2015	15-25-18	1/10	8/23/2015	NEM-03-S		Cladoceran	CRCL		Daphnia middendorffiana	F	3	10	30	0.021219637	0.106098184		0.636589106	3.182945528
Azimuth	Nunavut	2015	15-25-18	3/100	8/23/2015	NEM-03-S		Rotifer	ROTI		Kellicottia sp.	n/a	101	33.33333333	3366.666667	0.001252192	0.012521918		4.215712509	42.15712509
Azimuth	Nunavut	2015	15-25-18	1/10	8/23/2015	NEM-03-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	53	10	530	0.015622034	0.471437491		8.279678275	249.8618703
Azimuth	Nunavut	2015	15-25-18	1/10	8/23/2015	NEM-03-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	76	10	760	0.013365482	0.457190372		10.15776599	347.4646826
Azimuth	Nunavut	2015	15-25-19	1/10	8/23/2015	NEM-04-S		Calanoid	CRCO		Calanoida indet.	I-IV	53	10	530	0.004802846	0.121691779		2.54550859	64.49664313
Azimuth	Nunavut	2015	15-25-19	1/100	8/23/2015	NEM-04-S		Calanoid	CRCO		Calanoida indet.	nauplius	1	100	100	0.000177853	0.000889266		0.017785315	0.088926576
Azimuth	Nunavut	2015	15-25-19	1/10	8/23/2015	NEM-04-S		Calanoid	CRCO		Calanoida indet.	V	24	10	240	0.013365482	0.457190372		3.207715575	109.7256892
Azimuth	Nunavut	2015	15-25-19	3/100	8/23/2015	NEM-04-S		Rotifer	ROTI		Conochilus sp.	n/a	19	33.33333333	633.3333333	0.000146136	0.001461355		0.092552514	0.925525141
Azimuth	Nunavut	2015	15-25-19	1/10	8/23/2015	NEM-04-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	155	10	1550	0.001389335	0.006946677		2.153469844	10.76734922
Azimuth	Nunavut	2015	15-25-19	3/100	8/23/2015	NEM-04-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	171	33.33333333	5700	2.00168E-05	0.000100084		0.114095973	0.570479864
Azimuth	Nunavut	2015	15-25-19	1/10	8/23/2015	NEM-04-S		Cyclopoid	CRCO		Cyclopoida indet.	V	6	10	60	0.005042793	0.025213967		0.302567601	1.512838006
Azimuth	Nunavut	2015	15-25-19	1/10	8/23/2015	NEM-04-S		Cyclopoid	CRCO		Cyclops scutifer	F	6	10	60	0.007235588	0.036177938		0.434135259	2.170676293
Azimuth	Nunavut	2015	15-25-19	1/10	8/23/2015	NEM-04-S		Cyclopoid	CRCO		Cyclops scutifer	M	1	10	10	0.005185998	0.025929991		0.051859981	0.259299907
Azimuth	Nunavut	2015	15-25-19	1/10	8/23/2015	NEM-04-S		Calanoid	CRCO		Heterocope septentrionalis	F	1	10	10	0.094287498	0.471437491		0.942874982	4.714374911
Azimuth	Nunavut	2015	15-25-19	3/100	8/23/2015	NEM-04-S		Rotifer	ROTI		Kellicottia sp.	n/a	95	33.33333333	3166.666667	0.001252192	0.012521918		3.965274142	39.65274142
Azimuth	Nunavut	2015	15-25-19	1/10	8/23/2015	NEM-04-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	45	10	450	0.015622034	0.471437491		7.029915516	212.146871
Azimuth	Nunavut	2015	15-25-19	1/10	8/23/2015	NEM-04-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	47	10	470	0.013365482	0.457190372		6.281776335	214.8794748
Azimuth	Nunavut	2015	15-25-20	Whole	9/19/2015	NEM-05-S		Cladoceran	CRCL		Bosmina sp.	F	1	1	1	0.008880563	0.044402816		0.008880563	0.044402816
Azimuth	Nunavut	2015	15-25-20	3/100	9/19/2015	NEM-05-S		Calanoid	CRCO		Calanoida indet.	nauplius	13	33.33333333	433.3333333	0.000177853	0.000889266		0.077069699	0.385348494
Azimuth	Nunavut	2015	15-25-20	3/100	9/19/2015	NEM-05-S		Rotifer	ROTI		Conochilus sp.	n/a	3	33.33333333	100	0.000146136	0.001461355		0.014613555	0.146135549
Azimuth	Nunavut	2015	15-25-20	1/10	9/19/2015	NEM-05-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	115	10	1150	0.001389335	0.006946677		1.59773569	7.988678452
Azimuth	Nunavut	2015	15-25-20	3/100	9/19/2015	NEM-05-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	162	33.33333333	5400	2.00168E-05	0.000100084		0.108090922	0.540454608
Azimuth	Nunavut	2015	15-25-20	1/10	9/19/2015	NEM-05-S		Cyclopoid	CRCO		Cyclopoida indet.	V	11	10	110	0.005042793	0.025213967		0.554707269	2.773536344
Azimuth	Nunavut	2015	15-25-20	1/10	9/19/2015	NEM-05-S		Cyclopoid	CRCO		Cyclops scutifer	F	2	10	20	0.007235588	0.036177938		0.144711753	0.723558764
Azimuth	Nunavut	2015	15-25-20	Whole	9/19/2015	NEM-05-S		Cladoceran	CRCL		Daphnia middendorffiana	F	2	1	2	0.021219637	0.106098184		0.042439274	0.212196369
Azimuth	Nunavut	2015	15-25-20	Whole	9/19/2015	NEM-05-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	1	1	0.021219637	0.106098184		0.021219637	0.106098184
Azimuth	Nunavut	2015	15-25-20	1/10	9/19/2015	NEM-05-S		Calanoid	CRCO		Heterocope septentrionalis	F	1	10	10	0.094287498	0.471437491		0.942874982	4.714374911
Azimuth	Nunavut	2015	15-25-20	Whole	9/19/2015	NEM-05-S		Cladoceran	CRCL		Holopedium gibberum	F	1	1	1	0.002497062	0.012485309		0.002497062	0.012485309
Azimuth	Nunavut	2015	15-25-20	3/100	9/19/2015	NEM-05-S		Rotifer	ROTI		Kellicottia sp.	n/a	99	33.33333333	3300	0.001252192	0.012521918		4.132233053	41.32233053
Azimuth	Nunavut	2015	15-25-20	2/100	9/19/2015	NEM-05-S		Rotifer	ROTI		Keratella sp.	n/a	3	50	150	0.000105538	0.001055381		0.015830719	0.158307188
Azimuth	Nunavut	2015	15-25-20	1/10	9/19/2015	NEM-05-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	95	10	950	0.015622034	0.471437491		14.84093276	447.8656165
Azimuth	Nunavut	2015	15-25-20	1/10	9/19/2015	NEM-05-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	71	10	710	0.013365482	0.457190372		9.48949191	324.605164
Azimuth	Nunavut	2015	15-25-20	2/100	9/19/2015	NEM-05-S		Rotifer	ROTI		Polyarthra sp.	n/a	2	50	100	7.16125E-05	0.000716125		0.007161253	0.071612533
Azimuth	Nunavut	2015	15-25-21	2/10	9/19/2015	NEM-06-S		Cladoceran	CRCL		Bosmina sp.	F	2	5	10	0.008880563	0.044402816		0.088805631	0.444028157
Azimuth	Nunavut	2015	15-25-21	3/100	9/19/2015	NEM-06-S		Calanoid	CRCO		Calanoida indet.	nauplius	20	33.33333333	666.6666667	0.000177853	0.000889266		0.118568768	0.592843838
Azimuth	Nunavut	2015	15-25-21	3/100	9/19/2015	NEM-06-S		Rotifer	ROTI		Conochilus sp.	n/a	3	33.33333333	100	0.000146136	0.001461355		0.014613555	0.146135549
Azimuth	Nunavut	2015	15-25-21	2/10	9/19/2015	NEM-06-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	102	5	510	0.001389335	0.006946677		0.708561045	3.542805227
Azimuth	Nunavut	2015	15-25-21	3/100	9/19/2015	NEM-06-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	122	33.33333333	4066.666667	2.00168E-05	0.000100084		0.081401805	0.407009025
Azimuth	Nunavut	2015	15-25-21	2/10	9/19/2015	NEM-06-S		Cyclopoid	CRCO		Cyclopoida indet.	V	21	5	105	0.005042793	0.025213967		0.529493302	2.64746651
Azimuth	Nunavut	2015	15-25-21	2/10	9/19/2015	NEM-06-S		Cyclopoid	CRCO		Cyclops scutifer	F	3	5	15	0.007235588	0.036177938		0.108533815	0.542669073
Azimuth	Nunavut	2015	15-25-21	2/10	9/19/2015	NEM-06-S		Calanoid	CRCO		Heterocope septentrionalis	F	3	5	15	0.094287498	0.471437491		1.414312473	7.071562366
Azimuth	Nunavut	2015	15-25-21	3/100	9/19/2015	NEM-06-S		Rotifer	ROTI		Kellicottia sp.	n/a	123	33.33333333	4100	0.001252192	0.012521918		5.133986521	51.33986521
Azimuth	Nunavut	2015	15-25-21	3/100	9/19/2015	NEM-06-S		Rotifer	ROTI		Keratella sp.	n/a	4	33.33333333	133.3333333	0.000105538	0.001055381		0.01407175	0.1407175
Azimuth	Nunavut	2015	15-25-21	2/10	9/19/2015	NEM-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	90	5	450	0.015622034	0.471437491		7.029915516	212.146871
Azimuth	Nunavut	2015	15-25-21	2/10	9/19/2015	NEM-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	107	5	535	0.013365482	0.457190372		7.150532636	244.5968489
Azimuth	Nunavut	2015	15-25-22	1/100	8/24/2015	MAM-03-S		Rotifer	ROTI		Asplanchna sp.	n/a	1	100	100	7.80401E-05	0.002001028		0.007804008	0.20010276
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Cladoceran	CRCL		Bosmina sp.	F	1	33.33333333	33.33333333	0.008880563	0.044402816		0.296018771	1.480093856
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Calanoid	CRCO		Calanoida indet.	nauplius	26	33.33333333	866.6666667	0.000177853	0.000889266		0.154139398	0.770696989
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Rotifer	ROTI		Conochilus sp.	n/a	87	33.33333333	2900	0.000146136	0.001461355		0.423793091	4.23793091
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Rotifer	ROTI		Conochilus sp.	n/a	4	33.33333333	133.3333333	0.000146136	0.001461355		0.01948474	0.194847398
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	105	33.33333333	3500	0.001389335	0.006946677		4.862673841	24.3133692
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	61	33.33333333	2033.333333	2.00168E-05	0.000100084		0.040700903	0.203504513
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Cyclopoid	CRCO		Cyclopoida indet.	V	23	33.33333333	766.6666667	0.005042793	0.025213967		3.866141571	19.33070785
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Cyclopoid	CRCO		Cyclops scutifer	F	7	33.33333333	233.3333333	0.007235588	0.036177938		1.688303783	8.441518917
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	33.33333333	33.33333333	0.021219637	0.106098184		0.707321228	3.536606142
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	33.33333333	33.33333333	0.021219637	0.106098184		0.707321228	3.536606142
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Calanoid	CRCO		Heterocope septentrionalis	F	3	33.33333333	100	0.094287498	0.471437491		9.428749822	47.14374911
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Calanoid	CRCO		Heterocope septentrionalis	M	2	33.33333333	66.66666667	0.091438074	0.457190372		6.095871625	30.47935812
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Rotifer	ROTI		Kellicottia sp.	n/a	154	33.33333333	5133.333333	0.001252192	0.012521918		6.427918083	64.27918083
Azimuth	Nunavut	2015	15-25-22	2/100	8/24/2015	MAM-03-S		Rotifer	ROTI		Keratella sp.	n/a	2	50	100	0.000105538	0.001055381		0.010553813	0.105538125
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	39	33.33333333	1300	0.015622034	0.471437491		20.30864482	612.8687384
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	66	33.33333333	2200	0.013365482	0.457190372		29.40405944	1005.818818
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	V	3	33.33333333	100	0.013365482	0.457190372		1.336548156	45.71903718
Azimuth	Nunavut	2015	15-25-22	3/100	8/24/2015	MAM-03-S		Cyclopoid	CRCO		Microcyclops sp.	F	2	33.33333333	66.66666667	0.000961953	0.004809763		0.064130168	0.320650838
Azimuth	Nunavut	2015	15-25-23	2/100	8/24/2015	MAM-04-S		Rotifer	ROTI		Asplanchna sp.	n/a	2	50	100	7.80401E-05	0.002001028		0.007804008	0.20010276
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Calanoid	CRCO		Calanoida indet.	I-IV	4	1	4	0.004802846	0.121691779		0.019211386	0.486767118
Azimuth	Nunavut	2015	15-25-23	3/100	8/24/2015	MAM-04-S		Calanoid	CRCO		Calanoida indet.	nauplius	13	33.33333333	433.3333333	0.000177853	0.000889266		0.077069699	0.385348494
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Calanoid	CRCO		Calanoida indet.	V	1	1	1	0.013365482	0.457190372		0.013365482	0.457190372

Zooplankton raw count data for abundance calculations and biomass calculations, Azimuth Nunavut 2015

Client	Project	Year	Biologica #	Split	Date	Client ID	Fraction	Major Group	Groupcode	Family	Taxon	Stage	Raw Abundance	Split Multiplier	Total Abundance	Mean DW Biomass_mg	Mean WW Biomass_mg	Biomass assumptions	Total DW Biomass_mg	Total WW Biomass _mg
Azimuth	Nunavut	2015	15-25-23	3/100	8/24/2015	MAM-04-S		Rotifer	ROTI		Conochilus sp.	n/a	47	33.33333333	1566.666667	0.000146136	0.001461355		0.228945693	2.289456928
Azimuth	Nunavut	2015	15-25-23	1/100	8/24/2015	MAM-04-S		Rotifer	ROTI		Conochilus sp.	n/a	1	100	100	0.000146136	0.001461355		0.014613555	0.146135549
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	145	1	145	0.001389335	0.006946677		0.201453631	1.007268153
Azimuth	Nunavut	2015	15-25-23	3/100	8/24/2015	MAM-04-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	74	33.33333333	2466.666667	2.00168E-05	0.000100084		0.049374865	0.246874327
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Cyclopoid	CRCO		Cyclopoida indet.	V	18	1	18	0.005042793	0.025213967		0.09077028	0.453851402
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Cyclopoid	CRCO		Cyclops scutifer	F	12	1	12	0.007235588	0.036177938		0.086827052	0.434135259
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Cyclopoid	CRCO		Cyclops scutifer	M	1	1	1	0.005185998	0.025929991		0.005185998	0.025929991
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	1	1	0.021219637	0.106098184		0.021219637	0.106098184
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Calanoid	CRCO		Heterocope septentrionalis	F	91	1	91	0.094287498	0.471437491		8.580162338	42.90081169
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Calanoid	CRCO		Heterocope septentrionalis	M	46	1	46	0.091438074	0.457190372		4.206151421	21.0307571
Azimuth	Nunavut	2015	15-25-23	3/100	8/24/2015	MAM-04-S		Rotifer	ROTI		Kellicottia sp.	n/a	112	33.33333333	3733.333333	0.001252192	0.012521918		4.674849515	46.74849515
Azimuth	Nunavut	2015	15-25-23	2/100	8/24/2015	MAM-04-S		Rotifer	ROTI		Keratella sp.	n/a	2	50	100	0.000105538	0.001055381		0.010553813	0.105538125
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	5	1	5	0.015622034	0.471437491		0.078110172	2.357187455
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	4	1	4	0.013365482	0.457190372		0.053461926	1.828761487
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	V	4	1	4	0.013365482	0.457190372		0.053461926	1.828761487
Azimuth	Nunavut	2015	15-25-23	Whole	8/24/2015	MAM-04-S		Cyclopoid	CRCO		Microcyclops sp.	F	1	1	1	0.000961953	0.004809763		0.000961953	0.004809763
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Cladoceran	CRCL		Bosmina sp.	F	1	3.333333333	3.333333333	0.008880563	0.044402816		0.029601877	0.148009386
Azimuth	Nunavut	2015	15-25-24	3/100	9/19/2015	MAM-05-S		Calanoid	CRCO		Calanoida indet.	nauplius	11	33.33333333	366.6666667	0.000177853	0.000889266		0.065212822	0.326064111
Azimuth	Nunavut	2015	15-25-24	3/100	9/19/2015	MAM-05-S		Rotifer	ROTI		Conochilus sp.	n/a	7	33.33333333	233.3333333	0.000146136	0.001461355		0.034098295	0.340982947
Azimuth	Nunavut	2015	15-25-24	1/100	9/19/2015	MAM-05-S		Rotifer	ROTI		Conochilus sp.	n/a	1	100	100	0.000146136	0.001461355		0.014613555	0.146135549
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	119	3.333333333	396.6666667	0.001389335	0.006946677		0.551103035	2.755515176
Azimuth	Nunavut	2015	15-25-24	3/100	9/19/2015	MAM-05-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	63	33.33333333	2100	2.00168E-05	0.000100084		0.042035358	0.210176792
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Cyclopoid	CRCO		Cyclopoida indet.	V	11	3.333333333	36.66666667	0.005042793	0.025213967		0.184902423	0.924512115
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Cyclopoid	CRCO		Cyclops scutifer	F	34	3.333333333	113.3333333	0.007235588	0.036177938		0.820033266	4.100166331
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Cyclopoid	CRCO		Cyclops scutifer	M	32	3.333333333	106.6666667	0.005185998	0.025929991		0.553173134	2.765865671
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Cladoceran	CRCL		Daphnia sp.	F	1	3.333333333	3.333333333	0.003999883	0.019999416		0.013332944	0.066664721
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Cyclopoid	CRCO		Diacyclops thomasi	F	2	3.333333333	6.666666667	0.006289189	0.031445943		0.041927925	0.209639623
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Cyclopoid	CRCO		Diacyclops thomasi	M	2	3.333333333	6.666666667	0.004170636	0.020853182		0.027804243	0.139021215
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Calanoid	CRCO		Heterocope septentrionalis	F	2	3.333333333	6.666666667	0.094287498	0.471437491		0.628583321	3.142916607
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Calanoid	CRCO		Heterocope septentrionalis	M	3	3.333333333	10	0.091438074	0.457190372		0.914380744	4.571903718
Azimuth	Nunavut	2015	15-25-24	3/100	9/19/2015	MAM-05-S		Rotifer	ROTI		Kellicottia sp.	n/a	107	33.33333333	3566.666667	0.001252192	0.012521918		4.466150876	44.66150876
Azimuth	Nunavut	2015	15-25-24	1/100	9/19/2015	MAM-05-S		Rotifer	ROTI		Keratella sp.	n/a	1	100	100	0.000105538	0.001055381		0.010553813	0.105538125
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	45	3.333333333	150	0.015622034	0.471437491		2.343305172	70.71562366
Azimuth	Nunavut	2015	15-25-24	3/10	9/19/2015	MAM-05-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	6	3.333333333	20	0.013365482	0.457190372		0.267309631	9.143807437
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Cladoceran	CRCL		Bosmina sp.	F	1	3.333333333	3.333333333	0.008880563	0.044402816		0.029601877	0.148009386
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Calanoid	CRCO		Calanoida indet.	I-IV	2	3.333333333	6.666666667	0.004802846	0.121691779		0.032018976	0.81127853
Azimuth	Nunavut	2015	15-25-24-QA	3/100	9/19/2015	MAM-05-S-QA		Calanoid	CRCO		Calanoida indet.	nauplius	17	33.33333333	566.6666667	0.000177853	0.000889266		0.100783452	0.503917262
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Calanoid	CRCO		Calanoida indet.	V	1	3.333333333	3.333333333	0.013365482	0.457190372		0.044551605	1.523967906
Azimuth	Nunavut	2015	15-25-24-QA	3/100	9/19/2015	MAM-05-S-QA		Rotifer	ROTI		Conochilus sp.	n/a	13	33.33333333	433.3333333	0.000146136	0.001461355		0.063325404	0.633254044
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	103	3.333333333	343.3333333	0.001389335	0.006946677		0.477005148	2.385025741
Azimuth	Nunavut	2015	15-25-24-QA	3/100	9/19/2015	MAM-05-S-QA		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	62	33.33333333	2066.666667	2.00168E-05	0.000100084		0.04136813	0.206840652
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Cyclopoid	CRCO		Cyclopoida indet.	V	13	3.333333333	43.33333333	0.005042793	0.025213967		0.218521045	1.092605227
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Cyclopoid	CRCO		Cyclops scutifer	F	32	3.333333333	106.6666667	0.007235588	0.036177938		0.771796015	3.858980076
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Cyclopoid	CRCO		Cyclops scutifer	M	27	3.333333333	90	0.005185998	0.025929991		0.466739832	2.33369916
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Cladoceran	CRCL		Daphnia sp.	F	1	3.333333333	3.333333333	0.003999883	0.019999416		0.013332944	0.066664721
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Cyclopoid	CRCO		Diacyclops thomasi	F	4	3.333333333	13.33333333	0.006289189	0.031445943		0.083855849	0.419279246
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Cyclopoid	CRCO		Diacyclops thomasi	M	5	3.333333333	16.66666667	0.004170636	0.020853182		0.069510607	0.347553036
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Calanoid	CRCO		Heterocope septentrionalis	M	5	3.333333333	16.66666667	0.091438074	0.457190372		1.523967906	7.619839531
Azimuth	Nunavut	2015	15-25-24-QA	3/100	9/19/2015	MAM-05-S-QA		Rotifer	ROTI		Kellicottia sp.	n/a	112	33.33333333	3733.333333	0.001252192	0.012521918		4.674849515	46.74849515
Azimuth	Nunavut	2015	15-25-24-QA	1/100	9/19/2015	MAM-05-S-QA		Rotifer	ROTI		Keratella sp.	n/a	1	100	100	0.000105538	0.001055381		0.010553813	0.105538125
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	47	3.333333333	156.6666667	0.015622034	0.471437491		2.447452069	73.85854027
Azimuth	Nunavut	2015	15-25-24-QA	3/10	9/19/2015	MAM-05-S-QA		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	9	3.333333333	30	0.013365482	0.457190372		0.400964447	13.71571116
Azimuth	Nunavut	2015	15-25-24-QA	2/100	9/19/2015	MAM-05-S-QA		Rotifer	ROTI		Polyarthra sp.	n/a	2	50	100	7.16125E-05	0.000716125		0.007161253	0.071612533
Azimuth	Nunavut	2015	15-25-25	3/100	9/19/2015	MAM-06-S		Calanoid	CRCO		Calanoida indet.	nauplius	20	33.33333333	666.6666667	0.000177853	0.000889266		0.118568768	0.592843838
Azimuth	Nunavut	2015	15-25-25	3/100	9/19/2015	MAM-06-S		Rotifer	ROTI		Conochilus sp.	n/a	15	33.33333333	500	0.000146136	0.001461355		0.073067774	0.730677743
Azimuth	Nunavut	2015	15-25-25	1/100	9/19/2015	MAM-06-S		Copepod	CRCO		Copepoda indet.	nauplius	1	100	100	0.000142032	0.000710161		0.014203216	0.071016078
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Cyclopoid	CRCO		Cyclopoida indet.	F	1	2	2	0.005042793	0.025213967		0.010085587	0.050427934
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	128	2	256	0.001389335	0.006946677		0.355669858	1.77834929
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Cyclopoid	CRCO		Cyclopoida indet.	M	4	2	8	0.005042793	0.025213967		0.040342347	0.201711734
Azimuth	Nunavut	2015	15-25-25	3/100	9/19/2015	MAM-06-S		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	33	33.33333333	1100	2.00168E-05	0.000100084		0.022018521	0.110092605
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Cyclopoid	CRCO		Cyclopoida indet.	V	6	2	12	0.005042793	0.025213967		0.06051352	0.302567601
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Cyclopoid	CRCO		Cyclops scutifer	F	40	2	80	0.007235588	0.036177938		0.578847011	2.894235057
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Cyclopoid	CRCO		Cyclops scutifer	M	21	2	42	0.005185998	0.025929991		0.217811922	1.089059608
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Cladoceran	CRCL		Daphnia middendorffiana	F	1	2	2	0.021219637	0.106098184		0.042439274	0.212196369
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Cladoceran	CRCL		Daphnia sp.	F	2	2	4	0.003999883	0.019999416		0.015999533	0.079997665
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Cyclopoid	CRCO		Diacyclops thomasi	F	4	2	8	0.006289189	0.031445943		0.050313509	0.251567547
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Cyclopoid	CRCO		Diacyclops thomasi	M	2	2	4	0.004170636	0.020853182		0.016682546	0.083412729
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Calanoid	CRCO		Heterocope septentrionalis	F	1	2	2	0.094287498	0.471437491		0.188574996	0.942874982
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Calanoid	CRCO		Heterocope septentrionalis	M	2	2	4	0.091438074	0.457190372		0.365752297	1.828761487
Azimuth	Nunavut	2015	15-25-25	3/100	9/19/2015	MAM-06-S		Rotifer	ROTI		Kellicottia sp.	n/a	77	33.33333333	2566.666667	0.001252192	0.012521918		3.213959042	32.13959042
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	47	2	94	0.015622034	0.471437491		1.468471241	44.31512416
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	10	2	20	0.013365482	0.457190372		0.267309631	9.143807437
Azimuth	Nunavut	2015	15-25-25	5/10	9/19/2015	MAM-06-S		Calanoid	CRCO		Leptodiaptomus pribilofensis	V	3	2	6	0.013365482	0.457190372		0.080192889	2.743142231

Zooplankton raw count data for abundance calculations and biomass calculations, Azimuth Nunavut 2015

Client	Project	Year	Biologica #	Split	Date	Client ID	Fraction	Major Group	Groupcode	Family	Taxon	Stage	Raw Abundance	Split Multiplier	Total Abundance	Mean DW Biomass_mg	Mean WW Biomass_mg	Biomass assumptions	Total DW Biomass_mg	Total WW Biomass _mg
Azimuth	Nunavut	2015	15-25-25	1/100	9/19/2015	MAM-06-S		Rotifer	ROTI		Polyarthra sp.	n/a	1	100	100	7.16125E-05	0.000716125		0.007161253	0.071612533
Azimuth	Nunavut	2015	15-25-26	1/100	8/22/2015	DUP-1		Calanoid	CRCO		Calanoida indet.	nauplius	1	100	100	0.000177853	0.000889266		0.017785315	0.088926576
Azimuth	Nunavut	2015	15-25-26	3/100	8/22/2015	DUP-1		Rotifer	ROTI		Conochilus sp.	n/a	65	33.33333333	2166.666667	0.000146136	0.001461355		0.316627022	3.16627022
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Cyclopoid	CRCO		Cyclopoida indet.	I-IV	163	3.333333333	543.3333333	0.001389335	0.006946677		0.754872225	3.774361124
Azimuth	Nunavut	2015	15-25-26	3/100	8/22/2015	DUP-1		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	66	33.33333333	2200	2.00168E-05	0.000100084		0.044037042	0.22018521
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Cyclopoid	CRCO		Cyclopoida indet.	V	14	3.333333333	46.66666667	0.005042793	0.025213967		0.235330356	1.176651782
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Cyclopoid	CRCO		Cyclops scutifer	F	17	3.333333333	56.66666667	0.007235588	0.036177938		0.410016633	2.050083166
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Cyclopoid	CRCO		Cyclops scutifer	M	1	3.333333333	3.333333333	0.005185998	0.025929991		0.01728666	0.086433302
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Cladoceran	CRCL		Daphnia middendorffiana	F	1	3.333333333	3.333333333	0.021219637	0.106098184		0.070732123	0.353660614
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Cladoceran	CRCL		Daphnia sp.	F	1	3.333333333	3.333333333	0.003999883	0.019999416		0.013332944	0.066664721
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Calanoid	CRCO		Heterocope septentrionalis	F	7	3.333333333	23.33333333	0.094287498	0.471437491		2.200041625	11.00020813
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Calanoid	CRCO		Heterocope septentrionalis	M	5	3.333333333	16.66666667	0.091438074	0.457190372		1.523967906	7.619839531
Azimuth	Nunavut	2015	15-25-26	Whole	8/22/2015	DUP-1		Cladoceran	CRCL		Holopedium gibberum	F	16	1	16	0.002497062	0.012485309		0.039952988	0.199764941
Azimuth	Nunavut	2015	15-25-26	3/100	8/22/2015	DUP-1		Rotifer	ROTI		Kellicottia sp.	n/a	85	33.33333333	2833.333333	0.001252192	0.012521918		3.547876864	35.47876864
Azimuth	Nunavut	2015	15-25-26	1/100	8/22/2015	DUP-1		Rotifer	ROTI		Keratella sp.	n/a	1	100	100	0.000105538	0.001055381		0.010553813	0.105538125
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	31	3.333333333	103.3333333	0.015622034	0.471437491		1.614276896	48.71520741
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Calanoid	CRCO		Leptodiaptomus pribilofensis	I-IV	4	3.333333333	13.33333333	0.004802846	0.457190372		0.064037952	6.095871625
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	23	3.333333333	76.66666667	0.013365482	0.457190372		1.02468692	35.05126184
Azimuth	Nunavut	2015	15-25-26	3/10	8/22/2015	DUP-1		Calanoid	CRCO		Leptodiaptomus pribilofensis	V	3	3.333333333	10	0.013365482	0.457190372		0.133654816	4.571903718
Azimuth	Nunavut	2015	15-25-26	3/100	8/22/2015	DUP-1		Rotifer	ROTI		Polyarthra sp.	n/a	6	33.33333333	200	7.16125E-05	0.000716125		0.014322507	0.143225066
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Cladoceran	CRCL		Bosmina sp.	F	1	2.5	2.5	0.008880563	0.044402816		0.022201408	0.111007039
Azimuth	Nunavut	2015	15-25-27	3/100	9/19/2015	DUP-1-September		Calanoid	CRCO		Calanoida indet.	nauplius	9	33.33333333	300	0.000177853	0.000889266		0.053355945	0.266779727
Azimuth	Nunavut	2015	15-25-27	3/100	9/19/2015	DUP-1-September		Rotifer	ROTI		Conochilus sp.	n/a	15	33.33333333	500	0.000146136	0.001461355		0.073067774	0.730677743
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Cyclopoid	CRCO		Cyclopoida indet.	F	1	2.5	2.5	0.005042793	0.025213967		0.012606983	0.063034917
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Cyclopoid	CRCO		Cyclopoida indet.	M	3	2.5	7.5	0.005042793	0.025213967		0.03782095	0.189104751
Azimuth	Nunavut	2015	15-25-27	3/100	9/19/2015	DUP-1-September		Cyclopoid	CRCO		Cyclopoida indet.	nauplius	11	33.33333333	366.6666667	2.00168E-05	0.000100084		0.007339507	0.036697535
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Cyclopoid	CRCO		Cyclops scutifer	F	59	2.5	147.5	0.007235588	0.036177938		1.067249177	5.336245887
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Cyclopoid	CRCO		Cyclops scutifer	I-IV	81	2.5	202.5	0.001389335	0.006946677		0.281340415	1.406702075
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Cyclopoid	CRCO		Cyclops scutifer	M	81	2.5	202.5	0.005185998	0.025929991		1.050164622	5.25082311
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Cyclopoid	CRCO		Cyclops scutifer	V	40	2.5	100	0.002148681	0.025213967		0.21486814	2.521396677
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Cladoceran	CRCL		Daphnia middendorffiana	F	1	2.5	2.5	0.021219637	0.106098184		0.053049092	0.265245461
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Cladoceran	CRCL		Daphnia sp.	F	2	2.5	5	0.003999883	0.019999416		0.019999416	0.099997081
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Cyclopoid	CRCO		Diacyclops thomasi	F	6	2.5	15	0.006289189	0.031445943		0.09433783	0.471689151
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Cyclopoid	CRCO		Diacyclops thomasi	M	4	2.5	10	0.004170636	0.020853182		0.041706364	0.208531822
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Calanoid	CRCO		Heterocope septentrionalis	F	3	2.5	7.5	0.094287498	0.471437491		0.707156237	3.535781183
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Calanoid	CRCO		Heterocope septentrionalis	M	1	2.5	2.5	0.091438074	0.457190372		0.228595186	1.14297593
Azimuth	Nunavut	2015	15-25-27	3/100	9/19/2015	DUP-1-September		Rotifer	ROTI		Kellicottia sp.	n/a	94	33.33333333	3133.333333	0.001252192	0.012521918		3.923534414	39.23534414
Azimuth	Nunavut	2015	15-25-27	1/100	9/19/2015	DUP-1-September		Rotifer	ROTI		Keratella sp.	n/a	1	100	100	0.000105538	0.001055381		0.010553813	0.105538125
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Calanoid	CRCO		Leptodiaptomus pribilofensis	F	25	2.5	62.5	0.015622034	0.471437491		0.976377155	29.46484319
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Calanoid	CRCO		Leptodiaptomus pribilofensis	M	17	2.5	42.5	0.013365482	0.457190372		0.568032966	19.4305908
Azimuth	Nunavut	2015	15-25-27	4/10	9/19/2015	DUP-1-September		Calanoid	CRCO		Leptodiaptomus pribilofensis	V	3	2.5	7.5	0.013365482	0.457190372		0.100241112	3.428927789
Azimuth	Nunavut	2015	15-25-27	3/100	9/19/2015	DUP-1-September		Rotifer	ROTI		Polyarthra sp.	n/a	5	33.33333333	166.6666667	7.16125E-05	0.000716125		0.011935422	0.119354222

Zooplankton biomeasurements and conversions for calculation of biomass data, Azimuth Nunavut 2015

Groupcode	Taxon	Stage	Biologica Sample	Client Sample	Unit	Conversion (mm)	Objective	Length (units)	Width (units)	Calibration	Length (mm)	CRUSTACEA - Ln(Length)	CRUSTACEA - Ln(α)	CRUSTACEA - β	CRUSTACEA - mg DW	CRUSTACEA - WW:DW	CRUSTACEA - mg WW	CRUSTACEA α/β Reference	Rotifera - FF	Rotifera - %BV	Rotifera - WW:DW	Rotifera - mg DW	Rotifera - mg WW	Rotifera - FF/%BV Reference	Final Biomass - DW	Final Biomass - WW
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	0.8		0.26	0.2080	-1.570217199	1.050	2.460	0.000060	5	0.000300	EPA SOP; Calanoid copepodites							6.00406E-05	0.000300203
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	0.9		0.26	0.2340	-1.452434164	1.050	2.460	0.000080	5	0.000401	EPA SOP; Calanoid copepodites							8.02195E-05	0.000401098
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-13		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-15		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-15		4	1	4x	0.9		0.26	0.2340	-1.452434164	1.050	2.460	0.000080	5	0.000401	EPA SOP; Calanoid copepodites							8.02195E-05	0.000401098
CRCO	Calanoida indet.	Nauplius	15-25-15		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-17		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-17		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-17		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-17		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-17		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCL	Daphnia middendorffiana	F	15-25-15		4	1	4x	8.5		0.26	2.2100	0.792992516	1.393	3.011	0.043847	5	0.219234	EPA SOP							0.043846744	0.21923372
CRCL	Daphnia middendorffiana	F	15-25-15		4	1	4x	3.5		0.26	0.9100	-0.094310679	1.393	3.011	0.003031	5	0.015157	EPA SOP							0.003031418	0.015157091
CRCL	Daphnia sp.	F	15-25-16		4	1	4x	3.9		0.26	1.0140	0.013902905	1.510	2.560	0.004691	5	0.023454	EPA SOP							0.004690745	0.023453725
CRCO	Cyclops scutifer	F	15-25-16		4	1	4x	5.2		0.26	1.3520	0.301584978	1.492	1.990	0.008102	5	0.040512	EPA SOP							0.00810235	0.040511748
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.8		0.26	1.2480	0.22154227	1.492	1.990	0.006909	5	0.034547	EPA SOP							0.006909305	0.034546527
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.5		0.26	1.1700	0.157003749	1.492	1.990	0.006077	5	0.030383	EPA SOP							0.006076552	0.030382761
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.9		0.26	1.2740	0.242161557	1.492	1.990	0.007199	5	0.035994	EPA SOP							0.007198708	0.035993538
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	5.4		0.26	1.4040	0.339325306	1.492	1.990	0.008734	5	0.043671	EPA SOP							0.008734296	0.043671481
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.9		0.26	1.2740	0.242161557	1.492	1.990	0.007199	5	0.035994	EPA SOP							0.007198708	0.035993538
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.7		0.26	1.2220	0.200488861	1.492	1.990	0.006626	5	0.033129	EPA SOP							0.006625811	0.033129057
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.3		0.26	1.1180	0.111541375	1.492	1.990	0.005551	5	0.027755	EPA SOP							0.00555094	0.027754701
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	5		0.26	1.3000	0.262364264	1.492	1.990	0.007494	5	0.037470	EPA SOP							0.007494016	0.037470082
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	5.1		0.26	1.3260	0.282166892	1.492	1.990	0.007795	5	0.038976	EPA SOP							0.007795231	0.038976154
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	5		0.26	1.3000	0.262364264	1.492	1.990	0.007494	5	0.037470	EPA SOP							0.007494016	0.037470082
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	5.1		0.26	1.3260	0.282166892	1.492	1.990	0.007795	5	0.038976	EPA SOP							0.007795231	0.038976154
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.9		0.26	1.2740	0.242161557	1.492	1.990	0.007199	5	0.035994	EPA SOP							0.007198708	0.035993538
CRCO	Cyclops scutifer	F	15-25-16		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Cyclops scutifer	F	15-25-16		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	F	15-25-16		4	1	4x	4.7		0.26	1.2220	0.200488861	1.492	1.990	0.006626	5	0.033129	EPA SOP							0.006625811	0.033129057
CRCO	Cyclops scutifer	F	15-25-16		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	F	15-25-17		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	F	15-25-17		4	1	4x	4.3		0.26	1.1180	0.111541375	1.492	1.990	0.005551	5	0.027755	EPA SOP							0.00555094	0.027754701
CRCO	Cyclops scutifer	F	15-25-25		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	3.9		0.26	1.0140	0.013902905	1.492	1.990	0.004571	5	0.022854	EPA SOP							0.004570702	0.022853509
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	3.1		0.26	0.8060	-0.215671536	1.492	1.990	0.002895	5	0.014473	EPA SOP							0.002894504	0.014472518
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	5.1		0.26	1.3260	0.282166892	1.492	1.990	0.007795	5	0.038976	EPA SOP							0.007795231	0.038976154
CRCO	Cyclops scutifer	M	15-25-15		4	1	4x	4.3		0.26	1.1180	0.111541375	1.492	1.990	0.005551	5	0.027755	EPA SOP							0.00555094	0.027754701
CRCO	Cyclops scutifer	M	15-25-16		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-24		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-24		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-24		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-24		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-24		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Leptodiaptomus pribilofensis	M	15-25-14		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	M	15-25-18		4	1	4x	4.8		0.26	1.2480	0.22154227	1.953	2.400	0.011998	5	0.059988	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.011997538	0.059987689
CRCO	Leptodiaptomus pribilofensis	M	15-25-18		4	1	4x	4.8		0.26	1.2480	0.22154227	1.953	2.400	0.011998	5	0.059988	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.011997538	0.059987689
CRCO	Leptodiaptomus pribilofensis	M	15-25-18		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	M	15-25-21		4	1	4x	4.4		0.26	1.1440	0.134530893	1.953	2.400	0.009736	5	0.048682	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.009736426	0.048682132
CRCO	Leptodiaptomus pribilofensis	M	15-25-21		4	1	4x	4.6		0.26	1.1960	0.178982656	1.953	2.400	0.010833	5	0.054163	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.010832581	0.054162906
CRCO	Leptodiaptomus pribilofensis	M	15-25-25		4	1	4x	5.1		0.26	1.3260	0.282166892	1.953	2.400	0.013877	5	0.069383	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013876552	0.069382762
CRCO	Leptodiaptomus pribilofensis	M	15-25-25		4	1	4x	5		0.26	1.3000	0.262364264	1.953	2.400	0.013232	5	0.066162	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013232478	0.066162388
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	5		0.26	1.3000	0.262364264	1.953	2.400	0.013232	5	0.066162	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013232478	0.066162388
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	4.3		0.26	1.1180	0.111541375	1.953	2.400	0.009214	5	0.046069	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.009213772	0.046068859
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	5.1		0.26	1.3260	0.282166892	1.953	2.400	0.013877	5	0.069383	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013876552	0.069382762
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	4.8		0.26	1.2480	0.22154227	1.953	2.400	0.011998	5	0.059988	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.011997538	0.059987689
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	5.1		0.26	1.3260	0.282166892	1.953	2.400	0.013877	5	0.069383	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013876552	0.069382762
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	4.9		0.26	1.2740	0.242161557	1.953	2.400	0.012606	5	0.063031	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.012606187	0.063030936
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	4.8		0.26	1.2480	0.22154227	1.953	2.400	0.011998	5	0.059988	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.011997538	0.059987689
CRCO	Leptodiaptomus pribilofensis	M	15-25-26		4	1	4x	5.1		0.26	1.3260	0.282166892	1.953	2.400	0.013877	5	0.069383	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013876552	0.069382762
CRCO	Leptodiaptomus pribilofensis	M	15-25-20		4	1	4x	4.8		0.26	1.2480	0.22154227	1.953	2.400	0.011998	5	0.059988	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.011997538	0.059987689
CRCO	Leptodiaptomus pribilofensis	M	15-25-20		4	1	4x	4.7		0.26	1.2220	0.200488861	1.953	2.400	0.011406	5	0.057032	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.011406385	0.057031924
CRCO	Leptodiaptomus pribilofensis	M	15-25-20		4	1	4x	5		0.26	1.3000	0.262364264	1.953	2.400	0.013232	5	0.066162	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013232478	0.066162388
CRCO	Leptodiaptomus pribilofensis	M	15-25-20		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	M	15-25-20		4	1	4x	5		0.26	1.3000	0.262364264	1.953	2.400	0.013232	5	0.066162	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013232478	0.066162388
CRCO	Leptodiaptomus pribilofensis	M	15-25-20		4	1	4x	5.1		0.26	1.3260	0.282166892	1.953	2.400	0.013877	5	0.069383	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013876552	0.069382762
CRCO	Leptodiaptomus pribilofensis	M	15-25-20		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	M	15-25-20		4	1	4x	5.5		0.26	1.4300	0.357674444	1.953	2.400	0.016633	5	0.083167	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.016633499	0.083167494
CRCO	Leptodiaptomus pribilofensis	M	15-25-20		4	1	4x	5.1		0.26	1.3260	0.282166892	1.953	2.400	0.013877	5	0.069383	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013876552	0.069382762
CRCO	Leptodiaptomus pribilofensis	M	15-25-20		4	1	4x	4.8		0.26	1.2480	0.22154227	1.953	2.400	0.011998	5	0.059988	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.011997538	0.059987689
CRCO	Leptodiaptomus pribilofensis	M	15-25-20		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	M	15-25-24		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	M	15-25-24		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	M	15-25-24		4	1	4x	4.6		0.26	1.1960	0.178982656	1.953	2.400	0.010833	5	0.054163	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.010832581	0.054162906
CRCO	Leptodiaptomus pribilofensis	F	15-25-14		4	1	4x	5		0.26	1.3000	0.262364264	1.953	2.400	0.013232	5	0.066162	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013232478	0.066162388
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.5		0.26	1.4300	0.357674444	1.953	2.400	0.016633	5	0.083167	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.016633499	0.083167494
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.6		0.26	1.4560	0.37569295	1.953	2.400	0.017369	5	0.086843	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.017368584	0.086842922
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.8		0.26	1.5080	0.41078427	1.953	2.400	0.018895	5	0.094474	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.018894715	0.094473574

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Groupcode	Taxon	Stage	Biologica Sample	Client Sample	Unit	Conversion (mm)	Objective	Length (units)	Width (units)	Calibration	Length (mm)	CRUSTACEA - Ln(Length)	CRUSTACEA - Ln(α)	CRUSTACEA - β	CRUSTACEA - mg DW	CRUSTACEA - WW:DW	CRUSTACEA - mg WW	CRUSTACEA α/β Reference	Rotifera - FF	Rotifera - %BV	Rotifera - WW:DW	Rotifera - mg DW	Rotifera - mg WW	Rotifera - FF/%BV Reference	Final Biomass - DW	Final Biomass - WW
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.8		0.26	1.5080	0.41078427	1.953	2.400	0.018895	5	0.094474	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.018894715	0.094473574
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.7		0.26	1.4820	0.393392527	1.953	2.400	0.018122	5	0.090611	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.018122279	0.090611395
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5		0.26	1.3000	0.262364264	1.953	2.400	0.013232	5	0.066162	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013232478	0.066162388
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.8		0.26	1.5080	0.41078427	1.953	2.400	0.018895	5	0.094474	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.018894715	0.094473574
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.6		0.26	1.4560	0.37569295	1.953	2.400	0.017369	5	0.086843	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.017368584	0.086842922
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.6		0.26	1.4560	0.37569295	1.953	2.400	0.017369	5	0.086843	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.017368584	0.086842922
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5		0.26	1.3000	0.262364264	1.953	2.400	0.013232	5	0.066162	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013232478	0.066162388
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.8		0.26	1.5080	0.41078427	1.953	2.400	0.018895	5	0.094474	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.018894715	0.094473574
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5		0.26	1.3000	0.262364264	1.953	2.400	0.013232	5	0.066162	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013232478	0.066162388
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.5		0.26	1.4300	0.357674444	1.953	2.400	0.016633	5	0.083167	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.016633499	0.083167494
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.5		0.26	1.4300	0.357674444	1.953	2.400	0.016633	5	0.083167	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.016633499	0.083167494
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5		0.26	1.3000	0.262364264	1.953	2.400	0.013232	5	0.066162	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013232478	0.066162388
CRCO	Leptodiaptomus pribilofensis	F	15-25-25		4	1	4x	5.7		0.26	1.4820	0.393392527	1.953	2.400	0.018122	5	0.090611	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.018122279	0.090611395
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5		0.26	1.3000	0.262364264	1.953	2.400	0.013232	5	0.066162	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013232478	0.066162388
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.4		0.26	1.4040	0.339325306	1.953	2.400	0.015917	5	0.079584	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015916889	0.079584444
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.6		0.26	1.4560	0.37569295	1.953	2.400	0.017369	5	0.086843	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.017368584	0.086842922
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.1		0.26	1.3260	0.282166892	1.953	2.400	0.013877	5	0.069383	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013876552	0.069382762
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.5		0.26	1.4300	0.357674444	1.953	2.400	0.016633	5	0.083167	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.016633499	0.083167494
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.5		0.26	1.4300	0.357674444	1.953	2.400	0.016633	5	0.083167	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.016633499	0.083167494
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	F	15-25-26		4	1	4x	5.6		0.26	1.4560	0.37569295	1.953	2.400	0.017369	5	0.086843	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.017368584	0.086842922
CRCO	Leptodiaptomus pribilofensis	F	15-25-20		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	F	15-25-20		4	1	4x	5.4		0.26	1.4040	0.339325306	1.953	2.400	0.015917	5	0.079584	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015916889	0.079584444
CRCO	Leptodiaptomus pribilofensis	F	15-25-20		4	1	4x	5.4		0.26	1.4040	0.339325306	1.953	2.400	0.015917	5	0.079584	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015916889	0.079584444
CRCO	Leptodiaptomus pribilofensis	F	15-25-20		4	1	4x	5.5		0.26	1.4300	0.357674444	1.953	2.400	0.016633	5	0.083167	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.016633499	0.083167494
CRCO	Leptodiaptomus pribilofensis	F	15-25-20		4	1	4x	5.1		0.26	1.3260	0.282166892	1.953	2.400	0.013877	5	0.069383	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013876552	0.069382762
CRCO	Leptodiaptomus pribilofensis	F	15-25-20		4	1	4x	5.6		0.26	1.4560	0.37569295	1.953	2.400	0.017369	5	0.086843	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.017368584	0.086842922
CRCO	Leptodiaptomus pribilofensis	F	15-25-20		4	1	4x	5.1		0.26	1.3260	0.282166892	1.953	2.400	0.013877	5	0.069383	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013876552	0.069382762
CRCO	Leptodiaptomus pribilofensis	F	15-25-20		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	F	15-25-20		4	1	4x	5.1		0.26	1.3260	0.282166892	1.953	2.400	0.013877	5	0.069383	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013876552	0.069382762
CRCO	Leptodiaptomus pribilofensis	F	15-25-20		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Leptodiaptomus pribilofensis	F	15-25-20		4	1	4x	5.3		0.26	1.3780	0.320633173	1.953	2.400	0.015219	5	0.076093	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015218619	0.076093095
CRCO	Leptodiaptomus pribilofensis	F	15-25-24		4	1	4x	5.4		0.26	1.4040	0.339325306	1.953	2.400	0.015917	5	0.079584	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.015916889	0.079584444
CRCO	Leptodiaptomus pribilofensis	F	15-25-24		4	1	4x	5.6		0.26	1.4560	0.37569295	1.953	2.400	0.017369	5	0.086843	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.017368584	0.086842922
CRCO	Leptodiaptomus pribilofensis	F	15-25-24		4	1	4x	5		0.26	1.3000	0.262364264	1.953	2.400	0.013232	5	0.066162	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013232478	0.066162388
CRCO	Leptodiaptomus pribilofensis	F	15-25-24		4	1	4x	5.6		0.26	1.4560	0.37569295	1.953	2.400	0.017369	5	0.086843	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.017368584	0.086842922
CRCO	Leptodiaptomus pribilofensis	F	15-25-24		4	1	4x	5.5		0.26	1.4300	0.357674444	1.953	2.400	0.016633	5	0.083167	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.016633499	0.083167494
CRCO	Leptodiaptomus pribilofensis	F	15-25-24		4	1	4x	5.1		0.26	1.3260	0.282166892	1.953	2.400	0.013877	5	0.069383	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.013876552	0.069382762
CRCO	Leptodiaptomus pribilofensis	F	15-25-24		4	1	4x	5.2		0.26	1.3520	0.301584978	1.953	2.400	0.014539	5	0.072693	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.014538553	0.072692765
CRCO	Heterocope septentrionalis	M	15-25-25		4	1	4x	11		0.26	2.8600	1.050821625	1.953	2.400	0.087792	5	0.438961	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.087792133	0.438960667
CRCO	Heterocope septentrionalis	M	15-25-25		4	1	4x	9.8		0.26	2.5480	0.935308738	1.953	2.400	0.066536	5	0.332679	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.066535855	0.332679273
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	11.5		0.26	2.9900	1.095273387	1.953	2.400	0.097676	5	0.488380	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.097676025	0.488380123
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	11.5		0.26	2.9900	1.095273387	1.953	2.400	0.097676	5	0.488380	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.097676025	0.488380123
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	11.8		0.26	3.0680	1.121025884	1.953	2.400	0.103903	5	0.519517	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.103903452	0.519517259
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	10.8		0.26	2.8080	1.032472486	1.953	2.400	0.084010	5	0.420049	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.084009843	0.420049213
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	11		0.26	2.8600	1.050821625	1.953	2.400	0.087792	5	0.438961	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.087792133	0.438960667
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	11		0.26	2.8600	1.050821625	1.953	2.400	0.087792	5	0.438961	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.087792133	0.438960667
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	11		0.26	2.8600	1.050821625	1.953	2.400	0.087792	5	0.438961	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.087792133	0.438960667
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	11		0.26	2.8600	1.050821625	1.953	2.400	0.087792	5	0.438961	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.087792133	0.438960667
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	11.1		0.26	2.8860	1.05987146	1.953	2.400	0.089720	5	0.448599	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.089719802	0.448599011
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	10.8		0.26	2.8080	1.032472486	1.953	2.400	0.084010	5	0.420049	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.084009843	0.420049213
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	11.2		0.26	2.9120	1.06884013	1.953	2.400	0.091672	5	0.458360	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.091671938	0.45835969
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	11		0.26	2.8600	1.050821625	1.953	2.400	0.087792	5	0.438961	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.087792133	0.438960667
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	10.8		0.26	2.8080	1.032472486	1.953	2.400	0.084010	5	0.420049	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.084009843	0.420049213
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	10.8		0.26	2.8080	1.032472486	1.953	2.400	0.084010	5	0.420049	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.084009843	0.420049213
CRCO	Heterocope septentrionalis	M	15-25-26		4	1	4x	11.5		0.26	2.9900	1.095273387	1.953	2.400	0.097676	5	0.488380	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.097676025	0.488380123
CRCO	Heterocope septentrionalis	M	15-25-20		4	1	4x	12.5		0.26	3.2500	1.178654996	1.953	2.400	0.119316	5	0.596578	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.119315589	0.596577945
CRCO	Heterocope septentrionalis	M	15-25-20		4	1	4x	12.1		0.26	3.1460	1.146131805	1.953	2.400	0.110357	5	0.551783	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.110356533	0.551782664
CRCO	Heterocope septentrionalis	F	15-25-25		4	1	4x	10.5		0.26	2.7300	1.004301609	1.953	2.400	0.078518	5	0.392588	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.078517683	0.392588416
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	9.8		0.26	2.5480	0.935308738	1.953	2.400	0.066536	5	0.332679	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.066535855	0.332679273
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	12		0.26	3.1200	1.137833002	1.953	2.400	0.108180	5	0.540901	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.108180292	0.540901459
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	11.5		0.26	2.9900	1.095273387	1.953	2.400	0.097676	5	0.488380	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.097676025	0.488380123
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	11		0.26	2.8600	1.050821625	1.953	2.400	0.087792	5	0.438961	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.087792133	0.438960667
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	11		0.26	2.8600	1.050821625	1.953	2.400	0.087792	5	0.438961	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.087792133	0.438960667
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	10.5		0.26	2.7300	1.004301609	1.953	2.400	0.078518	5	0.392588	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.078517683	0.392588416
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	12		0.26	3.1200	1.137833002	1.953	2.400	0.108180	5	0.540901	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.108180292	0.540901459
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	10.8		0.26	2.8080	1.032472486	1.953	2.400	0.084010	5	0.420049	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.084009843	0.420049213
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	12.5		0.26	3.2500	1.178654996	1.953	2.400	0.119316	5	0.596578	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.119315589	0.596577945
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	10.7		0.26	2.7820	1.023170094	1.953	2.400	0.082155	5	0.410775	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.082155043	0.410775213
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	10		0.26	2.6000	0.955511445	1.953	2.400	0.069841	5	0.349207	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.069841436	0.349207178
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	11		0.26	2.8600	1.050821625	1.953	2.400	0.087792	5	0.438961	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.087792133	0.438960667
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	10.5		0.26	2.7300	1.004301609	1.953	2.400	0.078518	5	0.392588	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.078517683	0.392588416
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	10.5		0.26	2.7300	1.004301609	1.953	2.400	0.078518	5	0.392588	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.078517683	0.392588416
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	10.8		0.26	2.8080	1.032472486	1.953	2.400	0.084010	5	0.420049	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.084009843	0.420049213
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	11.5		0.26	2.9900	1.095273387	1.953	2.400	0.097676	5	0.488380	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.097676025	0.488380123
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	10.5		0.26	2.7300	1.004301609	1.953	2.400	0.078518	5	0.392588	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.078517683	0.392588416
CRCO	Heterocope septentrionalis	F	15-25-26		4	1	4x	10.3		0.26	2.6780	0.985070247	1.953	2.400	0.074976	5	0.374880	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.07497604	0.374880199
CRCO	Heterocope septentrionalis	F	15-25-20		4	1	4x	10.6		0.26	2.7560	1.013780353	1.953	2.400	0.080324	5	0.401622	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.080324353	0.401621764
CRCO	Heterocope septentrionalis	F	15-25-20		4	1	4x	13		0.26	3.3800	1.217875709	1.953	2.400	0.131092	5	0.655462	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.131092306	0.655461531
CRCO	Heterocope septentrionalis	F	15-25-20		4	1	4x	13.2		0.26	3.4320	1.233143182	1.953	2.400	0.135985	5	0.679924	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.135984871	0.679924354
CRCO	Heterocope septentrionalis	F	15-25-20		4	1	4x	12.5		0.26	3.2500	1.178654996	1.953	2.400	0.119316	5	0.596578	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.119315589	0.596577945
CRCO	Heterocope septentrionalis	F	15-25-20		4	1	4x	12.8		0.26	3.3280	1.202371523	1.953	2.400	0.126304	5	0.631520	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.126303994	0.631519972
CRCO	Heterocope septentrionalis	F	15-25-20		4	1	4x	11.8		0.26	3.0680	1.121025884	1.953	2.400	0.103903	5	0.519517	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.103903452	0.519517259
CRCO	Heterocope septentrionalis	F	15-25-20		4	1	4x	11.9		0.26	3.0940	1.129464752	1.953	2.400	0.106029	5	0.530146	Bottrell et al. 1976 as in Watkins et al. ; pooled Calanoid copepodites							0.106029293	0.530146465
CRCO	Diacyclops thomasi	M	15-25-13		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.492	1.990	0.004116	5	0.020580	EPA SOP							0.004116099	0.020580493
CRCO	Diacyclops thomasi	M	15-25-13		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Diacyclops thomasi	M	15-25-13		4	1	4x	3.9		0.26	1.0140	0.013902905	1.492	1.990	0.004571	5	0.022854	EPA SOP							0.004570702	0.022853509
CRCO	Diacyclops thomasi	M	15-25-13		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Diacyclops thomasi	M	15-25-13		4	1	4x	3.1		0.26	0.8060	-0.215671536	1.492	1.990	0.002895	5	0.014473	EPA SOP							0.002894504	0.014472518
CRCO	Diacyclops thomasi	M	15-25-13		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.492	1.990	0.004116	5	0.020580	EPA SOP							0.004116099	0.020580493
CRCO	Diacyclops thomasi	M	15-25-13		4	1	4x	3.9		0.26	1.0140	0.013902905	1.492	1.990	0.004571	5	0.022854	EPA SOP							0.004570702	0.022853509
CRCO	Diacyclops thomasi	M	15-25-13		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.492	1.990	0.004116	5	0.020580	EPA SOP							0.004116099	0.020580493
CRCO	Diacyclops thomasi	M	15-25-13		4	1	4x	3.9		0.26	1.0140	0.013902905	1.492	1.990	0.004571	5	0.022854	EPA SOP							0.004570702	0.022853509
CRCO	Diacyclops thomasi	M	15-25-13		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Diacyclops thomasi	M	15-25-13		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.492	1.990	0.004116	5	0.020580	EPA SOP							0.004116099	0.020580493
CRCO	Diacyclops thomasi	M	15-25-15		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196

Zooplankton biomeasurements and conversions for calculation of biomass data, Azimuth Nunavut 2015

Groupcode	Taxon	Stage	Biologica Sample	Client Sample	Unit	Conversion (mm)	Objective	Length (units)	Width (units)	Calibration	Length (mm)	CRUSTACEA - Ln(Length)	CRUSTACEA - Ln(α)	CRUSTACEA - β	CRUSTACEA - mg DW	CRUSTACEA - WW:DW	CRUSTACEA - mg WW	CRUSTACEA α/β Reference	Rotifera - FF	Rotifera - %BV	Rotifera - WW:DW	Rotifera - mg DW	Rotifera - mg WW	Rotifera - FF/%BV Reference	Final Biomass - DW	Final Biomass - WW
CRCO	Diacyclops thomasi	M	15-25-16		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Diacyclops thomasi	M	15-25-17		4	1	4x	3.6		0.26	0.9360	-0.066139803	1.492	1.990	0.003898	5	0.019488	EPA SOP							0.003897681	0.019488406
CRCO	Diacyclops thomasi	M	15-25-17		4	1	4x	3.5		0.26	0.9100	-0.094310679	1.492	1.990	0.003685	5	0.018426	EPA SOP							0.003685189	0.018425944
CRCO	Diacyclops thomasi	M	15-25-17		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Diacyclops thomasi	M	15-25-17		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Diacyclops thomasi	M	15-25-17		4	1	4x	3.9		0.26	1.0140	0.013902905	1.492	1.990	0.004571	5	0.022854	EPA SOP							0.004570702	0.022853509
CRCO	Diacyclops thomasi	M	15-25-17		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.492	1.990	0.004116	5	0.020580	EPA SOP							0.004116099	0.020580493
CRCO	Diacyclops thomasi	M	15-25-17		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.492	1.990	0.004116	5	0.020580	EPA SOP							0.004116099	0.020580493
CRCO	Diacyclops thomasi	M	15-25-17		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Diacyclops thomasi	M	15-25-17		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Diacyclops thomasi	M	15-25-24		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Diacyclops thomasi	M	15-25-24		4	1	4x	3.1		0.26	0.8060	-0.215671536	1.492	1.990	0.002895	5	0.014473	EPA SOP							0.002894504	0.014472518
CRCO	Diacyclops thomasi	M	15-25-25		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Diacyclops thomasi	M	15-25-25		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Diacyclops thomasi	F	15-25-13		4	1	4x	4.8		0.26	1.2480	0.22154227	1.492	1.990	0.006909	5	0.034547	EPA SOP							0.006909305	0.034546527
CRCO	Diacyclops thomasi	F	15-25-13		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Diacyclops thomasi	F	15-25-13		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Diacyclops thomasi	F	15-25-13		4	1	4x	4.5		0.26	1.1700	0.157003749	1.492	1.990	0.006077	5	0.030383	EPA SOP							0.006076552	0.030382761
CRCO	Diacyclops thomasi	F	15-25-13		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Diacyclops thomasi	F	15-25-13		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Diacyclops thomasi	F	15-25-13		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Diacyclops thomasi	F	15-25-16		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.492	1.990	0.004116	5	0.020580	EPA SOP							0.004116099	0.020580493
CRCO	Diacyclops thomasi	F	15-25-16		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Diacyclops thomasi	F	15-25-16		4	1	4x	4.3		0.26	1.1180	0.111541375	1.492	1.990	0.005551	5	0.027755	EPA SOP							0.00555094	0.027754701
CRCO	Diacyclops thomasi	F	15-25-16		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Diacyclops thomasi	F	15-25-16		4	1	4x	4.7		0.26	1.2220	0.200488861	1.492	1.990	0.006626	5	0.033129	EPA SOP							0.006625811	0.033129057
CRCO	Diacyclops thomasi	F	15-25-16		4	1	4x	4.8		0.26	1.2480	0.22154227	1.492	1.990	0.006909	5	0.034547	EPA SOP							0.006909305	0.034546527
CRCO	Diacyclops thomasi	F	15-25-17		4	1	4x	4.9		0.26	1.2740	0.242161557	1.492	1.990	0.007199	5	0.035994	EPA SOP							0.007198708	0.035993538
CRCO	Diacyclops thomasi	F	15-25-17		4	1	4x	4.7		0.26	1.2220	0.200488861	1.492	1.990	0.006626	5	0.033129	EPA SOP							0.006625811	0.033129057
CRCO	Diacyclops thomasi	F	15-25-17		4	1	4x	4.5		0.26	1.1700	0.157003749	1.492	1.990	0.006077	5	0.030383	EPA SOP							0.006076552	0.030382761
CRCO	Diacyclops thomasi	F	15-25-17		4	1	4x	4.7		0.26	1.2220	0.200488861	1.492	1.990	0.006626	5	0.033129	EPA SOP							0.006625811	0.033129057
CRCO	Diacyclops thomasi	F	15-25-17		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Diacyclops thomasi	F	15-25-17		4	1	4x	4.9		0.26	1.2740	0.242161557	1.492	1.990	0.007199	5	0.035994	EPA SOP							0.007198708	0.035993538
CRCO	Diacyclops thomasi	F	15-25-24		4	1	4x	4.5		0.26	1.1700	0.157003749	1.492	1.990	0.006077	5	0.030383	EPA SOP							0.006076552	0.030382761
CRCO	Diacyclops thomasi	F	15-25-24		4	1	4x	4.8		0.26	1.2480	0.22154227	1.492	1.990	0.006909	5	0.034547	EPA SOP							0.006909305	0.034546527
ROTI	Kellicottia sp.	n/a	15-25-01		4	1	4x	2.1		0.26	0.5460								0.030	0.015	0.100	0.00050	0.00496	EPA SOP	0.000495639	0.004956387
ROTI	Kellicottia sp.	n/a	15-25-01		4	1	4x	2.4		0.26	0.6240								0.030	0.015	0.100	0.00074	0.00740	EPA SOP	0.000739846	0.007398456
ROTI	Kellicottia sp.	n/a	15-25-01		4	1	4x	2.2		0.26	0.5720								0.030	0.015	0.100	0.00057	0.00570	EPA SOP	0.000569869	0.005698695
ROTI	Kellicottia sp.	n/a	15-25-01		4	1	4x	2.8		0.26	0.7280								0.030	0.015	0.100	0.00117	0.01175	EPA SOP	0.001174847	0.011748473
ROTI	Kellicottia sp.	n/a	15-25-01		4	1	4x	2.2		0.26	0.5720								0.030	0.015	0.100	0.00057	0.00570	EPA SOP	0.000569869	0.005698695
ROTI	Kellicottia sp.	n/a	15-25-01		4	1	4x	2.3		0.26	0.5980								0.030	0.015	0.100	0.00065	0.00651	EPA SOP	0.000651165	0.006511647
ROTI	Kellicottia sp.	n/a	15-25-01		4	1	4x	2.9		0.26	0.7540								0.030	0.015	0.100	0.00131	0.01305	EPA SOP	0.001305273	0.013052729
ROTI	Kellicottia sp.	n/a	15-25-01		4	1	4x	2.7		0.26	0.7020								0.030	0.015	0.100	0.00105	0.01053	EPA SOP	0.001053413	0.010534129
ROTI	Kellicottia sp.	n/a	15-25-01		4	1	4x	2.8		0.26	0.7280								0.030	0.015	0.100	0.00117	0.01175	EPA SOP	0.001174847	0.011748473
ROTI	Kellicottia sp.	n/a	15-25-01		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	2.7		0.26	0.7020								0.030	0.015	0.100	0.00105	0.01053	EPA SOP	0.001053413	0.010534129
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	2		0.26	0.5200								0.030	0.015	0.100	0.00043	0.00428	EPA SOP	0.000428151	0.004281514
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	2.8		0.26	0.7280								0.030	0.015	0.100	0.00117	0.01175	EPA SOP	0.001174847	0.011748473
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	2.6		0.26	0.6760								0.030	0.015	0.100	0.00094	0.00941	EPA SOP	0.000940649	0.009406485
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	3.2		0.26	0.8320								0.030	0.015	0.100	0.00175	0.01754	EPA SOP	0.001753708	0.01753708
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	2.9		0.26	0.7540								0.030	0.015	0.100	0.00131	0.01305	EPA SOP	0.001305273	0.013052729
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	2.7		0.26	0.7020								0.030	0.015	0.100	0.00105	0.01053	EPA SOP	0.001053413	0.010534129
ROTI	Kellicottia sp.	n/a	15-25-02		4	1	4x	2.8		0.26	0.7280								0.030	0.015	0.100	0.00117	0.01175	EPA SOP	0.001174847	0.011748473
ROTI	Kellicottia sp.	n/a	15-25-03		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-03		4	1	4x	2.8		0.26	0.7280								0.030	0.015	0.100	0.00117	0.01175	EPA SOP	0.001174847	0.011748473
ROTI	Kellicottia sp.	n/a	15-25-03		4	1	4x	2.8		0.26	0.7280								0.030	0.015	0.100	0.00117	0.01175	EPA SOP	0.001174847	0.011748473
ROTI	Kellicottia sp.	n/a	15-25-03		4	1	4x	2.7		0.26	0.7020								0.030	0.015	0.100	0.00105	0.01053	EPA SOP	0.001053413	0.010534129
ROTI	Kellicottia sp.	n/a	15-25-03		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-03		4	1	4x	3.1		0.26	0.8060								0.030	0.015	0.100	0.00159	0.01594	EPA SOP	0.001594382	0.015943821
ROTI	Kellicottia sp.	n/a	15-25-03		4	1	4x	3.1		0.26	0.8060								0.030	0.015	0.100	0.00159	0.01594	EPA SOP	0.001594382	0.015943821
ROTI	Kellicottia sp.	n/a	15-25-03		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-03		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-03		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-03		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-04		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-04		4	1	4x	2.8		0.26	0.7280								0.030	0.015	0.100	0.00117	0.01175	EPA SOP	0.001174847	0.011748473
ROTI	Kellicottia sp.	n/a	15-25-04		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-04		4	1	4x	2.8		0.26	0.7280								0.030	0.015	0.100	0.00117	0.01175	EPA SOP	0.001174847	0.011748473
ROTI	Kellicottia sp.	n/a	15-25-04		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-04		4	1	4x	3.2		0.26	0.8320								0.030	0.015	0.100	0.00175	0.01754	EPA SOP	0.001753708	0.01753708
ROTI	Kellicottia sp.	n/a	15-25-04		4	1	4x	2.7		0.26	0.7020								0.030	0.015	0.100	0.00105	0.01053	EPA SOP	0.001053413	0.010534129
ROTI	Kellicottia sp.	n/a	15-25-04		4	1	4x	3.1		0.26	0.8060								0.030	0.015	0.100	0.00159	0.01594	EPA SOP	0.001594382	0.015943821
ROTI	Kellicottia sp.	n/a	15-25-04		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-04		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-04		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-05		4	1	4x	2		0.26	0.5200								0.030	0.015	0.100	0.00043	0.00428	EPA SOP	0.000428151	0.004281514
ROTI	Kellicottia sp.	n/a	15-25-05		4	1	4x	2.5		0.26	0.6500								0.030	0.015	0.100	0.00084	0.00836	EPA SOP	0.000836233	0.008362331
ROTI	Kellicottia sp.	n/a	15-25-05		4	1	4x	2.6		0.26	0.6760								0.030	0.015	0.100	0.00094	0.00941	EPA SOP	0.000940649	0.009406485
ROTI	Kellicottia sp.	n/a	15-25-05		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-05		4	1	4x	2.5		0.26	0.6500								0.030	0.015	0.100	0.00084	0.00836	EPA SOP	0.000836233	0.008362331
ROTI	Kellicottia sp.	n/a	15-25-06		4	1	4x	2.9		0.26	0.7540								0.030	0.015	0.100	0.00131	0.01305	EPA SOP	0.001305273	0.013052729
ROTI	Kellicottia sp.	n/a	15-25-06		4	1	4x	2.5		0.26	0.6500								0.030	0.015	0.100	0.00084	0.00836	EPA SOP	0.000836233	0.008362331
ROTI	Kellicottia sp.	n/a	15-25-06		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-06		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-06		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-06		4	1	4x	2.9		0.26	0.7540								0.030	0.015	0.100	0.00131	0.01305	EPA SOP	0.001305273	0.013052729
ROTI	Kellicottia sp.	n/a	15-25-06		4	1	4x	2.8		0.26	0.7280								0.030	0.015	0.100	0.00117	0.01175	EPA SOP	0.001174847	0.011748473
ROTI	Kellicottia sp.	n/a	15-25-07		4	1	4x	2.9		0.26	0.7540								0.030	0.015	0.100	0.00131	0.01305	EPA SOP	0.001305273	0.013052729
ROTI	Kellicottia sp.	n/a	15-25-07		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-07		4	1	4x	2.6		0.26	0.6760								0.030	0.015	0.100	0.00094	0.00941	EPA SOP	0.000940649	0.009406485
ROTI	Kellicottia sp.	n/a	15-25-07		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-07		4	1	4x	2.6		0.26	0.6760								0.030	0.015	0.100	0.00094	0.00941	EPA SOP	0.000940649	0.009406485
ROTI	Kellicottia sp.	n/a	15-25-08		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-08		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-08		4	1	4x	2.7		0.26	0.7020								0.030	0.015	0.100	0.00105	0.01053	EPA SOP	0.001053413	0.010534129
ROTI	Kellicottia sp.	n/a	15-25-08		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-08		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-09		4	1	4x	3.2		0.26	0.8320								0.030	0.015	0.100	0.00175	0.01754	EPA SOP	0.001753708	0.01753708
ROTI	Kellicottia sp.	n/a	15-25-09		4	1	4x	3.1		0.26	0.8060								0.030	0.015	0.100	0.00159	0.01594	EPA SOP	0.001594382	0.015943821
ROTI	Kellicottia sp.	n/a	15-25-09		4	1	4x	3.1		0.26	0.8060								0.030	0.015	0.100	0.00159	0.01594	EPA SOP	0.001594382	0.015943821
ROTI	Kellicottia sp.	n/a	15-25-09		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-09		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Kellicottia sp.	n/a	15-25-09		4	1	4x	3		0.26	0.7800								0.030	0.015	0.100	0.00145	0.01445	EPA SOP	0.001445011	0.014450108
ROTI	Conochilus sp.	n/a	15-25-01		4	1	4x	0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122

Zooplankton biomeasurements and conversions for calculation of biomass data, Azimuth Nunavut 2015

Groupcode	Taxon	Stage	Biologica Sample	Client Sample	Unit	Conversion (mm)	Objective	Length (units)	Width (units)	Calibration	Length (mm)	CRUSTACEA - Ln(Length)	CRUSTACEA - Ln(α)	CRUSTACEA - β	CRUSTACEA - mg DW	CRUSTACEA - WW:DW	CRUSTACEA - mg WW	CRUSTACEA α/β Reference	Rotifera - FF	Rotifera - %BV	Rotifera - WW:DW	Rotifera - mg DW	Rotifera - mg WW	Rotifera - FF/%BV Reference	Final Biomass - DW	Final Biomass - WW
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.9		0.26	0.2340								0.260	0.000	0.100	0.00033	0.00333	EPA SOP	0.000333136	0.003331355
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-01		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.4		0.26	0.1040								0.260	0.000	0.100	0.00003	0.00029	EPA SOP	2.92465E-05	0.000292465
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.4		0.26	0.1040								0.260	0.000	0.100	0.00003	0.00029	EPA SOP	2.92465E-05	0.000292465
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.9		0.26	0.2340								0.260	0.000	0.100	0.00033	0.00333	EPA SOP	0.000333136	0.003331355
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.4		0.26	0.1040								0.260	0.000	0.100	0.00003	0.00029	EPA SOP	2.92465E-05	0.000292465
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.3		0.26	0.0780								0.260	0.000	0.100	0.00001	0.00012	EPA SOP	1.23384E-05	0.000123384
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.4		0.26	0.1040								0.260	0.000	0.100	0.00003	0.00029	EPA SOP	2.92465E-05	0.000292465
ROTI	Conochilus sp.	n/a	15-25-02		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.4		0.26	0.1040								0.260	0.000	0.100	0.00003	0.00029	EPA SOP	2.92465E-05	0.000292465
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.4		0.26	0.1040								0.260	0.000	0.100	0.00003	0.00029	EPA SOP	2.92465E-05	0.000292465
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-03		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-04		4	1		0.9		0.26	0.2340								0.260	0.000	0.100	0.00033	0.00333	EPA SOP	0.000333136	0.003331355
ROTI	Conochilus sp.	n/a	15-25-04		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-04		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-04		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-04		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-05		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-05		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-05		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-05		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-05		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-05		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-05		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-05		4	1		0.4		0.26	0.1040								0.260	0.000	0.100	0.00003	0.00029	EPA SOP	2.92465E-05	0.000292465
ROTI	Conochilus sp.	n/a	15-25-06		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-06		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-06		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-06		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-06		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-06		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-06		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-06		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-07		4	1		1		0.26	0.2600								0.260	0.000	0.100	0.00046	0.00457	EPA SOP	0.000456976	0.00456976
ROTI	Conochilus sp.	n/a	15-25-07		4	1		0.9		0.26	0.2340								0.260	0.000	0.100	0.00033	0.00333	EPA SOP	0.000333136	0.003331355
ROTI	Conochilus sp.	n/a	15-25-07		4	1		0.9		0.26	0.2340								0.260	0.000	0.100	0.00033	0.00333	EPA SOP	0.000333136	0.003331355
ROTI	Conochilus sp.	n/a	15-25-07		4	1		0.9		0.26	0.2340								0.260	0.000	0.100	0.00033	0.00333	EPA SOP	0.000333136	0.003331355
ROTI	Conochilus sp.	n/a	15-25-07		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-07		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Conochilus sp.	n/a	15-25-07		4	1		0.9		0.26	0.2340								0.260	0.000	0.100	0.00033	0.00333	EPA SOP	0.000333136	0.003331355
ROTI	Conochilus sp.	n/a	15-25-07		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-07		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-08		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-08		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-08		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-08		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-08		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-09		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-09		4	1		0.5		0.26	0.1300								0.260	0.000	0.100	0.00006	0.00057	EPA SOP	0.000057122	0.00057122
ROTI	Conochilus sp.	n/a	15-25-09		4	1		0.6		0.26	0.1560								0.260	0.000	0.100	0.00010	0.00099	EPA SOP	9.87068E-05	0.000987068
ROTI	Conochilus sp.	n/a	15-25-09		4	1		0.8		0.26	0.2080								0.260	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233972	0.002339717
ROTI	Conochilus sp.	n/a	15-25-09		4	1		0.7		0.26	0.1820								0.260	0.000	0.100	0.00016	0.00157	EPA SOP	0.000156743	0.001567428
ROTI	Polyarthra sp.	n/a	15-25-05		4	1	4x	0.5		0.26	0.1300								0.230	0.100	0.100	0.00006	0.00056	EPA SOP	5.55841E-05	0.000555841
ROTI	Polyarthra sp.	n/a	15-25-05		4	1		0.5		0.26	0.1300								0.230	0.100	0.100	0.00006	0.00056	EPA SOP	5.55841E-05	0.000555841
ROTI	Polyarthra sp.	n/a	15-25-05		4	1		0.5		0.26	0.1300								0.230	0.100	0.100	0.00006	0.00056	EPA SOP	5.55841E-05	0.000555841
ROTI	Polyarthra sp.	n/a	15-25-07		4	1		0.6		0.26	0.1560								0.230	0.100	0.100	0.00010	0.00096	EPA SOP	9.60493E-05	0.000960493
ROTI	Polyarthra sp.	n/a	15-25-07		4	1		0.4		0.26	0.1040								0.230	0.100	0.100	0.00003	0.00028	EPA SOP	2.84591E-05	0.000284591
ROTI	Polyarthra sp.	n/a	15-25-07		4	1		0.6		0.26	0.1560								0.230	0.100	0.100	0.00010	0.00096	EPA SOP	9.60493E-05	0.000960493
ROTI	Polyarthra sp.	n/a	15-25-08		4	1		0.6		0.26	0.1560								0.230	0.100	0.100	0.00010	0.00096	EPA SOP	9.60493E-05	0.000960493
ROTI	Polyarthra sp.	n/a	15-25-08		4	1		0.4		0.26	0.1040								0.230	0.100	0.100	0.00003	0.00028	EPA SOP	2.84591E-05	0.000284591
ROTI	Polyarthra sp.	n/a	15-25-08		4	1		0.5		0.26	0.1300								0.230	0.100	0.100	0.00006	0.00056	EPA SOP	5.55841E-05	0.000555841
ROTI	Polyarthra sp.	n/a	15-25-08		4	1		0.6		0.26	0.1560								0.230	0.100	0.100	0.00010	0.00096	EPA SOP	9.60493E-05	0.000960493
ROTI	Polyarthra sp.	n/a	15-25-09		4	1		0.5		0.26	0.1300								0.230	0.100	0.100	0.00006	0.00056	EPA SOP	5.55841E-05	0.000555841
ROTI	Polyarthra sp.	n/a	15-25-09		4	1		0.6		0.26	0.1560								0.230	0.100	0.100	0.00010	0.00096	EPA SOP	9.60493E-05	0.000960493
ROTI	Polyarthra sp.	n/a	15-25-09		4	1		0.4		0.26	0.1040								0.230	0.100	0.100	0.00003	0.00028	EPA SOP	2.84591E-05	0.000284591
ROTI	Polyarthra sp.	n/a	15-25-09		4	1		0.7		0.26	0.1820								0.230	0.100	0.100	0.00015	0.00153	EPA SOP	0.000152523	0.001525228
ROTI	Polyarthra sp.	n/a	15-25-09		4	1		0.6		0.26	0.1560								0.230	0.100	0.100	0.00010	0.00096	EPA SOP	9.60493E-05	0.000960493
ROTI	Polyarthra sp.	n/a	15-25-09		4	1		0.4		0.26	0.1040								0.230	0.100	0.100	0.00003	0.00028	EPA SOP	2.84591E-05	0.000284591
ROTI	Polyarthra sp.	n/a	15-25-09		4	1		0.5		0.26	0.1300								0.230	0.100	0.100	0.00006	0.00056	EPA SOP	5.55841E-05	0.000555841
ROTI	Polyarthra sp.	n/a	15-25-03		4	1		0.6		0.26	0.1560								0.230	0.100	0.100	0.00010	0.00096	EPA SOP	9.60493E-05	0.000960493
ROTI	Polyarthra sp.	n/a	15-25-03		4	1		0.5		0.26	0.1300								0.230	0.100	0.100	0.00006	0.00056	EPA SOP	5.55841E-05	0.000555841
ROTI	Polyarthra sp.	n/a	15-25-03		4	1		0.6		0.26	0.1560								0.230	0.100	0.100	0.00010	0.00096	EPA SOP	9.60493E-05	0.000960493
ROTI	Polyarthra sp.	n/a	15-25-03		4	1		0.5		0.26	0.1300								0.230	0.100	0.100	0.00006	0.00056	EPA SOP	5.55841E-05	0.000555841
ROTI	Polyarthra sp.	n/a	15-25-03		4	1		0.6		0.26	0.1560								0.230	0.100	0.100	0.00010	0.00096	EPA SOP	9.60493E-05	0.000960493
ROTI	Asplanchna sp.	n/a	15-25-01		4	1	4x	0.5		0.26	0.1300								0.230	0.000	0.039	0.00002	0.00051	EPA SOP	1.97071E-05	0.00050531
ROTI	Asplanchna sp.	n/a	15-25-01		4	1	4x	0.8		0.26	0.2080								0.230	0.000	0.039	0.00008	0.00207	EPA SOP	8.07202E-05	0.00206975
ROTI	Asplanchna sp.	n/a	15-25-03		4	1	4x	0.7		0.26	0.1820								0.230	0.000	0.039	0.00005	0.00139	EPA SOP	5.40763E-05	0.001386571
ROTI	Asplanchna sp.	n/a	15-25-03		4	1	4x	1.0		0.26	0.2600								0.230	0.000	0.039	0.00016	0.00404	EPA SOP	0.000157657	0.00404248

Zooplankton biomeasurements and conversions for calculation of biomass data, Azimuth Nunavut 2015

Groupcode	Taxon	Stage	Biologica Sample	Client Sample	Unit	Conversion (mm)	Objective	Length (units)	Width (units)	Calibration	Length (mm)	CRUSTACEA - Ln(Length)	CRUSTACEA - Ln(α)	CRUSTACEA - β	CRUSTACEA - mg DW	CRUSTACEA - WW:DW	CRUSTACEA - mg WW	CRUSTACEA α/β Reference	Rotifera - FF	Rotifera - %BV	Rotifera - WW:DW	Rotifera - mg DW	Rotifera - mg WW	Rotifera - FF/%BV Reference	Final Biomass - DW	Final Biomass - WW
ROTI	Collotheca sp.	n/a	15-25-01		4	1	4x	0.7		0.26	0.1820								1.800	0.000	0.100	0.00109	0.01085	EPA SOP	0.001085142	0.010851422
ROTI	Synchaeta sp.	n/a	15-25-03		4	1	4x	1.1		0.26	0.2860								0.100	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233937	0.002339366
ROTI	Synchaeta sp.	n/a	15-25-03		4	1	4x	9		0.26	2.3400								0.100	0.000	0.100	0.12813	1.28129	EPA SOP	0.12812904	1.2812904
ROTI	Synchaeta sp.	n/a	15-25-03		4	1	4x	1.3		0.26	0.3380								0.100	0.000	0.100	0.00039	0.00386	EPA SOP	0.000386145	0.003861447
ROTI	Synchaeta sp.	n/a	15-25-03		4	1	4x	1		0.26	0.2600								0.100	0.000	0.100	0.00018	0.00176	EPA SOP	0.00017576	0.0017576
ROTI	Synchaeta sp.	n/a	15-25-04		4	1	4x	1.1		0.26	0.2860								0.100	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233937	0.002339366
ROTI	Synchaeta sp.	n/a	15-25-04		4	1	4x	0.8		0.26	0.2080								0.100	0.000	0.100	0.00009	0.00090	EPA SOP	8.99891E-05	0.000899891
ROTI	Synchaeta sp.	n/a	15-25-04		4	1	4x	1		0.26	0.2600								0.100	0.000	0.100	0.00018	0.00176	EPA SOP	0.00017576	0.0017576
ROTI	Synchaeta sp.	n/a	15-25-04		4	1	4x	1		0.26	0.2600								0.100	0.000	0.100	0.00018	0.00176	EPA SOP	0.00017576	0.0017576
ROTI	Synchaeta sp.	n/a	15-25-04		4	1	4x	1.1		0.26	0.2860								0.100	0.000	0.100	0.00023	0.00234	EPA SOP	0.000233937	0.002339366
ROTI	Synchaeta sp.	n/a	15-25-09		4	1	4x	1.3		0.26	0.3380								0.100	0.000	0.100	0.00039	0.00386	EPA SOP	0.000386145	0.003861447
ROTI	Synchaeta sp.	n/a	15-25-09		4	1	4x	0.9		0.26	0.2340								0.100	0.000	0.100	0.00013	0.00128	EPA SOP	0.000128129	0.00128129
ROTI	Synchaeta sp.	n/a	15-25-09		4	1	4x	1.2		0.26	0.3120								0.100	0.000	0.100	0.00030	0.00304	EPA SOP	0.000303713	0.003037133
ROTI	Synchaeta sp.	n/a	15-25-09		4	1	4x	1.4		0.26	0.3640								0.100	0.000	0.100	0.00048	0.00482	EPA SOP	0.000482285	0.004822854
ROTI	Synchaeta sp.	n/a	15-25-09		4	1	4x	1.2		0.26	0.3120								0.100	0.000	0.100	0.00030	0.00304	EPA SOP	0.000303713	0.003037133
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.5		0.26	0.3900	-0.94160854	1.050	2.460	0.000282	5	0.001409	EPA SOP; Calanoid copepodites							0.000281857	0.001409283
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.7		0.26	0.4420	-0.816445397	1.050	2.460	0.000383	5	0.001917	EPA SOP; Calanoid copepodites							0.000383485	0.001917423
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	2.1		0.26	0.5460	-0.605136303	1.050	2.460	0.000645	5	0.003225	EPA SOP; Calanoid copepodites							0.000644916	0.00322458
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	0.7		0.26	0.1820	-1.703748592	1.050	2.460	0.000043	5	0.000216	EPA SOP; Calanoid copepodites							4.323E-05	0.00021615
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-01		4	1	4x	1.5		0.26	0.3900	-0.94160854	1.050	2.460	0.000282	5	0.001409	EPA SOP; Calanoid copepodites							0.000281857	0.001409283
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	0.8		0.26	0.2080	-1.570217199	1.050	2.460	0.000060	5	0.000300	EPA SOP; Calanoid copepodites							6.00406E-05	0.000300203
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.050	2.460	0.000990	5	0.004952	EPA SOP; Calanoid copepodites							0.000990321	0.004951606
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-02		4	1	4x	1.5		0.26	0.3900	-0.94160854	1.050	2.460	0.000282	5	0.001409	EPA SOP; Calanoid copepodites							0.000281857	0.001409283
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.5		0.26	0.3900	-0.94160854	1.050	2.460	0.000282	5	0.001409	EPA SOP; Calanoid copepodites							0.000281857	0.001409283
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.5		0.26	0.3900	-0.94160854	1.050	2.460	0.000282	5	0.001409	EPA SOP; Calanoid copepodites							0.000281857	0.001409283
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.5		0.26	0.3900	-0.94160854	1.050	2.460	0.000282	5	0.001409	EPA SOP; Calanoid copepodites							0.000281857	0.001409283
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-03		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-04		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-04		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-04		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-04		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-04		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-04		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-04		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-04		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-04		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-04		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1.7		0.26	0.4420	-0.816445397	1.050	2.460	0.000383	5	0.001917	EPA SOP; Calanoid copepodites							0.000383485	0.001917423
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-05		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	0.8		0.26	0.2080	-1.570217199	1.050	2.460	0.000060	5	0.000300	EPA SOP; Calanoid copepodites							6.00406E-05	0.000300203
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	1.6		0.26	0.4160	-0.877070019	1.050	2.460	0.000330	5	0.001652	EPA SOP; Calanoid copepodites							0.000330353	0.001651767
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	1.6		0.26	0.4160	-0.877070019	1.050	2.460	0.000330	5	0.001652	EPA SOP; Calanoid copepodites							0.000330353	0.001651767
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	0.9		0.26	0.2340	-1.452434164	1.050	2.460	0.000080	5	0.000401	EPA SOP; Calanoid copepodites							8.02195E-05	0.000401098
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	0.9		0.26	0.2340	-1.452434164	1.050	2.460	0.000080	5	0.000401	EPA SOP; Calanoid copepodites							8.02195E-05	0.000401098
CRCO	Calanoida indet.	Nauplius	15-25-06		4	1	4x	1.5		0.26	0.3900	-0.94160854	1.050	2.460	0.000282	5	0.001409	EPA SOP; Calanoid copepodites							0.000281857	0.001409283
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1.5		0.26	0.3900	-0.94160854	1.050	2.460	0.000282	5	0.001409	EPA SOP; Calanoid copepodites							0.000281857	0.001409283
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1.5		0.26	0.3900	-0.94160854	1.050	2.460	0.000282	5	0.001409	EPA SOP; Calanoid copepodites							0.000281857	0.001409283
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1.6		0.26	0.4160	-0.877070019	1.050	2.460	0.000330	5	0.001652	EPA SOP; Calanoid copepodites							0.000330353	0.001651767

Zooplankton biomeasurements and conversions for calculation of biomass data, Azimuth Nunavut 2015

Groupcode	Taxon	Stage	Biologica Sample	Client Sample	Unit	Conversion (mm)	Objective	Length (units)	Width (units)	Calibration	Length (mm)	CRUSTACEA - Ln(Length)	CRUSTACEA - Ln(α)	CRUSTACEA - β	CRUSTACEA - mg DW	CRUSTACEA - WW:DW	CRUSTACEA - mg WW	CRUSTACEA α/β Reference	Rotifera - FF	Rotifera - %BV	Rotifera - WW:DW	Rotifera - mg DW	Rotifera - mg WW	Rotifera - FF/%BV Reference	Final Biomass - DW	Final Biomass - WW
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-07		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-08		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-08		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-08		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-08		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-08		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-08		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-08		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-08		4	1	4x	1.5		0.26	0.3900	-0.94160854	1.050	2.460	0.000282	5	0.001409	EPA SOP; Calanoid copepodites							0.000281857	0.001409283
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; Calanoid copepodites							0.000162791	0.000813953
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	0.9		0.26	0.2340	-1.452434164	1.050	2.460	0.000080	5	0.000401	EPA SOP; Calanoid copepodites							8.02195E-05	0.000401098
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; Calanoid copepodites							0.000103955	0.000519773
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; Calanoid copepodites							0.000237858	0.001189292
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; Calanoid copepodites							0.000198219	0.000991093
CRCO	Calanoida indet.	Nauplius	15-25-09		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; Calanoid copepodites							0.000131422	0.000657112
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.660	3.970	0.000037	5	0.000183	EPA SOP; Cyclopoid copepodites							3.65344E-05	0.000182672
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.660	3.970	0.000037	5	0.000183	EPA SOP; Cyclopoid copepodites							3.65344E-05	0.000182672
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	0.9		0.26	0.2340	-1.452434164	1.660	3.970	0.000016	5	0.000082	EPA SOP; Cyclopoid copepodites							1.64708E-05	8.23542E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.660	3.970	0.000095	5	0.000476	EPA SOP; Cyclopoid copepodites							9.51703E-05	0.000475851
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.660	3.970	0.000037	5	0.000183	EPA SOP; Cyclopoid copepodites							3.65344E-05	0.000182672
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.660	3.970	0.000052	5	0.000258	EPA SOP; Cyclopoid copepodites							5.16087E-05	0.000258043
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.660	3.970	0.000052	5	0.000258	EPA SOP; Cyclopoid copepodites							5.16087E-05	0.000258043
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.660	3.970	0.000052	5	0.000258	EPA SOP; Cyclopoid copepodites							5.16087E-05	0.000258043
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	0.7		0.26	0.1820	-1.703748592	1.660	3.970	0.000006	5	0.000030	EPA SOP; Cyclopoid copepodites							6.07313E-06	3.03656E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-01		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.660	3.970	0.000052	5	0.000258	EPA SOP; Cyclopoid copepodites							5.16087E-05	0.000258043
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.660	3.970	0.000095	5	0.000476	EPA SOP; Cyclopoid copepodites							9.51703E-05	0.000475851
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	0.7		0.26	0.1820	-1.703748592	1.660	3.970	0.000006	5	0.000030	EPA SOP; Cyclopoid copepodites							6.07313E-06	3.03656E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.660	3.970	0.000037	5	0.000183	EPA SOP; Cyclopoid copepodites							3.65344E-05	0.000182672
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.660	3.970	0.000052	5	0.000258	EPA SOP; Cyclopoid copepodites							5.16087E-05	0.000258043
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.660	3.970	0.000037	5	0.000183	EPA SOP; Cyclopoid copepodites							3.65344E-05	0.000182672
CRCO	Cyclopoida indet.	Nauplius	15-25-02		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.660	3.970	0.000037	5	0.000183	EPA SOP; Cyclopoid copepodites							3.65344E-05	0.000182672
CRCO	Cyclopoida indet.	Nauplius	15-25-03		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-03		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.660	3.970	0.000037	5	0.000183	EPA SOP; Cyclopoid copepodites							3.65344E-05	0.000182672
CRCO	Cyclopoida indet.	Nauplius	15-25-03		4	1	4x	0.9		0.26	0.2340	-1.452434164	1.660	3.970	0.000016	5	0.000082	EPA SOP; Cyclopoid copepodites							1.64708E-05	8.23542E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-03		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-03		4	1	4x	0.8		0.26	0.2080	-1.570217199	1.660	3.970	0.000010	5	0.000052	EPA SOP; Cyclopoid copepodites							1.03191E-05	5.15953E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-03		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-03		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-04		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-04		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-04		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-04		4	1	4x	0.7		0.26	0.1820	-1.703748592	1.660	3.970	0.000006	5	0.000030	EPA SOP; Cyclopoid copepodites							6.07313E-06	3.03656E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-04		4	1	4x	0.8		0.26	0.2080	-1.570217199	1.660	3.970	0.000010	5	0.000052	EPA SOP; Cyclopoid copepodites							1.03191E-05	5.15953E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-04		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.660	3.970	0.000037	5	0.000183	EPA SOP; Cyclopoid copepodites							3.65344E-05	0.000182672
CRCO	Cyclopoida indet.	Nauplius	15-25-04		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.660	3.970	0.000052	5	0.000258	EPA SOP; Cyclopoid copepodites							5.16087E-05	0.000258043
CRCO	Cyclopoida indet.	Nauplius	15-25-04		4	1	4x	1		0.26	0.2600	-1.347073648	1.660	3.970	0.000025	5	0.000125	EPA SOP; Cyclopoid copepodites							2.50249E-05	0.000125125
CRCO	Cyclopoida indet.	Nauplius	15-25-05		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-05		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-05		4	1	4x	0.5		0.26	0.1300	-2.040220829	1.660	3.970	0.000002	5	0.000008	EPA SOP; Cyclopoid copepodites							1.59692E-06	7.98461E-06
CRCO	Cyclopoida indet.	Nauplius	15-25-05		4	1	4x	0.4		0.26	0.1040	-2.26336438	1.660	3.970	0.000001	5	0.000003	EPA SOP; Cyclopoid copepodites							6.58493E-07	3.29247E-06
CRCO	Cyclopoida indet.	Nauplius	15-25-05		4	1	4x	0.5		0.26	0.1300	-2.040220829	1.660	3.970	0.000002	5	0.000008	EPA SOP; Cyclopoid copepodites							1.59692E-06	7.98461E-06
CRCO	Cyclopoida indet.	Nauplius	15-25-05		4	1	4x	0.5		0.26	0.1300	-2.040220829	1.660	3.970	0.000002	5	0.000008	EPA SOP; Cyclopoid copepodites							1.59692E-06	7.98461E-06
CRCO	Cyclopoida indet.	Nauplius	15-25-05		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.5		0.26	0.1300	-2.040220829	1.660	3.970	0.000002	5	0.000008	EPA SOP; Cyclopoid copepodites							1.59692E-06	7.98461E-06
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.5		0.26	0.1300	-2.040220829	1.660	3.970	0.000002	5	0.000008	EPA SOP; Cyclopoid copepodites							1.59692E-06	7.98461E-06
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.5		0.26	0.1300	-2.040220829	1.660	3.970	0.000002	5	0.000008	EPA SOP; Cyclopoid copepodites							1.59692E-06	7.98461E-06
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.5		0.26	0.1300	-2.040220829	1.660	3.970	0.000002	5	0.000008	EPA SOP; Cyclopoid copepodites							1.59692E-06	7.98461E-06
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-06		4	1	4x	0.5		0.26	0.1300	-2.040220829	1.660	3.970	0.000002	5	0.000008	EPA SOP; Cyclopoid copepodites							1.59692E-06	7.98461E-06
CRCO	Cyclopoida indet.	Nauplius	15-25-07		4	1	4x	0.7		0.26	0.1820	-1.703748592	1.660	3.970	0.000006	5	0.000030	EPA SOP; Cyclopoid copepodites							6.07313E-06	3.03656E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-07		4	1	4x	0.9		0.26	0.2340	-1.452434164	1.660	3.970	0.000016	5	0.000082	EPA SOP; Cyclopoid copepodites							1.64708E-05	8.23542E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-07		4	1	4x	0.7		0.26	0.1820	-1.703748592	1.660	3.970	0.000006	5	0.000030	EPA SOP; Cyclopoid copepodites							6.07313E-06	3.03656E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-07		4	1	4x	0.7		0.26	0.1820	-1.703748592	1.660	3.970	0.000006	5	0.000030	EPA SOP; Cyclopoid copepodites							6.07313E-06	3.03656E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-07		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-07		4	1	4x	0.7		0.26	0.1820	-1.703748592	1.660	3.970	0.000006	5	0.000030	EPA SOP; Cyclopoid copepodites							6.07313E-06	3.03656E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-07		4	1	4x	0.7		0.26	0.1820	-1.703748592	1.660	3.970	0.000006	5	0.000030	EPA SOP; Cyclopoid copepodites							6.07313E-06	3.03656E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-08		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-09		4	1	4x	0.8		0.26	0.2080	-1.570217199	1.660	3.970	0.000010	5	0.000052	EPA SOP; Cyclopoid copepodites							1.03191E-05	5.15953E-05
CRCO	Cyclopoida indet.	Nauplius	15-25-09		4	1	4x	0.6		0.26	0.1560	-1.857899272	1.660	3.970	0.000003	5	0.000016	EPA SOP; Cyclopoid copepodites							3.29332E-06	1.64666E-05
CRCO	Copepoda indet.	Nauplius	15-25-01		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; *Diaptomus copepodites*							0.000162791	0.000813953
CRCO	Copepoda indet.	Nauplius	15-25-01		4	1	4x	1		0.26	0.2600	-1.347073648	1.050	2.460	0.000104	5	0.000520	EPA SOP; *Diaptomus copepodites*							0.000103955	0.000519773
CRCO	Copepoda indet.	Nauplius	15-25-01		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; *Diaptomus copepodites*							0.000162791	0.000813953
CRCO	Copepoda indet.	Nauplius	15-25-01		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; *Diaptomus copepodites*							0.000162791	0.000813953
CRCO	Copepoda indet.	Nauplius	15-25-02		4	1	4x	1.4		0.26	0.3640	-1.010601411	1.050	2.460	0.000238	5	0.001189	EPA SOP; *Diaptomus copepodites*							0.000237858	0.001189292
CRCO	Copepoda indet.	Nauplius	15-25-02		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; *Diaptomus copepodites*							0.000131422	0.000657112
CRCO	Copepoda indet.	Nauplius	15-25-02		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; *Diaptomus copepodites*							0.000131422	0.000657112
CRCO	Copepoda indet.	Nauplius	15-25-02		4	1	4x	1.3		0.26	0.3380	-1.084709383	1.050	2.460	0.000198	5	0.000991	EPA SOP; *Diaptomus copepodites*							0.000198219	0.000991093
CRCO	Copepoda indet.	Nauplius	15-25-02		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; *Diaptomus copepodites*							0.000131422	0.000657112
CRCO	Copepoda indet.	Nauplius	15-25-02		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; *Diaptomus copepodites*							0.000131422	0.000657112
CRCO	Copepoda indet.	Nauplius	15-25-02		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; *Diaptomus copepodites*							0.000162791	0.000813953
CRCO	Copepoda indet.	Nauplius	15-25-02		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; *Diaptomus copepodites*							0.000162791	0.000813953
CRCO	Copepoda indet.	Nauplius	15-25-04		4	1	4x	0.9		0.26	0.2340	-1.452434164	1.050	2.460	0.000080	5	0.000401	EPA SOP; *Diaptomus copepodites*							8.02195E-05	0.000401098
CRCO	Copepoda indet.	Nauplius	15-25-04		4	1	4x	1.2		0.26	0.3120	-1.164752091	1.050	2.460	0.000163	5	0.000814	EPA SOP; *Diaptomus copepodites*							0.000162791	0.000813953
CRCO	Copepoda indet.	Nauplius	15-25-04		4	1	4x	1.1		0.26	0.2860	-1.251763468	1.050	2.460	0.000131	5	0.000657	EPA SOP; *Diaptomus copepodites*							0.000131422	0.000657112

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Groupcode	Taxon	Stage	Biologica Sample	Client Sample	Unit	Conversion (mm)	Objective	Length (units)	Width (units)	Calibration	Length (mm)	CRUSTACEA - Ln(Length)	CRUSTACEA - Ln(α)	CRUSTACEA - β	CRUSTACEA - mg DW	CRUSTACEA - WW:DW	CRUSTACEA - mg WW	CRUSTACEA α/β Reference	Rotifera - FF	Rotifera - %BV	Rotifera - WW:DW	Rotifera - mg DW	Rotifera - mg WW	Rotifera - FF/%BV Reference	Final Biomass - DW	Final Biomass - WW
CRCO	Copepoda indet.	Nauplius	15-25-06		4	1	4x	0.9		0.26	0.2340	-1.452434164	1.050	2.460	0.000080	5	0.000401	EPA SOP; *Diaptomus copepodites*							8.02195E-05	0.000401098
CRCO	Copepoda indet.	Nauplius	15-25-07		4	1	4x	0.9		0.26	0.2340	-1.452434164	1.050	2.460	0.000080	5	0.000401	EPA SOP; *Diaptomus copepodites*							8.02195E-05	0.000401098
CRCL	Holopedium gibberum	F	15-25-01		4	1	4x	3.0		0.26	0.7800	-0.248461359	2.073	3.190	0.003598	5	0.017991	EPA SOP; Alpha modified via Watkins et al.							0.003598108	0.017990542
CRCL	Holopedium gibberum	F	15-25-01		4	1	4x	3		0.26	0.7800	-0.248461359	2.073	3.190	0.003598	5	0.017991	EPA SOP; Alpha modified via Watkins et al.							0.003598108	0.017990542
CRCL	Holopedium gibberum	F	15-25-01		4	1	4x	2.3		0.26	0.5980	-0.514164525	2.073	3.190	0.001542	5	0.007708	EPA SOP; Alpha modified via Watkins et al.							0.001541591	0.007707956
CRCL	Holopedium gibberum	F	15-25-01		4	1	4x	2.7		0.26	0.7020	-0.353821875	2.073	3.190	0.002571	5	0.012855	EPA SOP; Alpha modified via Watkins et al.							0.002571034	0.012855171
CRCL	Holopedium gibberum	F	15-25-02		4	1	4x	2		0.26	0.5200	-0.653926467	2.073	3.190	0.000987	5	0.004935	EPA SOP; Alpha modified via Watkins et al.							0.000987059	0.004935295
CRCL	Holopedium gibberum	F	15-25-02		4	1	4x	3		0.26	0.7800	-0.248461359	2.073	3.190	0.003598	5	0.017991	EPA SOP; Alpha modified via Watkins et al.							0.003598108	0.017990542
CRCL	Holopedium gibberum	F	15-25-02		4	1	4x	2.3		0.26	0.5980	-0.514164525	2.073	3.190	0.001542	5	0.007708	EPA SOP; Alpha modified via Watkins et al.							0.001541591	0.007707956
CRCL	Holopedium gibberum	F	15-25-02		4	1	4x	2		0.26	0.5200	-0.653926467	2.073	3.190	0.000987	5	0.004935	EPA SOP; Alpha modified via Watkins et al.							0.000987059	0.004935295
CRCL	Holopedium gibberum	F	15-25-02		4	1	4x	2.2		0.26	0.5720	-0.558616288	2.073	3.190	0.001338	5	0.006689	EPA SOP; Alpha modified via Watkins et al.							0.001337783	0.006688917
CRCL	Holopedium gibberum	F	15-25-02		4	1	4x	2.5		0.26	0.6500	-0.430782916	2.073	3.190	0.002011	5	0.010057	EPA SOP; Alpha modified via Watkins et al.							0.002011343	0.010056713
CRCL	Holopedium gibberum	F	15-25-02		4	1	4x	2.2		0.26	0.5720	-0.558616288	2.073	3.190	0.001338	5	0.006689	EPA SOP; Alpha modified via Watkins et al.							0.001337783	0.006688917
CRCL	Holopedium gibberum	F	15-25-02		4	1	4x	2		0.26	0.5200	-0.653926467	2.073	3.190	0.000987	5	0.004935	EPA SOP; Alpha modified via Watkins et al.							0.000987059	0.004935295
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	3		0.26	0.7800	-0.248461359	2.073	3.190	0.003598	5	0.017991	EPA SOP; Alpha modified via Watkins et al.							0.003598108	0.017990542
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	3.2		0.26	0.8320	-0.183922838	2.073	3.190	0.004421	5	0.022103	EPA SOP; Alpha modified via Watkins et al.							0.004420647	0.022103237
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	2.3		0.26	0.5980	-0.514164525	2.073	3.190	0.001542	5	0.007708	EPA SOP; Alpha modified via Watkins et al.							0.001541591	0.007707956
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	2		0.26	0.5200	-0.653926467	2.073	3.190	0.000987	5	0.004935	EPA SOP; Alpha modified via Watkins et al.							0.000987059	0.004935295
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	2.2		0.26	0.5720	-0.558616288	2.073	3.190	0.001338	5	0.006689	EPA SOP; Alpha modified via Watkins et al.							0.001337783	0.006688917
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	2.5		0.26	0.6500	-0.430782916	2.073	3.190	0.002011	5	0.010057	EPA SOP; Alpha modified via Watkins et al.							0.002011343	0.010056713
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	2.2		0.26	0.5720	-0.558616288	2.073	3.190	0.001338	5	0.006689	EPA SOP; Alpha modified via Watkins et al.							0.001337783	0.006688917
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	2		0.26	0.5200	-0.653926467	2.073	3.190	0.000987	5	0.004935	EPA SOP; Alpha modified via Watkins et al.							0.000987059	0.004935295
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	3		0.26	0.7800	-0.248461359	2.073	3.190	0.003598	5	0.017991	EPA SOP; Alpha modified via Watkins et al.							0.003598108	0.017990542
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	3.2		0.26	0.8320	-0.183922838	2.073	3.190	0.004421	5	0.022103	EPA SOP; Alpha modified via Watkins et al.							0.004420647	0.022103237
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	3.4		0.26	0.8840	-0.123298216	2.073	3.190	0.005364	5	0.026819	EPA SOP; Alpha modified via Watkins et al.							0.005363832	0.026819161
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	2.9		0.26	0.7540	-0.282362911	2.073	3.190	0.003229	5	0.016146	EPA SOP; Alpha modified via Watkins et al.							0.00322929	0.01614645
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	2.4		0.26	0.6240	-0.471604911	2.073	3.190	0.001766	5	0.008829	EPA SOP; Alpha modified via Watkins et al.							0.001765758	0.008828792
CRCL	Holopedium gibberum	F	15-25-03		4	1	4x	2.2		0.26	0.5720	-0.558616288	2.073	3.190	0.001338	5	0.006689	EPA SOP; Alpha modified via Watkins et al.							0.001337783	0.006688917
CRCL	Holopedium gibberum	F	15-25-04		4	1	4x	2.9		0.26	0.7540	-0.282362911	2.073	3.190	0.003229	5	0.016146	EPA SOP; Alpha modified via Watkins et al.							0.00322929	0.01614645
CRCL	Holopedium gibberum	F	15-25-04		4	1	4x	2.5		0.26	0.6500	-0.430782916	2.073	3.190	0.002011	5	0.010057	EPA SOP; Alpha modified via Watkins et al.							0.002011343	0.010056713
CRCL	Holopedium gibberum	F	15-25-04		4	1	4x	2.6		0.26	0.6760	-0.391562203	2.073	3.190	0.002279	5	0.011397	EPA SOP; Alpha modified via Watkins et al.							0.00227941	0.011397049
CRCL	Holopedium gibberum	F	15-25-04		4	1	4x	2.2		0.26	0.5720	-0.558616288	2.073	3.190	0.001338	5	0.006689	EPA SOP; Alpha modified via Watkins et al.							0.001337783	0.006688917
CRCL	Holopedium gibberum	F	15-25-04		4	1	4x	2.5		0.26	0.6500	-0.430782916	2.073	3.190	0.002011	5	0.010057	EPA SOP; Alpha modified via Watkins et al.							0.002011343	0.010056713
CRCL	Holopedium gibberum	F	15-25-04		4	1	4x	3.3		0.26	0.8580	-0.153151179	2.073	3.190	0.004877	5	0.024383	EPA SOP; Alpha modified via Watkins et al.							0.004876597	0.024382987
CRCL	Holopedium gibberum	F	15-25-05		4	1	4x	2.5		0.26	0.6500	-0.430782916	2.073	3.190	0.002011	5	0.010057	EPA SOP; Alpha modified via Watkins et al.							0.002011343	0.010056713
CRCL	Holopedium gibberum	F	15-25-05		4	1	4x	2.4		0.26	0.6240	-0.471604911	2.073	3.190	0.001766	5	0.008829	EPA SOP; Alpha modified via Watkins et al.							0.001765758	0.008828792
CRCL	Holopedium gibberum	F	15-25-05		4	1	4x	3.3		0.26	0.8580	-0.153151179	2.073	3.190	0.004877	5	0.024383	EPA SOP; Alpha modified via Watkins et al.							0.004876597	0.024382987
CRCL	Holopedium gibberum	F	15-25-05		4	1	4x	3.3		0.26	0.8580	-0.153151179	2.073	3.190	0.004877	5	0.024383	EPA SOP; Alpha modified via Watkins et al.							0.004876597	0.024382987
CRCL	Holopedium gibberum	F	15-25-05		4	1	4x	3.2		0.26	0.8320	-0.183922838	2.073	3.190	0.004421	5	0.022103	EPA SOP; Alpha modified via Watkins et al.							0.004420647	0.022103237
CRCL	Holopedium gibberum	F	15-25-05		4	1	4x	2.9		0.26	0.7540	-0.282362911	2.073	3.190	0.003229	5	0.016146	EPA SOP; Alpha modified via Watkins et al.							0.00322929	0.01614645
CRCL	Holopedium gibberum	F	15-25-05		4	1	4x	2.4		0.26	0.6240	-0.471604911	2.073	3.190	0.001766	5	0.008829	EPA SOP; Alpha modified via Watkins et al.							0.001765758	0.008828792
CRCL	Holopedium gibberum	F	15-25-07		4	1	4x	2.7		0.26	0.7020	-0.353821875	2.073	3.190	0.002571	5	0.012855	EPA SOP; Alpha modified via Watkins et al.							0.002571034	0.012855171
CRCL	Holopedium gibberum	F	15-25-07		4	1	4x	2.9		0.26	0.7540	-0.282362911	2.073	3.190	0.003229	5	0.016146	EPA SOP; Alpha modified via Watkins et al.							0.00322929	0.01614645
CRCL	Holopedium gibberum	F	15-25-07		4	1	4x	2.8		0.26	0.7280	-0.317454231	2.073	3.190	0.002887	5	0.014436	EPA SOP; Alpha modified via Watkins et al.							0.002887298	0.014436488
CRCL	Holopedium gibberum	F	15-25-07		4	1	4x	2.6		0.26	0.6760	-0.391562203	2.073	3.190	0.002279	5	0.011397	EPA SOP; Alpha modified via Watkins et al.							0.00227941	0.011397049
CRCL	Holopedium gibberum	F	15-25-07		4	1	4x	2.2		0.26	0.5720	-0.558616288	2.073	3.190	0.001338	5	0.006689	EPA SOP; Alpha modified via Watkins et al.							0.001337783	0.006688917
CRCL	Holopedium gibberum	F	15-25-07		4	1	4x	2.2		0.26	0.5720	-0.558616288	2.073	3.190	0.001338	5	0.006689	EPA SOP; Alpha modified via Watkins et al.							0.001337783	0.006688917
CRCL	Leptodora kindtii	F	15-25-07		4	1	4x	5.5		1	5.5000	1.704748092	-0.822	2.670	0.041666	5	0.208328	Malley et al. 1989							0.041665665	0.208328325
CRCL	Daphnia middendorffiana	F	15-25-01		4	1	4x	7.3		0.26	1.8980	0.6408007	1.393	3.011	0.027728	5	0.138641	Malley et al. 1989							0.027728227	0.138641133
CRCL	Daphnia middendorffiana	F	15-25-01		4	1	4x	6.9		0.26	1.7940	0.584447764	1.393	3.011	0.023401	5	0.117004	Malley et al. 1989							0.023400847	0.117004235
CRCL	Daphnia middendorffiana	F	15-25-01		4	1	4x	7		0.26	1.8200	0.598836501	1.393	3.011	0.024437	5	0.122185	Malley et al. 1989							0.024436959	0.122184796
CRCL	Daphnia middendorffiana	F	15-25-01		4	1	4x	6		0.26	1.5600	0.444685821	1.393	3.011	0.015363	5	0.076814	Malley et al. 1989							0.0153628	0.076814
CRCL	Daphnia middendorffiana	F	15-25-01		4	1	4x	6.2		0.26	1.6120	0.477475644	1.393	3.011	0.016957	5	0.084785	Malley et al. 1989							0.016956973	0.084784867
CRCL	Daphnia middendorffiana	F	15-25-01		4	1	4x	6.7		0.26	1.7420	0.555033878	1.393	3.011	0.021417	5	0.107087	Malley et al. 1989							0.021417471	0.107087357
CRCL	Daphnia middendorffiana	F	15-25-01		4	1	4x	6.7		0.26	1.7420	0.555033878	1.393	3.011	0.021417	5	0.107087	Malley et al. 1989							0.021417471	0.107087357
CRCL	Daphnia middendorffiana	F	15-25-01		4	1	4x	6.6		0.26	1.7160	0.539996001	1.393	3.011	0.020469	5	0.102347	Malley et al. 1989							0.020469336	0.10234668
CRCL	Daphnia middendorffiana	F	15-25-01		4	1	4x	6.6		0.26	1.7160	0.539996001	1.393	3.011	0.020469	5	0.102347	Malley et al. 1989							0.020469336	0.10234668
CRCL	Daphnia middendorffiana	F	15-25-01		4	1	4x	6.8		0.26	1.7680	0.569848964	1.393	3.011	0.022394	5	0.111972	Malley et al. 1989							0.022394496	0.111972482
CRCL	Daphnia middendorffiana	F	15-25-01		4	1	4x	7.2		0.26	1.8720	0.627007378	1.393	3.011	0.026600	5	0.133001	Malley et al. 1989							0.026600213	0.133001064
CRCL	Daphnia middendorffiana	F	15-25-02		4	1	4x	6.1		0.26	1.5860	0.461215123	1.393	3.011	0.016147	5	0.080734	Malley et al. 1989							0.016146749	0.080733746
CRCL	Daphnia middendorffiana	F	15-25-02		4	1	4x	9.3		0.26	2.4180	0.882940752	1.393	3.011	0.057486	5	0.287428	Malley et al. 1989							0.057485607	0.287428035
CRCL	Daphnia middendorffiana	F	15-25-02		4	1	4x	6		0.26	1.5600	0.444685821	1.393	3.011	0.015363	5	0.076814	Malley et al. 1989							0.0153628	0.076814
CRCL	Daphnia middendorffiana	F	15-25-02		4	1	4x	5.9		0.26	1.5340	0.427878703	1.393	3.011	0.014605	5	0.073023	Malley et al. 1989							0.014604691	0.073023455
CRCL	Daphnia middendorffiana	F	15-25-02		4	1	4x	6.2		0.26	1.6120	0.477475644	1.393	3.011	0.016957	5	0.084785	Malley et al. 1989							0.016956973	0.084784867
CRCL	Daphnia middendorffiana	F	15-25-02		4	1	4x	7.5		0.26	1.9500	0.667829373	1.393	3.011	0.030079	5	0.150396	Malley et al. 1989							0.03007921	0.150396051
CRCL	Daphnia middendorffiana	F	15-25-02		4	1	4x	6.5		0.26	1.6900	0.524728529	1.393	3.011	0.019550	5	0.097748	Malley et al. 1989							0.019549654	0.097748271
CRCL	Daphnia middendorffiana	F	15-25-02		4	1	4x	7.4		0.26	1.9240	0.654406352	1.393	3.011	0.028888	5	0.144439	Malley et al. 1989							0.028887747	0.144438735
CRCL	Daphnia middendorffiana	F	15-25-02		4	1	4x	6.3		0.26	1.6380	0.493475985	1.393	3.011	0.017794	5	0.088970	Malley et al. 1989							0.017793909	0.088969544
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	8.2		0.26	2.1320	0.757060506	1.393	3.011	0.039351	5	0.196753	Malley et al. 1989							0.03935052	0.196752599
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	6.5		0.26	1.6900	0.524728529	1.393	3.011	0.019550	5	0.097748	Malley et al. 1989							0.019549654	0.097748271
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	7		0.26	1.8200	0.598836501	1.393	3.011	0.024437	5	0.122185	Malley et al. 1989							0.024436959	0.122184796
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	7.4		0.26	1.9240	0.654406352	1.393	3.011	0.028888	5	0.144439	Malley et al. 1989							0.028887747	0.144438735
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	7		0.26	1.8200	0.598836501	1.393	3.011	0.024437	5	0.122185	Malley et al. 1989							0.024436959	0.122184796
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	7.5		0.26	1.9500	0.667829373	1.393	3.011	0.030079	5	0.150396	Malley et al. 1989							0.03007921	0.150396051
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	7.5		0.26	1.9500	0.667829373	1.393	3.011	0.030079	5	0.150396	Malley et al. 1989							0.03007921	0.150396051
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	5		0.26	1.3000	0.262364264	1.393	3.011	0.008873	5	0.044363	Malley et al. 1989							0.008872697	0.044363485
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	5.1		0.26	1.3260	0.282166892	1.393	3.011	0.009418	5	0.047089	Malley et al. 1989							0.009417828	0.047089141
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	5.5		0.26	1.4300	0.357674444	1.393	3.011	0.011822	5	0.059110	Malley et al. 1989							0.011821947	0.059109737
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	8.1		0.26	2.1060	0.744790414	1.393	3.011	0.037923	5	0.189616	Malley et al. 1989							0.037923233	0.189616166
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	7.5		0.26	1.9500	0.667829373	1.393	3.011	0.030079	5	0.150396	Malley et al. 1989							0.03007921	0.150396051
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	7.2		0.26	1.8720	0.627007378	1.393	3.011	0.026600	5	0.133001	Malley et al. 1989							0.026600213	0.133001064
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	7.3		0.26	1.8980	0.6408007	1.393	3.011	0.027728	5	0.138641	Malley et al. 1989							0.027728227	0.138641133
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	7.7		0.26	2.0020	0.694146681	1.393	3.011	0.032560	5	0.162799	Malley et al. 1989							0.032559711	0.162798554
CRCL	Daphnia middendorffiana	F	15-25-05		4	1	4x	7.7		0.26	2.0020	0.694146681	1.393	3.011	0.032560	5	0.162799	Malley et al. 1989							0.032559711	0.162798554
CRCL	Daphnia middendorffiana	F	15-25-06		4	1	4x	8.5		0.26	2.2100	0.792992516	1.393	3.011	0.043847	5	0.219234	Malley et al. 1989							0.043846744	0.21923372
CRCL	Daphnia middendorffiana	F	15-25-06		4	1	4x	7		0.26	1.8200	0.598836501	1.393	3.011	0.024437	5	0.122185	Malley et al. 1989							0.024436959	0.122184796
CRCL	Daphnia middendorffiana	F	15-25-06		4	1	4x	6.6		0.26	1.7160	0.539996001	1.393	3.011	0.020469	5	0.102347	Malley et al. 1989							0.020469336	0.10234668
CRCL	Daphnia middendorffiana	F	15-25-06		4	1	4x	6.6		0.26	1.7160	0.539996001	1.393	3.011	0.020469	5	0.102347	Malley et al. 1989							0.020469336	0.10234668
CRCL	Daphnia middendorffiana	F	15-25-08		4	1	4x	8.5		0.26	2.2100	0.792992516	1.393	3.011	0.043847	5	0.219234	Malley et al. 1989							0.043846744	0.21923372
CRCL	Daphnia middendorffiana	F	15-25-08		4	1	4x	5.5		0.26	1.4300	0.357674444	1.393	3.011	0.011822	5	0.059110	Malley et al. 1989							0.011821947	0.059109737
CRCL	Daphnia middendorffiana	F	15-25-02		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.393	3.011	0.003883	5	0.019416	Malley et al. 1989							0.003883161	0.019415804
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	3		0.26	0.7800	-0.248461359	1.393	3.011	0.001906	5	0.009529	Malley et al. 1989							0.001905764	0.009528819
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	4		0.26	1.0400	0.039220713	1.393	3.011	0.004532	5	0.022658	Malley et al. 1989							0.004531684	0.022658419
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	4.1		0.26	1.0660	0.063913326	1.393	3.011	0.004881	5	0.024407	Malley et al. 1989							0.004881453	0.024407267
CRCL	Daphnia middendorffiana	F	15-25-03		4	1	4x	3.2		0.26	0.8320	-0.183922838	1.393	3.011	0.002315	5	0.011573	Malley et al. 1989							0.002314534	0.01157267
CRCL	Daphnia middendorffiana	F	15-25-05		4	1	4x	4.4		0.26	1.1440	0.134530893	1.393	3.011	0.006038	5	0.030190	Malley et al. 1989							0.006037998	0.030189991
CRCL	Daphnia middendorffiana	F	15-25-05		4	1	4x	4.9		0.26	1.2740	0.242161557	1.393	3.011	0.008349	5	0.041745	Malley et al. 1989							0.008349056	0.041745279
CRCL	Daphnia middendorffiana	F	15-25-06		4	1	4x	4		0.26	1.0400	0.039220713	1.393	3.011	0.004532	5	0.022658	Malley et al. 1989							0.004531684	0.022658419
CRCL	Daphnia middendorffiana	F	15-25-09		4	1	4x	4		0.26	1.0400	0.039220713	1.393	3.011	0.004532	5	0.022658	Malley et al. 1989							0.004531684	0.022658419
CRCL	Daphnia sp.	F	15-25-01		4	1	4x	3.0		0.26	0.7800	-0.248461359	1.510	2.560	0.002396	5	0.011982	EPA SOP							0.002396331	0.011981656
CRCL	Daphnia sp.	F	15-25-01		4	1	4x	5		0.26	1.3000	0.262364264	1.510	2.560	0.008861	5	0.044305	EPA SOP							0.008860937	0.044304685
CRCL	Daphnia sp.	F	15-25-01		4	1	4x	4.7		0.26	1.2220	0.200488861	1.510	2.560	0.007563	5	0.037814	EPA SOP							0.007562876	0.037814378
CRCL	Daphnia sp.	F	15-25-01		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.510	2.560	0.004099	5	0.020497	EPA SOP							0.00409933	0.020496649
CRCL	Daphnia sp.	F	15-25-01		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.510	2.560	0.004389	5	0.021945	EPA SOP							0.004388968	0.021944842
CRCL	Daphnia sp.	F	15-25-02		4	1	4x	3.9		0.26	1.0140	0.013902905	1.510	2.560	0.004691	5	0.023454	EPA SOP							0.004690745	0.023453725
CRCL	Daphnia sp.	F	15-25-02		4	1	4x	2.8		0.26	0.7280	-0.317454231	1.510	2.560	0.002008	5	0.010042	EPA SOP							0.002008357	0.010041787
CRCL	Daphnia sp.	F	15-25-02		4	1	4x	2.8		0.26	0.7280	-0.317454231	1.510	2.560	0.002008	5	0.010042	EPA SOP							0.002008357	0.010041787
CRCL	Daphnia sp.	F	15-25-02		4	1	4x	3.2		0.26	0.8320	-0.183922838	1.510	2.560	0.002827	5	0.014134	EPA SOP							0.002826834	0.014134172
CRCL	Daphnia sp.	F	15-25-02		4	1	4x	3.1		0.26	0.8060	-0.215671536	1.510	2.560	0.002606	5	0.013031	EPA SOP							0.002606168	0.013030839

Zooplankton biomeasurements and conversions for calculation of biomass data, Azimuth Nunavut 2015

Groupcode	Taxon	Stage	Biologica Sample	Client Sample	Unit	Conversion (mm)	Objective	Length (units)	Width (units)	Calibration	Length (mm)	CRUSTACEA - Ln(Length)	CRUSTACEA - Ln(α)	CRUSTACEA - β	CRUSTACEA - mg DW	CRUSTACEA - WW:DW	CRUSTACEA - mg WW	CRUSTACEA α/β Reference	Rotifera - FF	Rotifera - %BV	Rotifera - WW:DW	Rotifera - mg DW	Rotifera - mg WW	Rotifera - FF/%BV Reference	Final Biomass - DW	Final Biomass - WW
CRCL	Daphnia sp.	F	15-25-03		4	1	4x	2.6		0.26	0.6760	-0.391562203	1.510	2.560	0.001661	5	0.008307	EPA SOP							0.001661301	0.008306503
CRCL	Daphnia sp.	F	15-25-05		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.510	2.560	0.004389	5	0.021945	EPA SOP							0.004388968	0.021944842
CRCL	Daphnia sp.	F	15-25-05		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.510	2.560	0.004099	5	0.020497	EPA SOP							0.00409933	0.020496649
CRCL	Daphnia sp.	F	15-25-05		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.510	2.560	0.004099	5	0.020497	EPA SOP							0.00409933	0.020496649
CRCL	Daphnia sp.	F	15-25-05		4	1	4x	3.9		0.26	1.0140	0.013902905	1.510	2.560	0.004691	5	0.023454	EPA SOP							0.004690745	0.023453725
CRCL	Daphnia sp.	F	15-25-05		4	1	4x	3.9		0.26	1.0140	0.013902905	1.510	2.560	0.004691	5	0.023454	EPA SOP							0.004690745	0.023453725
CRCL	Daphnia sp.	F	15-25-06		4	1	4x	3.2		0.26	0.8320	-0.183922838	1.510	2.560	0.002827	5	0.014134	EPA SOP							0.002826834	0.014134172
CRCL	Daphnia sp.	F	15-25-06		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.510	2.560	0.004099	5	0.020497	EPA SOP							0.00409933	0.020496649
CRCL	Daphnia sp.	F	15-25-06		4	1	4x	3.4		0.26	0.8840	-0.123298216	1.510	2.560	0.003301	5	0.016507	EPA SOP							0.003301433	0.016507164
CRCL	Daphnia ambigua	F	15-25-09		4	1	4x	3		0.26	0.7800	-0.248461359	1.468	2.830	0.002149	6	0.012892	Watkins et al., 2011							0.002148681	0.012892088
CRCL	Bosmina sp.	F	15-25-01		4	1	4x	1.7		0.26	0.4420	-0.816445397	2.712	2.529	0.001910	5	0.009548	EPA SOP							0.001909579	0.009547897
CRCL	Bosmina sp.	F	15-25-01		4	1	4x	2.2		0.26	0.5720	-0.558616288	2.712	2.529	0.003666	5	0.018329	EPA SOP							0.003665761	0.018328805
CRCL	Bosmina sp.	F	15-25-01		4	1	4x	2.2		0.26	0.5720	-0.558616288	2.712	2.529	0.003666	5	0.018329	EPA SOP							0.003665761	0.018328805
CRCL	Bosmina sp.	F	15-25-03		4	1	4x	3.2		0.26	0.8320	-0.183922838	2.712	2.529	0.009457	5	0.047286	EPA SOP							0.009457287	0.047286436
CRCL	Bosmina sp.	F	15-25-03		4	1	4x	3.5		0.26	0.9100	-0.094310679	2.712	2.529	0.011863	5	0.059317	EPA SOP							0.011863311	0.059316557
CRCL	Bosmina sp.	F	15-25-05		4	1	4x	1.9		0.26	0.4940	-0.705219762	2.712	2.529	0.002530	5	0.012650	EPA SOP							0.002529995	0.012649973
CRCL	Bosmina sp.	F	15-25-05		4	1	4x	3.7		0.26	0.9620	-0.038740828	2.712	2.529	0.013654	5	0.068268	EPA SOP							0.013653678	0.068268391
CRCL	Bosmina sp.	F	15-25-05		4	1	4x	3.6		0.26	0.9360	-0.066139803	2.712	2.529	0.012739	5	0.063697	EPA SOP							0.012739482	0.06369741
CRCL	Bosmina sp.	F	15-25-07		4	1	4x	2.8		0.26	0.7280	-0.317454231	2.712	2.529	0.006747	5	0.033733	EPA SOP							0.00674655	0.03373275
CRCL	Bosmina sp.	F	15-25-07		4	1	4x	3.4		0.26	0.8840	-0.123298216	2.712	2.529	0.011025	5	0.055123	EPA SOP							0.011024604	0.055123019
CRCL	Bosmina sp.	F	15-25-07		4	1	4x	3.5		0.26	0.9100	-0.094310679	2.712	2.529	0.011863	5	0.059317	EPA SOP							0.011863311	0.059316557
CRCL	Bosmina sp.	F	15-25-07		4	1	4x	2.7		0.26	0.7020	-0.353821875	2.712	2.529	0.006154	5	0.030768	EPA SOP							0.006153635	0.030768175
CRCL	Bosmina sp.	F	15-25-07		4	1	4x	2.5		0.26	0.6500	-0.430782916	2.712	2.529	0.005065	5	0.025326	EPA SOP							0.005065119	0.025325597
CRCL	Bosmina sp.	F	15-25-08		4	1	4x	3.5		0.26	0.9100	-0.094310679	2.712	2.529	0.011863	5	0.059317	EPA SOP							0.011863311	0.059316557
CRCL	Bosmina sp.	F	15-25-08		4	1	4x	3.5		0.26	0.9100	-0.094310679	2.712	2.529	0.011863	5	0.059317	EPA SOP							0.011863311	0.059316557
CRCL	Bosmina sp.	F	15-25-08		4	1	4x	3.2		0.26	0.8320	-0.183922838	2.712	2.529	0.009457	5	0.047286	EPA SOP							0.009457287	0.047286436
CRCL	Bosmina sp.	F	15-25-08		4	1	4x	3.2		0.26	0.8320	-0.183922838	2.712	2.529	0.009457	5	0.047286	EPA SOP							0.009457287	0.047286436
CRCL	Bosmina sp.	F	15-25-08		4	1	4x	3.5		0.26	0.9100	-0.094310679	2.712	2.529	0.011863	5	0.059317	EPA SOP							0.011863311	0.059316557
CRCL	Bosmina sp.	F	15-25-08		4	1	4x	3.4		0.26	0.8840	-0.123298216	2.712	2.529	0.011025	5	0.055123	EPA SOP							0.011024604	0.055123019
CRCL	Bosmina sp.	F	15-25-08		4	1	4x	3		0.26	0.7800	-0.248461359	2.712	2.529	0.008033	5	0.040164	EPA SOP							0.00803287	0.040164349
CRCL	Bosmina sp.	F	15-25-08		4	1	4x	3.5		0.26	0.9100	-0.094310679	2.712	2.529	0.011863	5	0.059317	EPA SOP							0.011863311	0.059316557
CRCL	Bosmina sp.	F	15-25-08		4	1	4x	2.7		0.26	0.7020	-0.353821875	2.712	2.529	0.006154	5	0.030768	EPA SOP							0.006153635	0.030768175
CRCL	Bosmina sp.	F	15-25-08		4	1	4x	3.5		0.26	0.9100	-0.094310679	2.712	2.529	0.011863	5	0.059317	EPA SOP							0.011863311	0.059316557
CRCL	Bosmina sp.	F	15-25-08		4	1	4x	2.5		0.26	0.6500	-0.430782916	2.712	2.529	0.005065	5	0.025326	EPA SOP							0.005065119	0.025325597
CRCL	Bosmina sp.	F	15-25-09		4	1	4x	3.4		0.26	0.8840	-0.123298216	2.712	2.529	0.011025	5	0.055123	EPA SOP							0.011024604	0.055123019
CRCL	Bosmina sp.	F	15-25-09		4	1	4x	3.4		0.26	0.8840	-0.123298216	2.712	2.529	0.011025	5	0.055123	EPA SOP							0.011024604	0.055123019
CRCO	Cyclops scutifer	F	15-25-01		4	1	4x	4.8		0.26	1.2480	0.22154227	1.492	1.990	0.006909	5	0.034547	EPA SOP							0.006909305	0.034546527
CRCO	Cyclops scutifer	F	15-25-01		4	1	4x	4.5		0.26	1.1700	0.157003749	1.492	1.990	0.006077	5	0.030383	EPA SOP							0.006076552	0.030382761
CRCO	Cyclops scutifer	F	15-25-02		4	1	4x	5.3		0.26	1.3780	0.320633173	1.492	1.990	0.008415	5	0.042077	EPA SOP							0.008415372	0.042076859
CRCO	Cyclops scutifer	F	15-25-02		4	1	4x	5.4		0.26	1.4040	0.339325306	1.492	1.990	0.008734	5	0.043671	EPA SOP							0.008734296	0.043671481
CRCO	Cyclops scutifer	F	15-25-02		4	1	4x	6.1		0.26	1.5860	0.461215123	1.492	1.990	0.011132	5	0.055660	EPA SOP							0.011131936	0.05565968
CRCO	Cyclops scutifer	F	15-25-02		4	1	4x	5		0.26	1.3000	0.262364264	1.492	1.990	0.007494	5	0.037470	EPA SOP							0.007494016	0.037470082
CRCO	Cyclops scutifer	F	15-25-02		4	1	4x	5.2		0.26	1.3520	0.301584978	1.492	1.990	0.008102	5	0.040512	EPA SOP							0.00810235	0.040511748
CRCO	Cyclops scutifer	F	15-25-02		4	1	4x	5.7		0.26	1.4820	0.393392527	1.492	1.990	0.009726	5	0.048632	EPA SOP							0.009726471	0.048632355
CRCO	Cyclops scutifer	F	15-25-02		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	F	15-25-02		4	1	4x	5.4		0.26	1.4040	0.339325306	1.492	1.990	0.008734	5	0.043671	EPA SOP							0.008734296	0.043671481
CRCO	Cyclops scutifer	F	15-25-02		4	1	4x	4.8		0.26	1.2480	0.22154227	1.492	1.990	0.006909	5	0.034547	EPA SOP							0.006909305	0.034546527
CRCO	Cyclops scutifer	F	15-25-02		4	1	4x	5.3		0.26	1.3780	0.320633173	1.492	1.990	0.008415	5	0.042077	EPA SOP							0.008415372	0.042076859
CRCO	Cyclops scutifer	F	15-25-03		4	1	4x	7		0.26	1.8200	0.598836501	1.492	1.990	0.014639	5	0.073195	EPA SOP							0.014638933	0.073194666
CRCO	Cyclops scutifer	F	15-25-03		4	1	4x	6.7		0.26	1.7420	0.555033878	1.492	1.990	0.013417	5	0.067085	EPA SOP							0.013416931	0.067084655
CRCO	Cyclops scutifer	F	15-25-03		4	1	4x	6.5		0.26	1.6900	0.524728529	1.492	1.990	0.012632	5	0.063159	EPA SOP							0.012631703	0.063158515
CRCO	Cyclops scutifer	F	15-25-04		4	1	4x	5		0.26	1.3000	0.262364264	1.492	1.990	0.007494	5	0.037470	EPA SOP							0.007494016	0.037470082
CRCO	Cyclops scutifer	F	15-25-04		4	1	4x	5.6		0.26	1.4560	0.37569295	1.492	1.990	0.009390	5	0.046949	EPA SOP							0.009389847	0.046949234
CRCO	Cyclops scutifer	F	15-25-04		4	1	4x	5.1		0.26	1.3260	0.282166892	1.492	1.990	0.007795	5	0.038976	EPA SOP							0.007795231	0.038976154
CRCO	Cyclops scutifer	F	15-25-04		4	1	4x	4.8		0.26	1.2480	0.22154227	1.492	1.990	0.006909	5	0.034547	EPA SOP							0.006909305	0.034546527
CRCO	Cyclops scutifer	F	15-25-04		4	1	4x	5.5		0.26	1.4300	0.357674444	1.492	1.990	0.009059	5	0.045296	EPA SOP							0.009059121	0.045295607
CRCO	Cyclops scutifer	F	15-25-04		4	1	4x	5.1		0.26	1.3260	0.282166892	1.492	1.990	0.007795	5	0.038976	EPA SOP							0.007795231	0.038976154
CRCO	Cyclops scutifer	F	15-25-05		4	1	4x	5.1		0.26	1.3260	0.282166892	1.492	1.990	0.007795	5	0.038976	EPA SOP							0.007795231	0.038976154
CRCO	Cyclops scutifer	F	15-25-05		4	1	4x	4.7		0.26	1.2220	0.200488861	1.492	1.990	0.006626	5	0.033129	EPA SOP							0.006625811	0.033129057
CRCO	Cyclops scutifer	F	15-25-05		4	1	4x	4.7		0.26	1.2220	0.200488861	1.492	1.990	0.006626	5	0.033129	EPA SOP							0.006625811	0.033129057
CRCO	Cyclops scutifer	F	15-25-05		4	1	4x	4.8		0.26	1.2480	0.22154227	1.492	1.990	0.006909	5	0.034547	EPA SOP							0.006909305	0.034546527
CRCO	Cyclops scutifer	F	15-25-05		4	1	4x	5		0.26	1.3000	0.262364264	1.492	1.990	0.007494	5	0.037470	EPA SOP							0.007494016	0.037470082
CRCO	Cyclops scutifer	F	15-25-05		4	1	4x	5.7		0.26	1.4820	0.393392527	1.492	1.990	0.009726	5	0.048632	EPA SOP							0.009726471	0.048632355
CRCO	Cyclops scutifer	F	15-25-06		4	1	4x	5.8		0.26	1.5080	0.41078427	1.492	1.990	0.010069	5	0.050345	EPA SOP							0.010068993	0.050344965
CRCO	Cyclops scutifer	F	15-25-06		4	1	4x	5.1		0.26	1.3260	0.282166892	1.492	1.990	0.007795	5	0.038976	EPA SOP							0.007795231	0.038976154
CRCO	Cyclops scutifer	F	15-25-06		4	1	4x	4.8		0.26	1.2480	0.22154227	1.492	1.990	0.006909	5	0.034547	EPA SOP							0.006909305	0.034546527
CRCO	Cyclops scutifer	F	15-25-08		4	1	4x	4.7		0.26	1.2220	0.200488861	1.492	1.990	0.006626	5	0.033129	EPA SOP							0.006625811	0.033129057
CRCO	Cyclops scutifer	F	15-25-08		4	1	4x	5		0.26	1.3000	0.262364264	1.492	1.990	0.007494	5	0.037470	EPA SOP							0.007494016	0.037470082
CRCO	Cyclops scutifer	F	15-25-08		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	F	15-25-08		4	1	4x	5.2		0.26	1.3520	0.301584978	1.492	1.990	0.008102	5	0.040512	EPA SOP							0.00810235	0.040511748
CRCO	Cyclops scutifer	F	15-25-08		4	1	4x	4.8		0.26	1.2480	0.22154227	1.492	1.990	0.006909	5	0.034547	EPA SOP							0.006909305	0.034546527
CRCO	Cyclops scutifer	F	15-25-08		4	1	4x	4.5		0.26	1.1700	0.157003749	1.492	1.990	0.006077	5	0.030383	EPA SOP							0.006076552	0.030382761
CRCO	Cyclops scutifer	F	15-25-09		4	1	4x	5		0.26	1.3000	0.262364264	1.492	1.990	0.007494	5	0.037470	EPA SOP							0.007494016	0.037470082
CRCO	Cyclops scutifer	F	15-25-09		4	1	4x	5.7		0.26	1.4820	0.393392527	1.492	1.990	0.009726	5	0.048632	EPA SOP							0.009726471	0.048632355
CRCO	Cyclops scutifer	F	15-25-09		4	1	4x	5.8		0.26	1.5080	0.41078427	1.492	1.990	0.010069	5	0.050345	EPA SOP							0.010068993	0.050344965
CRCO	Cyclops scutifer	F	15-25-09		4	1	4x	5		0.26	1.3000	0.262364264	1.492	1.990	0.007494	5	0.037470	EPA SOP							0.007494016	0.037470082
CRCO	Cyclops scutifer	F	15-25-09		4	1	4x	5.1		0.26	1.3260	0.282166892	1.492	1.990	0.007795	5	0.038976	EPA SOP							0.007795231	0.038976154
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.8		0.26	1.2480	0.22154227	1.492	1.990	0.006909	5	0.034547	EPA SOP							0.006909305	0.034546527
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.5		0.26	1.1700	0.157003749	1.492	1.990	0.006077	5	0.030383	EPA SOP							0.006076552	0.030382761
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Cyclops scutifer	F	15-25-13		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.9		0.26	1.2740	0.242161557	1.492	1.990	0.007199	5	0.035994	EPA SOP							0.007198708	0.035993538
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	5.4		0.26	1.4040	0.339325306	1.492	1.990	0.008734	5	0.043671	EPA SOP							0.008734296	0.043671481
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.9		0.26	1.2740	0.242161557	1.492	1.990	0.007199	5	0.035994	EPA SOP							0.007198708	0.035993538
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.7		0.26	1.2220	0.200488861	1.492	1.990	0.006626	5	0.033129	EPA SOP							0.006625811	0.033129057
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.3		0.26	1.1180	0.111541375	1.492	1.990	0.005551	5	0.027755	EPA SOP							0.00555094	0.027754701
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	5		0.26	1.3000	0.262364264	1.492	1.990	0.007494	5	0.037470	EPA SOP							0.007494016	0.037470082
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	5.1		0.26	1.3260	0.282166892	1.492	1.990	0.007795	5	0.038976	EPA SOP							0.007795231	0.038976154
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	5		0.26	1.3000	0.262364264	1.492	1.990	0.007494	5	0.037470	EPA SOP							0.007494016	0.037470082
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	5.1		0.26	1.3260	0.282166892	1.492	1.990	0.007795	5	0.038976	EPA SOP							0.007795231	0.038976154
CRCO	Cyclops scutifer	F	15-25-15		4	1	4x	4.9		0.26	1.2740	0.242161557	1.492	1.990	0.007199	5	0.035994	EPA SOP							0.007198708	0.035993538
CRCO	Cyclops scutifer	F	15-25-16		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Cyclops scutifer	F	15-25-16		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	F	15-25-16		4	1	4x	4.7		0.26	1.2220	0.200488861	1.492	1.990	0.006626	5	0.033129	EPA SOP							0.006625811	0.033129057
CRCO	Cyclops scutifer	F	15-25-16		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	F	15-25-17		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	F	15-25-17		4	1	4x	4.3		0.26	1.1180	0.111541375	1.492	1.990	0.005551	5	0.027755	EPA SOP							0.00555094	0.027754701
CRCO	Cyclops scutifer	F	15-25-17		4	1	4x	5.2		0.26	1.3520	0.301584978	1.492	1.990	0.008102	5	0.040512	EPA SOP							0.00810235	0.040511748
CRCO	Cyclops scutifer	F	15-25-18		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-01		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Cyclops scutifer	M	15-25-01		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	M	15-25-01		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Cyclops scutifer	M	15-25-01		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.1		0.26	1.0660	0.063913326	1.492	1.990	0.005049	5	0.025245	EPA SOP							0.005048986	0.025244932

Zooplankton biomeasurements and conversions for calculation of biomass data, Azimuth Nunavut 2015

Groupcode	Taxon	Stage	Biologica Sample	Client Sample	Unit	Conversion (mm)	Objective	Length (units)	Width (units)	Calibration	Length (mm)	CRUSTACEA - Ln(Length)	CRUSTACEA - Ln(α)	CRUSTACEA - β	CRUSTACEA - mg DW	CRUSTACEA - WW:DW	CRUSTACEA - mg WW	CRUSTACEA α/β Reference	Rotifera - FF	Rotifera - %BV	Rotifera - WW:DW	Rotifera - mg DW	Rotifera - mg WW	Rotifera - FF/%BV Reference	Final Biomass - DW	Final Biomass - WW
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.1		0.26	1.0660	0.063913326	1.492	1.990	0.005049	5	0.025245	EPA SOP							0.005048986	0.025244932
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	3.9		0.26	1.0140	0.013902905	1.492	1.990	0.004571	5	0.022854	EPA SOP							0.004570702	0.022853509
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.3		0.26	1.1180	0.111541375	1.492	1.990	0.005551	5	0.027755	EPA SOP							0.00555094	0.027754701
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.9		0.26	1.2740	0.242161557	1.492	1.990	0.007199	5	0.035994	EPA SOP							0.007198708	0.035993538
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.5		0.26	1.1700	0.157003749	1.492	1.990	0.006077	5	0.030383	EPA SOP							0.006076552	0.030382761
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.1		0.26	1.0660	0.063913326	1.492	1.990	0.005049	5	0.025245	EPA SOP							0.005048986	0.025244932
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	3.9		0.26	1.0140	0.013902905	1.492	1.990	0.004571	5	0.022854	EPA SOP							0.004570702	0.022853509
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	3.9		0.26	1.0140	0.013902905	1.492	1.990	0.004571	5	0.022854	EPA SOP							0.004570702	0.022853509
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-02		4	1	4x	4.1		0.26	1.0660	0.063913326	1.492	1.990	0.005049	5	0.025245	EPA SOP							0.005048986	0.025244932
CRCO	Cyclops scutifer	M	15-25-03		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-03		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Cyclops scutifer	M	15-25-03		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-03		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-03		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-03		4	1	4x	4.3		0.26	1.1180	0.111541375	1.492	1.990	0.005551	5	0.027755	EPA SOP							0.00555094	0.027754701
CRCO	Cyclops scutifer	M	15-25-04		4	1	4x	4.1		0.26	1.0660	0.063913326	1.492	1.990	0.005049	5	0.025245	EPA SOP							0.005048986	0.025244932
CRCO	Cyclops scutifer	M	15-25-04		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-04		4	1	4x	4.5		0.26	1.1700	0.157003749	1.492	1.990	0.006077	5	0.030383	EPA SOP							0.006076552	0.030382761
CRCO	Cyclops scutifer	M	15-25-04		4	1	4x	4.3		0.26	1.1180	0.111541375	1.492	1.990	0.005551	5	0.027755	EPA SOP							0.00555094	0.027754701
CRCO	Cyclops scutifer	M	15-25-04		4	1	4x	4.1		0.26	1.0660	0.063913326	1.492	1.990	0.005049	5	0.025245	EPA SOP							0.005048986	0.025244932
CRCO	Cyclops scutifer	M	15-25-04		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-05		4	1	4x	4.5		0.26	1.1700	0.157003749	1.492	1.990	0.006077	5	0.030383	EPA SOP							0.006076552	0.030382761
CRCO	Cyclops scutifer	M	15-25-05		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-05		4	1	4x	4.1		0.26	1.0660	0.063913326	1.492	1.990	0.005049	5	0.025245	EPA SOP							0.005048986	0.025244932
CRCO	Cyclops scutifer	M	15-25-05		4	1	4x	4.1		0.26	1.0660	0.063913326	1.492	1.990	0.005049	5	0.025245	EPA SOP							0.005048986	0.025244932
CRCO	Cyclops scutifer	M	15-25-05		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	3.9		0.26	1.0140	0.013902905	1.492	1.990	0.004571	5	0.022854	EPA SOP							0.004570702	0.022853509
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.492	1.990	0.004340	5	0.021702	EPA SOP							0.004340439	0.021702196
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	3.1		0.26	0.8060	-0.215671536	1.492	1.990	0.002895	5	0.014473	EPA SOP							0.002894504	0.014472518
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4.6		0.26	1.1960	0.178982656	1.492	1.990	0.006348	5	0.031741	EPA SOP							0.006348227	0.031741133
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	4.4		0.26	1.1440	0.134530893	1.492	1.990	0.005811	5	0.029054	EPA SOP							0.00581079	0.029053948
CRCO	Cyclops scutifer	M	15-25-13		4	1	4x	5.1		0.26	1.3260	0.282166892	1.492	1.990	0.007795	5	0.038976	EPA SOP							0.007795231	0.038976154
CRCO	Cyclops scutifer	M	15-25-15		4	1	4x	4.3		0.26	1.1180	0.111541375	1.492	1.990	0.005551	5	0.027755	EPA SOP							0.00555094	0.027754701
CRCO	Cyclops scutifer	M	15-25-16		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-14		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-14		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-14		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclops scutifer	M	15-25-14		4	1	4x	4		0.26	1.0400	0.039220713	1.492	1.990	0.004807	5	0.024034	EPA SOP							0.004806885	0.024034424
CRCO	Cyclops scutifer	M	15-25-14		4	1	4x	4.2		0.26	1.0920	0.088010877	1.492	1.990	0.005297	5	0.026485	EPA SOP							0.005297005	0.026485027
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	3.0		0.26	0.7800	-0.248461359	1.660	3.970	0.001961	5	0.009807	EPA SOP; Cyclopoid copepodites							0.001961302	0.009806509
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.8		0.26	0.7280	-0.317454231	1.660	3.970	0.001491	5	0.007457	EPA SOP; Cyclopoid copepodites							0.001491387	0.007456936
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.7		0.26	0.7020	-0.353821875	1.660	3.970	0.001291	5	0.006454	EPA SOP; Cyclopoid copepodites							0.001290884	0.006454419
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.9		0.26	0.7540	-0.282362911	1.660	3.970	0.001714	5	0.008572	EPA SOP; Cyclopoid copepodites							0.001714325	0.008571624
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.4		0.26	0.6240	-0.471604911	1.660	3.970	0.000809	5	0.004044	EPA SOP; Cyclopoid copepodites							0.000808745	0.004043725
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.4		0.26	0.6240	-0.471604911	1.660	3.970	0.000809	5	0.004044	EPA SOP; Cyclopoid copepodites							0.000808745	0.004043725
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.8		0.26	0.7280	-0.317454231	1.660	3.970	0.001491	5	0.007457	EPA SOP; Cyclopoid copepodites							0.001491387	0.007456936
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.3		0.26	0.5980	-0.514164525	1.660	3.970	0.000683	5	0.003415	EPA SOP; Cyclopoid copepodites							0.000683019	0.003415093
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.660	3.970	0.000951	5	0.004755	EPA SOP; Cyclopoid copepodites							0.000951031	0.004755157
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	3.5		0.26	0.9100	-0.094310679	1.660	3.970	0.003617	5	0.018084	EPA SOP; Cyclopoid copepodites							0.003616789	0.018083945
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.4		0.26	0.6240	-0.471604911	1.660	3.970	0.000809	5	0.004044	EPA SOP; Cyclopoid copepodites							0.000808745	0.004043725
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	3.4		0.26	0.8840	-0.123298216	1.660	3.970	0.003224	5	0.016118	EPA SOP; Cyclopoid copepodites							0.003223624	0.016118118
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	3		0.26	0.7800	-0.248461359	1.660	3.970	0.001961	5	0.009807	EPA SOP; Cyclopoid copepodites							0.001961302	0.009806509
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.8		0.26	0.7280	-0.317454231	1.660	3.970	0.001491	5	0.007457	EPA SOP; Cyclopoid copepodites							0.001491387	0.007456936
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	3.5		0.26	0.9100	-0.094310679	1.660	3.970	0.003617	5	0.018084	EPA SOP; Cyclopoid copepodites							0.003616789	0.018083945
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	3.2		0.26	0.8320	-0.183922838	1.660	3.970	0.002534	5	0.012670	EPA SOP; Cyclopoid copepodites							0.002534069	0.012670345
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	3.1		0.26	0.8060	-0.215671536	1.660	3.970	0.002234	5	0.011170	EPA SOP; Cyclopoid copepodites							0.002233978	0.011169892
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.660	3.970	0.000951	5	0.004755	EPA SOP; Cyclopoid copepodites							0.000951031	0.004755157
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	1.9		0.26	0.4940	-0.705219762	1.660	3.970	0.000320	5	0.001600	EPA SOP; Cyclopoid copepodites							0.000319908	0.001599539
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.6		0.26	0.6760	-0.391562203	1.660	3.970	0.001111	5	0.005556	EPA SOP; Cyclopoid copepodites							0.001111264	0.00555632
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.4		0.26	0.6240	-0.471604911	1.660	3.970	0.000809	5	0.004044	EPA SOP; Cyclopoid copepodites							0.000808745	0.004043725
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.660	3.970	0.000951	5	0.004755	EPA SOP; Cyclopoid copepodites							0.000951031	0.004755157
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	3.2		0.26	0.8320	-0.183922838	1.660	3.970	0.002534	5	0.012670	EPA SOP; Cyclopoid copepodites							0.002534069	0.012670345
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	3.1		0.26	0.8060	-0.215671536	1.660	3.970	0.002234	5	0.011170	EPA SOP; Cyclopoid copepodites							0.002233978	0.011169892
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	2.4		0.26	0.6240	-0.471604911	1.660	3.970	0.000809	5	0.004044	EPA SOP; Cyclopoid copepodites							0.000808745	0.004043725
CRCO	Cyclopoida indet.	I-IV	15-25-05		4	1	4x	3.1		0.26	0.8060	-0.215671536	1.660	3.970	0.002234	5	0.011170	EPA SOP; Cyclopoid copepodites							0.002233978	0.011169892
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.9		0.26	0.7540	-0.282362911	1.660	3.970	0.001714	5	0.008572	EPA SOP; Cyclopoid copepodites							0.001714325	0.008571624
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.660	3.970	0.000951	5	0.004755	EPA SOP; Cyclopoid copepodites							0.000951031	0.004755157
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.4		0.26	0.6240	-0.471604911	1.660	3.970	0.000809	5	0.004044	EPA SOP; Cyclopoid copepodites							0.000808745	0.004043725
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.8		0.26	0.7280	-0.317454231	1.660	3.970	0.001491	5	0.007457	EPA SOP; Cyclopoid copepodites							0.001491387	0.007456936
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.3		0.26	0.5980	-0.514164525	1.660	3.970	0.000683	5	0.003415	EPA SOP; Cyclopoid copepodites							0.000683019	0.003415093
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.4		0.26	0.6240	-0.471604911	1.660	3.970	0.000809	5	0.004044	EPA SOP; Cyclopoid copepodites							0.000808745	0.004043725
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.660	3.970	0.000951	5	0.004755	EPA SOP; Cyclopoid copepodites							0.000951031	0.004755157
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2		0.26	0.5200	-0.653926467	1.660	3.970	0.000392	5	0.001961	EPA SOP; Cyclopoid copepodites							0.000392159	0.001960795
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.660	3.970	0.000951	5	0.004755	EPA SOP; Cyclopoid copepodites							0.000951031	0.004755157
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.4		0.26	0.6240	-0.471604911	1.660	3.970	0.000809	5	0.004044	EPA SOP; Cyclopoid copepodites							0.000808745	0.004043725
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.660	3.970	0.000951	5	0.004755	EPA SOP; Cyclopoid copepodites							0.000951031	0.004755157
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.660	3.970	0.000951	5	0.004755	EPA SOP; Cyclopoid copepodites							0.000951031	0.004755157
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	3.3		0.26	0.8580	-0.153151179	1.660	3.970	0.002863	5	0.014317	EPA SOP; Cyclopoid copepodites							0.002863343	0.014316715
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.6		0.26	0.6760	-0.391562203	1.660	3.970	0.001111	5	0.005556	EPA SOP; Cyclopoid copepodites							0.001111264	0.00555632
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.660	3.970	0.000951	5	0.004755	EPA SOP; Cyclopoid copepodites							0.000951031	0.004755157
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.4		0.26	0.6240	-0.471604911	1.660	3.970	0.000809	5	0.004044	EPA SOP; Cyclopoid copepodites							0.000808745	0.004043725
CRCO	Cyclopoida indet.	I-IV	15-25-07		4	1	4x	2.2		0.26	0.5720	-0.558616288	1.660	3.970	0.000573	5	0.002863	EPA SOP; Cyclopoid copepodites							0.000572521	0.002862603
CRCO	Cyclopoida indet.	I-IV	15-25-08		4	1	4x	2.3		0.26	0.5980	-0.514164525	1.660	3.970	0.000683	5	0.003415	EPA SOP; Cyclopoid copepodites							0.000683019	0.003415093
CRCO	Cyclopoida indet.	I-IV	15-25-08		4	1	4x	2.9		0.26	0.7540	-0.282362911	1.660	3.970	0.001714	5	0.008572	EPA SOP; Cyclopoid copepodites							0.001714325	0.008571624
CRCO	Cyclopoida indet.	I-IV	15-25-08		4	1	4x	2.6		0.26	0.6760	-0.391562203	1.660	3.970	0.001111	5	0.005556	EPA SOP; Cyclopoid copepodites							0.001111264	0.00555632
CRCO	Cyclopoida indet.	I-IV	15-25-08		4	1	4x	3		0.26	0.7800	-0.248461359	1.660	3.970	0.001961	5	0.009807	EPA SOP; Cyclopoid copepodites							0.001961302	0.009806509
CRCO	Cyclopoida indet.	I-IV	15-25-08		4	1	4x	2.4		0.26	0.6240	-0.471604911	1.660	3.970	0.000809	5	0.004044	EPA SOP; Cyclopoid copepodites							0.000808745	0.004043725
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3.0		0.26	0.7800	-0.248461359	1.660	3.970	0.001961	5	0.009807	EPA SOP; Cyclopoid copepodites							0.001961302	0.009806509
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	2.2		0.26	0.5720	-0.558616288	1.660	3.970	0.000573	5	0.002863	EPA SOP; Cyclopoid copepodites							0.000572521	0.002862603
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3		0.26	0.7800	-0.248461359	1.660	3.970	0.001961	5	0.009807	EPA SOP; Cyclopoid copepodites							0.001961302	0.009806509
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3.1		0.26	0.8060	-0.215671536	1.660	3.970	0.002234	5	0.011170	EPA SOP; Cyclopoid copepodites							0.002233978	0.011169892
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	5.9		0.26	1.5340	0.427878703	1.660	3.970	0.028751	5	0.143756	EPA SOP; Cyclopoid copepodites							0.02875117	0.143755848
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3.3		0.26	0.8580	-0.153151179	1.660	3.970	0.002863	5	0.014317	EPA SOP; Cyclopoid copepodites							0.002863343	0.014316715
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3.6		0.26	0.9360	-0.066139803	1.660	3.970	0.004045	5	0.020224	EPA SOP; Cyclopoid copepodites							0.004044771	0.020223856

Zooplankton biomeasurements and conversions for calculation of biomass data, Azimuth Nunavut 2015

Groupcode	Taxon	Stage	Biologica Sample	Client Sample	Unit	Conversion (mm)	Objective	Length (units)	Width (units)	Calibration	Length (mm)	CRUSTACEA - Ln(Length)	CRUSTACEA - Ln(α)	CRUSTACEA - β	CRUSTACEA - mg DW	CRUSTACEA - WW:DW	CRUSTACEA - mg WW	CRUSTACEA α/β Reference	Rotifera - FF	Rotifera - %BV	Rotifera - WW:DW	Rotifera - mg DW	Rotifera - mg WW	Rotifera - FF/%BV Reference	Final Biomass - DW	Final Biomass - WW
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3.9		0.26	1.0140	0.013902905	1.660	3.970	0.005558	5	0.027789	EPA SOP; Cyclopoid copepodites							0.005557757	0.027788783
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	4.4		0.26	1.1440	0.134530893	1.660	3.970	0.008972	5	0.044859	EPA SOP; Cyclopoid copepodites							0.008971812	0.044859059
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.660	3.970	0.004510	5	0.022548	EPA SOP; Cyclopoid copepodites							0.004509557	0.022547785
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3		0.26	0.7800	-0.248461359	1.660	3.970	0.001961	5	0.009807	EPA SOP; Cyclopoid copepodites							0.001961302	0.009806509
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3.7		0.26	0.9620	-0.038740828	1.660	3.970	0.004510	5	0.022548	EPA SOP; Cyclopoid copepodites							0.004509557	0.022547785
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3.5		0.26	0.9100	-0.094310679	1.660	3.970	0.003617	5	0.018084	EPA SOP; Cyclopoid copepodites							0.003616789	0.018083945
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	4		0.26	1.0400	0.039220713	1.660	3.970	0.006145	5	0.030727	EPA SOP; Cyclopoid copepodites							0.006145415	0.030727074
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3.5		0.26	0.9100	-0.094310679	1.660	3.970	0.003617	5	0.018084	EPA SOP; Cyclopoid copepodites							0.003616789	0.018083945
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3.4		0.26	0.8840	-0.123298216	1.660	3.970	0.003224	5	0.016118	EPA SOP; Cyclopoid copepodites							0.003223624	0.016118118
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	2.9		0.26	0.7540	-0.282362911	1.660	3.970	0.001714	5	0.008572	EPA SOP; Cyclopoid copepodites							0.001714325	0.008571624
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	4.2		0.26	1.0920	0.088010877	1.660	3.970	0.007459	5	0.037294	EPA SOP; Cyclopoid copepodites							0.007458864	0.037294322
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	4.5		0.26	1.1700	0.157003749	1.660	3.970	0.009809	5	0.049045	EPA SOP; Cyclopoid copepodites							0.009809045	0.049045223
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	4.1		0.26	1.0660	0.063913326	1.660	3.970	0.006778	5	0.033892	EPA SOP; Cyclopoid copepodites							0.006778365	0.033891824
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	4.9		0.26	1.2740	0.242161557	1.660	3.970	0.013755	5	0.068774	EPA SOP; Cyclopoid copepodites							0.013754711	0.068773555
CRCO	Cyclopoida indet.	V	15-25-05		4	1	4x	3.9		0.26	1.0140	0.013902905	1.660	3.970	0.005558	5	0.027789	EPA SOP; Cyclopoid copepodites							0.005557757	0.027788783
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3.2		0.26	0.8320	-0.183922838	1.660	3.970	0.002534	5	0.012670	EPA SOP; Cyclopoid copepodites							0.002534069	0.012670345
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3.5		0.26	0.9100	-0.094310679	1.660	3.970	0.003617	5	0.018084	EPA SOP; Cyclopoid copepodites							0.003616789	0.018083945
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3		0.26	0.7800	-0.248461359	1.660	3.970	0.001961	5	0.009807	EPA SOP; Cyclopoid copepodites							0.001961302	0.009806509
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3.1		0.26	0.8060	-0.215671536	1.660	3.970	0.002234	5	0.011170	EPA SOP; Cyclopoid copepodites							0.002233978	0.011169892
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3.6		0.26	0.9360	-0.066139803	1.660	3.970	0.004045	5	0.020224	EPA SOP; Cyclopoid copepodites							0.004044771	0.020223856
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3.1		0.26	0.8060	-0.215671536	1.660	3.970	0.002234	5	0.011170	EPA SOP; Cyclopoid copepodites							0.002233978	0.011169892
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3.2		0.26	0.8320	-0.183922838	1.660	3.970	0.002534	5	0.012670	EPA SOP; Cyclopoid copepodites							0.002534069	0.012670345
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3.6		0.26	0.9360	-0.066139803	1.660	3.970	0.004045	5	0.020224	EPA SOP; Cyclopoid copepodites							0.004044771	0.020223856
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	5		0.26	1.3000	0.262364264	1.660	3.970	0.014903	5	0.074517	EPA SOP; Cyclopoid copepodites							0.014903352	0.074516758
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	2.6		0.26	0.6760	-0.391562203	1.660	3.970	0.001111	5	0.005556	EPA SOP; Cyclopoid copepodites							0.001111264	0.00555632
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3.8		0.26	0.9880	-0.012072581	1.660	3.970	0.005013	5	0.025066	EPA SOP; Cyclopoid copepodites							0.005013187	0.025065935
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3.6		0.26	0.9360	-0.066139803	1.660	3.970	0.004045	5	0.020224	EPA SOP; Cyclopoid copepodites							0.004044771	0.020223856
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3		0.26	0.7800	-0.248461359	1.660	3.970	0.001961	5	0.009807	EPA SOP; Cyclopoid copepodites							0.001961302	0.009806509
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	3.9		0.26	1.0140	0.013902905	1.660	3.970	0.005558	5	0.027789	EPA SOP; Cyclopoid copepodites							0.005557757	0.027788783
CRCO	Cyclopoida indet.	V	15-25-07		4	1	4x	4		0.26	1.0400	0.039220713	1.660	3.970	0.006145	5	0.030727	EPA SOP; Cyclopoid copepodites							0.006145415	0.030727074
CRCO	Cyclopoida indet.	V	15-25-08		4	1	4x	4.1		0.26	1.0660	0.063913326	1.660	3.970	0.006778	5	0.033892	EPA SOP; Cyclopoid copepodites							0.006778365	0.033891824
CRCO	Cyclopoida indet.	V	15-25-08		4	1	4x	3.2		0.26	0.8320	-0.183922838	1.660	3.970	0.002534	5	0.012670	EPA SOP; Cyclopoid copepodites							0.002534069	0.012670345
CRCO	Cyclopoida indet.	V	15-25-08		4	1	4x	4		0.26	1.0400	0.039220713	1.660	3.970	0.006145	5	0.030727	EPA SOP; Cyclopoid copepodites							0.006145415	0.030727074
CRCO	Cyclopoida indet.	V	15-25-08		4	1	4x	3		0.26	0.7800	-0.248461359	1.660	3.970	0.001961	5	0.009807	EPA SOP; Cyclopoid copepodites							0.001961302	0.009806509
CRCO	Cyclopoida indet.	V	15-25-08		4	1	4x	3.3		0.26	0.8580	-0.153151179	1.660	3.970	0.002863	5	0.014317	EPA SOP; Cyclopoid copepodites							0.002863343	0.014316715
ROTI	Rotifer indet.	n/a	15-25-01		4	1	4x	1.6		0.26	0.4160					5			0.000	0.000	0.100	0.00000	0.00000	EPA SOP	0	0
ROTI	Rotifer indet.	n/a	15-25-01		4	1	4x	0.5		0.26	0.1300					5			0.000	0.000	0.100	0.00000	0.00000	EPA SOP	0	0
ROTI	Rotifer indet.	n/a	15-25-05		4	1	4x	0.4		0.26	0.1040					5			0.000	0.000	0.100	0.00000	0.00000	EPA SOP	0	0
ROTI	Rotifer indet.	n/a	15-25-06		4	1	4x	0.6		0.26	0.1560					5			0.000	0.000	0.100	0.00000	0.00000	EPA SOP	0	0
ROTI	Rotifer indet.	n/a	15-25-09		4	1	4x	0.6		0.26	0.1560					5			0.000	0.000	0.100	0.00000	0.00000	EPA SOP	0	0
ROTI	Rotifer indet.	n/a	15-25-09		4	1	4x	0.8		0.26	0.2080					5			0.000	0.000	0.100	0.00000	0.00000	EPA SOP	0	0
CRCO	Calanoida indet.	I-IV	15-25-01		4	1	4x	7.0		0.26	1.8200	0.598836501	1.050	2.460	0.012468	5	0.062338	EPA SOP; *Diaptomus copepodites*							0.012467656	0.062338281
CRCO	Calanoida indet.	I-IV	15-25-01		4	1	4x	6.6		0.26	1.7160	0.539996001	1.050	2.460	0.010788	6	0.064725	EPA SOP; *Diaptomus copepodites*							0.010787523	0.064725136
CRCO	Calanoida indet.	I-IV	15-25-01		4	1	4x	4.7		0.26	1.2220	0.200488861	1.050	2.460	0.004680	7	0.032757	EPA SOP; *Diaptomus copepodites*							0.004679553	0.032756871
CRCO	Calanoida indet.	I-IV	15-25-01		4	1	4x	5		0.26	1.3000	0.262364264	1.050	2.460	0.005449	8	0.043591	EPA SOP; *Diaptomus copepodites*							0.005448913	0.043591302
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	8.8		0.26	2.2880	0.827678074	1.050	2.460	0.021891	10	0.218913	EPA SOP; *Diaptomus copepodites*							0.021891273	0.218912729
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	5.5		0.26	1.4300	0.357674444	1.050	2.460	0.006889	11	0.075775	EPA SOP; *Diaptomus copepodites*							0.006888678	0.075775453
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	4.9		0.26	1.2740	0.242161557	1.050	2.460	0.005185	12	0.062217	EPA SOP; *Diaptomus copepodites*							0.005184728	0.062216739
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	2.2		0.26	0.5720	-0.558616288	1.050	2.460	0.000723	13	0.009400	EPA SOP; *Diaptomus copepodites*							0.000723108	0.00940041
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	2.9		0.26	0.7540	-0.282362911	1.050	2.460	0.001427	14	0.019974	EPA SOP; *Diaptomus copepodites*							0.001426733	0.019974262
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	3.5		0.26	0.9100	-0.094310679	1.050	2.460	0.002266	15	0.033989	EPA SOP; *Diaptomus copepodites*							0.002265954	0.033989305
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	2.2		0.26	0.5720	-0.558616288	1.050	2.460	0.000723	16	0.011570	EPA SOP; *Diaptomus copepodites*							0.000723108	0.011569735
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	2.2		0.26	0.5720	-0.558616288	1.050	2.460	0.000723	17	0.012293	EPA SOP; *Diaptomus copepodites*							0.000723108	0.012292844
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	4.1		0.26	1.0660	0.063913326	1.050	2.460	0.003344	18	0.060196	EPA SOP; *Diaptomus copepodites*							0.003344198	0.060195557
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.050	2.460	0.000990	19	0.018816	EPA SOP; *Diaptomus copepodites*							0.000990321	0.018816102
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	2.2		0.26	0.5720	-0.558616288	1.050	2.460	0.000723	20	0.014462	EPA SOP; *Diaptomus copepodites*							0.000723108	0.014462169
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	4.2		0.26	1.0920	0.088010877	1.050	2.460	0.003548	21	0.074517	EPA SOP; *Diaptomus copepodites*							0.003548435	0.074517142
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	4.4		0.26	1.1440	0.134530893	1.050	2.460	0.003979	22	0.087531	EPA SOP; *Diaptomus copepodites*							0.003978664	0.0875306
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	5.2		0.26	1.3520	0.301584978	1.050	2.460	0.006001	23	0.138019	EPA SOP; *Diaptomus copepodites*							0.006000838	0.138019263
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	3.9		0.26	1.0140	0.013902905	1.050	2.460	0.002957	24	0.070970	EPA SOP; *Diaptomus copepodites*							0.002957077	0.070969839
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	3.9		0.26	1.0140	0.013902905	1.050	2.460	0.002957	25	0.073927	EPA SOP; *Diaptomus copepodites*							0.002957077	0.073926915
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	4.8		0.26	1.2480	0.22154227	1.050	2.460	0.004928	26	0.128136	EPA SOP; *Diaptomus copepodites*							0.004928299	0.128135785
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	2.4		0.26	0.6240	-0.471604911	1.050	2.460	0.000896	27	0.024184	EPA SOP; *Diaptomus copepodites*							0.000895701	0.02418394
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	3		0.26	0.7800	-0.248461359	1.050	2.460	0.001551	28	0.043423	EPA SOP; *Diaptomus copepodites*							0.001550822	0.043423014
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	3.9		0.26	1.0140	0.013902905	1.050	2.460	0.002957	29	0.085755	EPA SOP; *Diaptomus copepodites*							0.002957077	0.085755222
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	2.5		0.26	0.6500	-0.430782916	1.050	2.460	0.000990	30	0.029710	EPA SOP; *Diaptomus copepodites*							0.000990321	0.029709635
CRCO	Calanoida indet.	I-IV	15-25-02		4	1	4x	2.3		0.26	0.5980	-0.514164525	1.050	2.460	0.000807	31	0.025007	EPA SOP; *Diaptomus copepodites*							0.000806667	0.025006667
CRCO	Calanoida indet.	I-IV	15-25-03		4	1	4x	5.4		0.26	1.4040	0.339325306	1.050	2.460	0.006585	33	0.217293	EPA SOP; *Diaptomus copepodites*							0.006584644	0.217293248
CRCO	Calanoida indet.	I-IV	15-25-03		4	1	4x	4		0.26	1.0400	0.039220713	1.050	2.460	0.003147	34	0.107002	EPA SOP; *Diaptomus copepodites*							0.003147105	0.107001567
CRCO	Calanoida indet.	I-IV	15-25-03		4	1	4x	5		0.26	1.3000	0.262364264	1.050	2.460	0.005449	35	0.190712	EPA SOP; *Diaptomus copepodites*							0.005448913	0.190711946
CRCO	Calanoida indet.	I-IV	15-25-03		4	1	4x	4		0.26	1.0400	0.039220713	1.050	2.460	0.003147	36	0.113296	EPA SOP; *Diaptomus copepodites*							0.003147105	0.113295777
CRCO	Calanoida indet.	I-IV	15-25-05		4	1	4x	5		0.26	1.3000	0.262364264	1.050	2.460	0.005449	33	0.179814	EPA SOP; *Diaptomus copepodites*							0.005448913	0.17981412
CRCO	Calanoida indet.	I-IV	15-25-05		4	1	4x	6.8		0.26	1.7680	0.569848964	1.050	2.460	0.011610	34	0.394725	EPA SOP; *Diaptomus copepodites*							0.011609555	0.394724864
CRCO	Calanoida indet.	I-IV	15-25-05		4	1	4x	5.5		0.26	1.4300	0.357674444	1.050	2.460	0.006889	35	0.241104	EPA SOP; *Diaptomus copepodites*							0.006888678	0.241103715
CRCO	Calanoida indet.	I-IV	15-25-05		4	1	4x	5.2		0.26	1.3520	0.301584978	1.050	2.460	0.006001	36	0.216030	EPA SOP; *Diaptomus copepodites*							0.006000838	0.21603015
CRCO	Calanoida indet.	I-IV	15-25-05		4	1	4x	2.9		0.26	0.7540	-0.282362911	1.050	2.460	0.001427	37	0.052789	EPA SOP; *Diaptomus copepodites*							0.001426733	0.052789122
CRCO	Calanoida indet.	I-IV	15-25-05		4	1	4x	2.9		0.26	0.7540	-0.282362911	1.050	2.460	0.001427	38	0.054216	EPA SOP; *Diaptomus copepodites*							0.001426733	0.054215855
CRCO	Calanoida indet.	I-IV	15-25-05		4	1	4x	2.8		0.26	0.7280	-0.317454231	1.050	2.460	0.001309	39	0.051041	EPA SOP; *Diaptomus copepodites*							0.001308737	0.051040745
CRCO	Calanoida indet.	I-IV	15-25-05		4	1	4x	2.7		0.26	0.7020	-0.353821875	1.050	2.460	0.001197	40	0.047869	EPA SOP; *Diaptomus copepodites*							0.001196736	0.047869456
CRCO	Calanoida indet.	I-IV	15-25-06		4	1	4x	7		0.26	1.8200	0.598836501	1.050	2.460	0.012468	41	0.511174	EPA SOP; *Diaptomus copepodites*							0.012467656	0.511173907
CRCO	Calanoida indet.	I-IV	15-25-06		4	1	4x	5.7		0.26	1.4820	0.393392527	1.050	2.460	0.007521	42	0.315897	EPA SOP; *Diaptomus copepodites*							0.00752135	0.315896691
CRCO	Calanoida indet.	I-IV	15-25-06		4	1	4x	5.3		0.26	1.3780	0.320633173	1.050	2.460	0.006289	43	0.270415	EPA SOP; *Diaptomus copepodites*							0.00628872	0.270414974
CRCO	Calanoida indet.	I-IV	15-25-06		4	1	4x	5.7		0.26	1.4820	0.393392527	1.050	2.460	0.007521	44	0.330939	EPA SOP; *Diaptomus copepodites*							0.00752135	0.330939391
CRCO	Calanoida indet.	I-IV	15-25-06		4	1	4x	6.2		0.26	1.6120	0.477475644	1.050	2.460	0.009250	45	0.416236	EPA SOP; *Diaptomus copepodites*							0.00924969	0.41623607

Report on subsampling error and internal taxonomic consistency

Subsampling Accuracy

QA Sample	Abundance (Original Replicate) (A)	Abundance (QA Replicate) (B)	Accuracy 1-(A/B)*100
MAM-02-S	16393	18903	15.3
WTS-05-S	7055	7852	10.2
MAM-05-S	7327	7833	6.5
		Mean Subsampling Error (%)	**10.6**

Taxonomic Accuracy - Internal

QA Sample	Number of Unique Taxa (B)	Number of disagreements (A)	% Accuracy 1-(A/B)*100
MAM-02-S	7	0	100.0
WTS-05-S	7	0	100.0
MAM-05-S	6	0	100.0
		Mean Internal Taxonomic Accuracy (%)	**100.0**

APPENDIX G2

Zooplankton Taxonomy, Meadowbank Study Lakes, 2010

Zooplankton biomass (mg/m^3) (wet and dry weights), Meadowbank study lakes, 2010.

Station	Date	Water Depth (m)	Tow Depth (m)	Wet biomass (mg ww / tows)	Wet biomass (mg/m^3 ww)	Dry biomass (mg/m^3 dw)
Inuggugayualik Lake						
INUG-1	25-Aug-10	11.4	8	943	834	46.0
INUG-2	25-Aug-10	10.4	8	860	761	24.8
INUG-3	25-Aug-10	10.4	8	1394	1233	46.0
INUG-4	25-Aug-10	10.1	8	545	482	16.8
INUG-5	25-Aug-10	10.4	8	1553	1374	45.1
					Mean	***35.7***
Pipedream Lake						
PDL-1	24-Aug-10	10.6	8	140	124	7.1
PDL-2	24-Aug-10	28.2	8	210	186	8.0
PDL-3	24-Aug-10	10.7	8	235	208	23.0
PDL-4	24-Aug-10	11.4	8	124	110	5.3
PDL-5	24-Aug-10	23.7	8	227	201	8.8
					Mean	***10.4***

Zooplankton mean abundance (#/m^3) and taxonomy, Meadowbank study lakes, 2010.

Station	**INUG**	**PDL**
Date	25-Aug-10	24-Aug-10
CLADOCERA		
Daphniidae		
Daphnia longiremis Sars	0	0
Daphnia middendorffiana Fischer	124	11
Bosminidae		
Bosmina longirostris (O.F. Muller)	95	28
Chydoridae		
Chydorus sp.	0	0
Holopedidae		
Holopedium gibberum Zaddach	203	157
% CLADOCERA:	***8.8%***	***18%***
COPEPODA		
Calanoida		
Calanoida copepodite	45	33
Diaptomidae		
Diaptomus ashlandi Marsh	0	0
Diaptomus minutus Lilljeborg	823	116
Diaptomus sicilis S.A. Forbes	13	2.5
Diaptomus probilifensis Juday and Muttkowski	18	8.5
Diaptomus spp. (unid. Females)	1216	170
Temoridae		
Epischura lacustris Forbes	51	47
Heterocope septentrionalis Juday and Muttkow	56	61
Cyclopoida		
Cyclopoid copepodite	272	76
Cyclopidae		
Cyclops scutifer Sars	1865	388
% COPEPODA:	***91%***	***82%***
TOTAL ABUNDANCE / m^3:	**4780**	**1097**

APPENDIX G3

Zooplankton Taxonomy, Meadowbank Study Lakes, 2011

Zooplankton biomass (mg/m^3) (wet and dry weights), Meadowbank study lakes, 2011.

Area-Replicate	Date	Water Depth (m)	Tow Depth (m)	Total Wet biomass (mg ww)	Wet biomass (volume-normalized) (mg/m^3 ww)	Dry biomass (volume-normalized) (mg/m^3 dw)
Inuggugayualik Lake						
INUG-1	13-Aug-11	11.9	8	1193	1055	42.5
INUG-2	13-Aug-11	10.4	8	728	644	25.7
INUG-3	13-Aug-11	10.1	8	1479	1308	68.1
INUG-4	13-Aug-11	10.7	8	1028	909	40.7
INUG-5	13-Aug-11	13.3	8	935	827	39.8
INUG-6	13-Aug-11	10.6	8	1078	954	46.0
INUG-7	13-Aug-11	15.8	8	1030	911	35.4
INUG-8	13-Aug-11	10.3	8	1190	1053	44.2
INUG-9	13-Aug-11	11.0	8	1526	1350	54.8
INUG-10	13-Aug-11	10.7	8	1027	909	31.8
					Mean	***42.9***
Pipedream Lake						
PDL-1	11-Aug-11	12.0	8	1562	1382	23.0
PDL-2	11-Aug-11	30.5	8	575	509	14.2
PDL-3	11-Aug-11	21.4	8	533	472	13.3
PDL-4	11-Aug-11	11.1	8	1795	1588	34.5
PDL-5	11-Aug-11	23.0	8	1215	1075	13.3
PDL-6	11-Aug-11	17.9	8	1249	1105	12.4
PDL-7	11-Aug-11	23.7	8	3995	3534	36.3
PDL-8	11-Aug-11	23.9	8	2372	2098	28.3
PDL-9	11-Aug-11	16.2	8	3484	3082	38.0
PDL-10	11-Aug-11	12.0	8	2839	2512	35.4
					Mean	***24.9***

Zooplankton mean abundance (#/m^3) and taxonomy, Meadowbank study lakes, 2011.

Area	INUG	PDL
Date	13-Aug-11	11-Aug-11
<u>**CLADOCERA**</u>		
Daphniidae		
Daphnia longiremis Sars	0.18	0
Daphnia middendorffiana Fischer	6.5	1.2
Bosminidae		
Bosmina longirostris (O.F. Muller)	2.3	16
Chydoridae		
Acroperus harpae Baird	0	0
Alona guttata Sars	0	0
Chydorus sp.	0	0
Holopedidae		
Holopedium gibberum Zaddach	7.3	226
% CLADOCERA:	***0.1%***	***15.3%***
<u>**COPEPODA**</u>		
Calanoida		
Calanoida copepodite	6774	988
Diaptomidae		
Diaptomus ashlandi Marsh	0	3.5
Diaptomus minutus Lilljeborg	586	0
Diaptomus probilifensis Juday and Muttkowski	0	1.8
Diaptomus sicilis S.A. Forbes	5.7	2.1
Diaptomus sp. (unid. Females)	2541	44
Temoridae		
Epischura lacustris Forbes	296	89
Heterocope septentrionalis Juday and Muttkowski	57	44
Cyclopoida		
Cyclopoid copepodite	835	30
Cyclopidae		
Cyclops scutifer Sars	2884	143
% COPEPODA:	***99.9%***	***84.7%***
TOTAL ABUNDANCE / m^3:	**13994**	**1588**

APPENDIX H

Qualitative Periphyton Survey Results, Whale Tail Pit Baseline, 2015

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	WTS-1	Sand:	
Date:	7/17/2015	Small Gravel:	
GPS:	14W0607869 7254134	Large Gravel:	
		Small Cobble:	20%
		Large Cobble:	30%
		Boulder:	50%
		Bedrock:	
Microhabitat - Periphyton Cover:	Low and Moderate - Coverage is complete but not dense. Some evidence of ice scour. Below 30 cm remnant evidence of dense matting.		
Colour:	Muddy Green		
Macrohabitat- Periphyton Cover:	Sparse and Moderate - Appears to cover all boulders and cobble except in extreme shallows. Consistent mix of substrate in area. Some larger boulders breaking the surface		
Aspect/Terrain	Clear shoreline with low slope.		

Station ID:	WTS-2	Sand:	
Date:	7/17/2015	Small Gravel:	
GPS:	14W0607412 7253418	Large Gravel:	
		Small Cobble:	10%
		Large Cobble:	80%
		Boulder:	5%
		Bedrock:	5%
Microhabitat - Periphyton Cover:	Sparse and Moderate - Ice scour seems to extend down to 50 cm. Rocks are mostly flat and angular with minimal growth except deeper.		
Colour:	Muddy Green		
Macrohabitat- Periphyton Cover:	Sparse and Moderate - Where rocks haven't been scoured by ice there is evidence of growth.		
Aspect/Terrain	Evidence of rocks pushed up on shoreline. Layered bedrock extends into water and seems to have provided most of the rocks which are flat and angular. Area is tucked behind a prominent point.		

Station ID:	WTS3	Sand:	
Date:	7/17/2015	Small Gravel:	
GPS:	14W0607235 7254428	Large Gravel:	
		Small Cobble:	5%
		Large Cobble:	90%
		Boulder:	5%
		Bedrock:	
Microhabitat - Periphyton Cover:	Sparse and Moderate - Mostly sparse where shallower than 30 cm but moderate deeper. Evidence of remnant dense matting deeper.		
Colour:	Muddy Green		
Macrohabitat- Periphyton Cover:	Sparse, Low, and Moderate - evidence of ice scour. Consistent substrate with patches of boulders and patches of sand/gravel.		
Aspect/Terrain	Rocks and cobble are rounded. Shoreline is exposed except for a small area to the south that is protected by a small point.		

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	WTN1	Sand:	
Date:	7/17/2015	Small Gravel:	30%
GPS:	14W0607100 7254934	Large Gravel:	
Number of Pictures:	Eleven	Small Cobble:	15%
		Large Cobble:	15%
		Boulder:	
		Bedrock:	30%
Microhabitat - Periphyton Cover:	None, Sparse, and Low - Shallow depths had no growth but it was better deeper.		
Colour:	Muddy Green		
Macrohabitat- Periphyton Cover:	None and Sparse - Consistently better deeper.		
Aspect/Terrain	Shoreline was made up of bedrock outcropping which provided a point of land behind which there was more periphyton growth. It appears that there was more ice scour effect on the North side.		

Station ID:	WTN2	Sand:	
Date:	7/17/2015	Small Gravel:	
GPS:	14W0607153 7255340	Large Gravel:	5%
Number of Pictures:	Seven	Small Cobble:	20%
		Large Cobble:	70%
		Boulder:	5%
		Bedrock:	
Microhabitat - Periphyton Cover:	Sparse, Low, and Moderate - Growth was Moderate below 20 cm.		
Colour:	Muddy Green		
Macrohabitat- Periphyton Cover:	Sparse and Moderate - Growth depended on depth. Nice area with evidence of dense mats deeper. Probably effects of ice scour shallower. Consistent mix of cobble.		
Aspect/Terrain	This was the most northerly section of the lake. It appears to be less weathered though the cobbles are rounded.		

Station ID:	WTN3	Sand:	
Date:	7/17/2015	Small Gravel:	
GPS:	14W0607579 7255098	Large Gravel:	
Number of Pictures:	Seven	Small Cobble:	20%
		Large Cobble:	30%
		Boulder:	50%
		Bedrock:	
Microhabitat - Periphyton Cover:	Low and Moderate - Better than most areas especially when greater than 20 cm deep.		
Colour:	Muddy Green		
Macrohabitat- Periphyton Cover:	Sparse, Low, and Moderate - Consistent mix though where the shoreline varies so does the coverage.		
Aspect/Terrain	Open shoreline on the East Side. Rocks are a mix of rounded and angular. Sections where it drops off and sections where it is shallow.		

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	NEM-1	Sand:	
Date:	7/18/2015	Small Gravel:	10%
GPS:	14W0606618 7257076	Large Gravel:	30%
		Small Cobble:	30%
		Large Cobble:	30%
		Boulder:	
		Bedrock:	
Microhabitat - Periphyton Cover:	Low and Moderate - > than 20 cm depth is moderate. Dark brown and green. Growth increases with depth.		
Colour:	Dark brown and green		
Macrohabitat- Periphyton Cover:	Low and Moderate - Consistent cover		
Aspect/Terrain	This is a small bay near the moraine that stretches across the lake. The shore is a slow even slope to deeper water. Smaller substrate near the shore. Further out there are some boulders. (Great boat launch)		

Station ID:	NEM2	Sand:	
Date:	7/18/2015	Small Gravel:	
GPS:	14W0606929 7257969	Large Gravel:	5%
Number of Pictures:	Nine	Small Cobble:	30%
		Large Cobble:	50%
		Boulder:	15%
		Bedrock:	
Microhabitat - Periphyton Cover:	Sparse and Moderate - Thin coating on most surfaces but is moderate > than 30 cm depth. Growth is concentrated in pockets between rocks/boulders where you can see dense, tufts		
Colour:	Dark brown and green		
Macrohabitat- Periphyton Cover:	Sparse and Moderate - Consistent cover patterns		
Aspect/Terrain	This is near a small cobble covered point. East side has more large cobble with lower slope. Rocks/cobble are mostly very rounded.		

Station ID:	NEM3	Sand:	
Date:	7/18/2015	Small Gravel:	
GPS:	14W0605925 7257554	Large Gravel:	5%
		Small Cobble:	10%
		Large Cobble:	10%
		Boulder:	75%
		Bedrock:	
Microhabitat - Periphyton Cover:	None and Low - growth is limited to deep pockets between boulders. In the pockets you can see longer strands of periphyton matting on the sides of boulders.		
Colour:	Dark brown and green		
Macrohabitat- Periphyton Cover:	None and Low - This is a field of boulders with limited smaller substrate, as such there are patches of growth where it is deep but it is not consistent.		
Aspect/Terrain	Fairly exposed section of lake. There is a shallow patch with boulders breaking the surface. It would be a hard place to sample.		

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	MAM-1	Sand:	5%
Date:	7/18/2015	Small Gravel:	
GPS:	14W0604720 7254796	Large Gravel:	5%
		Small Cobble:	30%
		Large Cobble:	30%
		Boulder:	30%
		Bedrock:	
Microhabitat - Periphyton Cover:	Non, Sparse, and Low - no evidence of deep cover but mostly a thin layer at > 20 cm depth. More growth on sides and in deeper sheltered pockets.		
Colour:	Brown/Olive Colour		
Macrohabitat- Periphyton Cover:	Sparse and Low -Consistent for > 20 cm depth otherwise more patchy		
Aspect/Terrain	Shallow patch with large boulders offshore. Muddy banks extend into water.		

Station ID:	MAM-2	Sand:	
Date:	7/18/2015	Small Gravel:	
GPS:	14W0604537 7254030	Large Gravel:	
		Small Cobble:	5%
		Large Cobble:	10%
		Boulder:	85%
		Bedrock:	
Microhabitat - Periphyton Cover:	None and Moderate - no cover in shallower than 30 cm. Otherwise, good growth with evidence of deep matting.		
Colour:	Brown/Olive Colour		
Macrohabitat- Periphyton Cover:	None and Moderate - Consistent based on substrate.		
Aspect/Terrain	There are many larger boulders but that tends to be representative of this lake's shoreline.		

Station ID:	MAM-3	Sand:	
Date:	7/18/2015	Small Gravel:	
GPS:	14W0605020 7254596	Large Gravel:	
		Small Cobble:	5%
		Large Cobble:	15%
		Boulder:	80%
		Bedrock:	
Microhabitat - Periphyton Cover:	None, Sparse, Low, and Moderate - really mixed. Further out and deeper there is more. Where there is more there are thick tufts.		
Colour:	Brown/Olive Colour		
Macrohabitat- Periphyton Cover:	None, Sparse, and Low - Similar to the rest of the lake where growth is dependent on depth and substrate.		
Aspect/Terrain	Big boulders and shallow slope. The topography around the lake is representative of the shoreline. Lake is generally very shallow.		

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	C-2	Sand:	
Date:	7/19/2015	Small Gravel:	
GPS:	14W0638199 7221598	Large Gravel:	5%
		Small Cobble:	10%
		Large Cobble:	25%
		Boulder:	60%
		Bedrock:	
Microhabitat - Periphyton Cover:	Sparse growth with a thin film on most of the surface of the rock but some tufts of denser growth evident in patches		
Colour:			
Macrohabitat- Periphyton Cover:	Growth is limited to pools so it is patchy overall and pretty sparse.		
Aspect/Terrain	Fairly small stream with a larger pond area just upstream		

Station ID:	C-14	Sand:	
Date:	7/19/2015	Small Gravel:	
GPS:	14W0632916 7232202	Large Gravel:	10%
		Small Cobble:	10%
		Large Cobble:	60%
		Boulder:	20%
		Bedrock:	
Microhabitat - Periphyton Cover:	Moderate growth covering surfaces of rock particularly on the sides		
Colour:	Muddy-green-olive colour		
Macrohabitat- Periphyton Cover:	Pretty fast flowing but consistently good growth even in shallower sections		
Aspect/Terrain	Wide and shallow stream		

Station ID:	C-17	Sand:	
Date:	7/19/2015	Small Gravel:	
GPS:	14W0630583 7234684	Large Gravel:	
		Small Cobble:	20%
		Large Cobble:	30%
		Boulder:	50%
		Bedrock:	
Microhabitat - Periphyton Cover:	Moderate to high growth with some very dense matting that is peeling off		
Colour:	Muddy green colour		
Macrohabitat- Periphyton Cover:	Consistent cover in this shallow slow flowing stream		
Aspect/Terrain			

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	C-20	Sand:	
Date:	7/19/2015	Small Gravel:	
GPS:	14W0627265 7236464	Large Gravel:	5%
		Small Cobble:	15%
		Large Cobble:	30%
		Boulder:	50%
		Bedrock:	
Microhabitat - Periphyton Cover:	Sparse to moderate cover because it depends where you look. There is dense matting in deeper section (side of rocks) but really low growth on top sections		
Colour:			
Macrohabitat- Periphyton Cover:	Patchy growth - very dependent on area		
Aspect/Terrain	Wide larger stream/river and it is fairly fast flowing		

Station ID:	C-41	Sand:	
Date:	7/19/2015	Small Gravel:	
GPS:	14W0620601 7244690	Large Gravel:	
		Small Cobble:	10%
		Large Cobble:	40%
		Boulder:	50%
		Bedrock:	
Microhabitat - Periphyton Cover:	Moderate to high - lots of growth with dense matting that is firmly attached and evidence of some kind of lighter green algae		
Colour:	more green than most		
Macrohabitat- Periphyton Cover:	Some bright green (algae?) patches but overall good consistent growth with some old mats of periphyton in deeper sections		
Aspect/Terrain	Small but fast flowing		

Station ID:	WTS-1	Sand:	
Date:	8/22/2015	Small Gravel:	
GPS:	14W0607170 7253398	Large Gravel:	
		Small Cobble:	
		Large Cobble:	10%
		Boulder:	90%
		Bedrock:	
Microhabitat - Periphyton Cover:	Low cover; Thickness 1-5 mm; flat coverage of most rocks; uniform thickness; some filamentous periphyton, but no longer than 5 mm		
Colour:	green/brown colour		
Macrohabitat- Periphyton Cover:	Low cover; Clear water; coverage looks relatively homogenous along the south shore of the south basin of Whale Tail		
Aspect/Terrain			

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	WTN-1	Sand:	
Date:	8/22/2015	Small Gravel:	
GPS:	14W0606784 7255760	Large Gravel:	
		Small Cobble:	30%
		Large Cobble:	50%
		Boulder:	20%
		Bedrock:	
Microhabitat - Periphyton Cover:	Moderate Cover; Periphyton covering most rocks. 1-5 mm layer.		
Colour:	green/brown colour		
Macrohabitat- Periphyton Cover:	Moderate cover; The north basin of Whale Tail Lake; Water is clear; Secchi depth was 6 m at the WQ station in the middle of the lake; Relatively uniform coverage along the lake		
Aspect/Terrain			
Station ID:	NEM-1	Sand:	30%
Date:	8/23/2015	Small Gravel:	
GPS:	14W606649 7257142	Large Gravel:	
		Small Cobble:	
		Large Cobble:	20%
		Boulder:	50%
		Bedrock:	
Microhabitat - Periphyton Cover:	Low Coverage; Uniform lateral coverage along the shore		
Colour:	green/brown colour		
Macrohabitat- Periphyton Cover:	Low Coverage; Clear water; Secchi down to > 7m at the nearby WQ station		
Aspect/Terrain			
Station ID:	MAM-1	Sand:	
Date:	8/24/2015	Small Gravel:	
GPS:	14W0604852 7254530	Large Gravel:	
		Small Cobble:	
		Large Cobble:	60%
		Boulder:	40%
		Bedrock:	
Microhabitat - Periphyton Cover:	Moderate Cover; Firmly attached periphyton cover; 1-3 mm thick; Uniform coverage on all rock surface.		
Colour:	green/brown colour		
Macrohabitat- Periphyton Cover:	Low Cover; Water is clear; Secchi down to 7 m in the lake; Homogenous cover along shore from what we surveyed; Rock coverage along the shoreline of the entire lake.		
Aspect/Terrain			

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	C-2	Sand:	
Date:	8/25/2015	Small Gravel:	
GPS:	14W0638217 7221627	Large Gravel:	
		Small Cobble:	
		Large Cobble:	
		Boulder:	100%
		Bedrock:	
Microhabitat - Periphyton Cover:	High cover; 2-5 mm thick periphyton layer; moderately attached		
Colour:	green/brown colour		
Macrohabitat- Periphyton Cover:	High cover; Low flow, clear water, stagnant; No visible water downstream from proposed crossing; Sampled upstream; Little variability along reach where water present.		
Aspect/Terrain			

Station ID:	C-14	Sand:	
Date:	8/25/2015	Small Gravel:	
GPS:	14W0632890 7232182	Large Gravel:	
		Small Cobble:	
		Large Cobble:	40%
		Boulder:	60%
		Bedrock:	
Microhabitat - Periphyton Cover:	Moderate cover; Predominantly green filamentous periphyton; Firmly attached; Prevalent in		
Colour:	Green		
Macrohabitat- Periphyton Cover:	Moderate cover; Low flow, clear water, lots of exposed rock		
Aspect/Terrain			

Station ID:	C-17	Sand:	
Date:	8/25/2015	Small Gravel:	
GPS:	14W0630557 7234667	Large Gravel:	30%
		Small Cobble:	40%
		Large Cobble:	20%
		Boulder:	
		Bedrock:	
Microhabitat - Periphyton Cover:	Moderate cover; Firmly attached; Slippery texture; some filamentous/moss clumps; 1-2 mm thick in most places		
Colour:	brown		
Macrohabitat- Periphyton Cover:	Moderate cover; Clear water; Low flow in August compared to July according to pilot; Uniform coverage throughout the stream.		
Aspect/Terrain			

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	C-20	Sand:	
Date:	8/25/2015	Small Gravel:	
GPS:	14W0627186 7236475	Large Gravel:	
		Small Cobble:	
		Large Cobble:	5%
		Boulder:	95%
		Bedrock:	
Microhabitat - Periphyton Cover:	Moderate cover; Filamentous periphyton covering most rocks in riffle glide; Firmly attached		
Colour:	green		
Macrohabitat- Periphyton Cover:	Moderate cover; Clear water; Some riffle sections, but mostly glide over large boulder; Homogenous growth on submerged rocks.		
Aspect/Terrain			

Station ID:	C-41	Sand:	
Date:	8/25/2015	Small Gravel:	15%
GPS:	14W0620637 7244668	Large Gravel:	20%
		Small Cobble:	70%
		Large Cobble:	5%
		Boulder:	
		Bedrock:	
Microhabitat - Periphyton Cover:	Low cover; Noticeable growth on large rocks; Some filamentous strands		
Colour:	green/brown		
Macrohabitat- Periphyton Cover:	Low cover; Clear water; Moderate flow; Some patchiness in cover; Denser in small pools than riffle areas.		
Aspect/Terrain			

Station ID:	WTN-1	Sand:	
Date:	9/18/2015	Small Gravel:	
GPS:	14W0607100 7254934	Large Gravel:	
		Small Cobble:	20%
		Large Cobble:	20%
		Boulder:	
		Bedrock:	60%
Microhabitat - Periphyton Cover:	Moderate cover; Thin mud like layer		
Colour:			
Macrohabitat- Periphyton Cover:	Low to Moderate cover; Lots of exposed bedrock; Pretty thin growth;		
Aspect/Terrain	Water level was noticeably higher in July (approximately 40-50 cm); As such, this isn't the same substrate and growth characterized in July.		

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	WTN-2	Sand:	
Date:	9/18/2015	Small Gravel:	
GPS:	14W0607153 7255340	Large Gravel:	
		Small Cobble:	
		Large Cobble:	
		Boulder:	
		Bedrock:	
Microhabitat - Periphyton Cover:	High cover; Dense tufty growth; Some muddy/slimy growth, but pretty consistent		
Colour:	Dark olive green colour		
Macrohabitat- Periphyton Cover:	High cover; Consistent growth all depths; Evidence of dried up periphyton on exposed rocks along shore to 10-20 cm above current water level.		
Aspect/Terrain			
Station ID:	WTN-3	Sand:	
Date:	9/18/2015	Small Gravel:	
GPS:	14W0607579 7255098	Large Gravel:	
		Small Cobble:	30%
		Large Cobble:	40%
		Boulder:	30%
		Bedrock:	
Microhabitat - Periphyton Cover:	High cover; Thick matting with mix of colours from muddy green to lighter green		
Colour:	Muddy green to lighter green		
Macrohabitat- Periphyton Cover:	High cover; Thick consistent cover at all depths		
Aspect/Terrain			
Station ID:	WTS-1	Sand:	
Date:	9/18/2015	Small Gravel:	
GPS:	14W0607869 7254134	Large Gravel:	5%
		Small Cobble:	10%
		Large Cobble:	30%
		Boulder:	55%
		Bedrock:	
Microhabitat - Periphyton Cover:	High cover; Coating of fine growth on all surfaces; Growth is generally very poorly attached on shallow rocks		
Colour:	Muddy green		
Macrohabitat- Periphyton Cover:	Moderate to high cover; Appears consistent at > 10cm depth; Still some shallow parts of rocks have less growth		
Aspect/Terrain			

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	WTS-2	Sand:	
Date:	9/18/2015	Small Gravel:	
GPS:	14W0607412 7253418	Large Gravel:	
		Small Cobble:	
		Large Cobble:	
		Boulder:	
		Bedrock:	
Microhabitat - Periphyton Cover:	Moderate cover; Slimy coat of growth		
Colour:	Mix of olive/mud green and lighter green		
Macrohabitat- Periphyton Cover:	High cover; Appears consistent across all depths; Looks like mud green and appears denser from afar than it does up close		
Aspect/Terrain			

Station ID:	WTS-3	Sand:	
Date:	9/18/2015	Small Gravel:	
GPS:	14W0607235 7254428	Large Gravel:	10%
		Small Cobble:	45%
		Large Cobble:	40%
		Boulder:	5%
		Bedrock:	
Microhabitat - Periphyton Cover:	High cover; Looks well attached and yet scrapes off easily to a muddy slime; Fairly thick; Mix of tufts and fine muddy stuff		
Colour:	There are lighter green patches		
Macrohabitat- Periphyton Cover:	High cover; more tufty and not as muddy looking; Consistent cover		
Aspect/Terrain			

Station ID:	NEM-1	Sand:	
Date:	9/19/2015	Small Gravel:	
GPS:	14W0606618 7257076	Large Gravel:	20%
		Small Cobble:	50%
		Large Cobble:	30%
		Boulder:	
		Bedrock:	
Microhabitat - Periphyton Cover:	High cover; Dark with lots of growth; Scrapes into a slimy pile easily		
Colour:	Dark green		
Macrohabitat- Periphyton Cover:	High cover; Consistent coverage; Fairly dense with tufts and matting		
Aspect/Terrain			

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	NEM-2	Sand:	
Date:	9/19/2015	Small Gravel:	
GPS:	14W0606929 7257969	Large Gravel:	10%
		Small Cobble:	50%
		Large Cobble:	40%
		Boulder:	
		Bedrock:	
Microhabitat - Periphyton Cover:	High to low cover; Surprisingly spars especially in shallows; Also tufty with some fine slime		
Colour:	Dark mud/green colour		
Macrohabitat- Periphyton Cover:	Consistent cover but dependent on depth		
Aspect/Terrain			

Station ID:	NEM-3	Sand:	
Date:	9/19/2015	Small Gravel:	
GPS:	14W0605925 7257554	Large Gravel:	
		Small Cobble:	5%
		Large Cobble:	15%
		Boulder:	80%
		Bedrock:	
Microhabitat - Periphyton Cover:	Moderate cover		
Colour:	Dark green muddy colour		
Macrohabitat- Periphyton Cover:	Moderate to high cover; Dense tufts of growth on sides of boulders, but it is not matting except on some flat surfaces;		
Aspect/Terrain	Lower lake level means only deeper pools between boulders remain		

Station ID:	MAM-1	Sand:	
Date:	9/19/2015	Small Gravel:	
GPS:	14W0604720 7254796	Large Gravel:	10%
		Small Cobble:	40%
		Large Cobble:	30%
		Boulder:	20%
		Bedrock:	
Microhabitat - Periphyton Cover:	Moderate to high cover; Thick well attached growth		
Colour:	Muddy green colour		
Macrohabitat- Periphyton Cover:	High cover; Coverage is pretty dense especially at > 10cm depth		
Aspect/Terrain			

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	MAM-2	Sand:	
Date:	9/19/2015	Small Gravel:	
GPS:	14W0604538 7254030	Large Gravel:	
		Small Cobble:	
		Large Cobble:	20%
		Boulder:	80%
		Bedrock:	
Microhabitat - Periphyton Cover:	High cover; Dense and consistent on each rock though coverage type varies a bit between rocks		
Colour:	Dark olive green		
Macrohabitat- Periphyton Cover:	High cover; Lots of growth; Thick matting with tufts		
Aspect/Terrain			

Station ID:	MAM-3	Sand:	
Date:	9/19/2015	Small Gravel:	
GPS:	14W0605021 7254596	Large Gravel:	
		Small Cobble:	10%
		Large Cobble:	20%
		Boulder:	70%
		Bedrock:	
Microhabitat - Periphyton Cover:	High cover; Thick cover; Some tufts, but mostly loose mats		
Colour:	Brownish/green colour		
Macrohabitat- Periphyton Cover:	High cover; Dense matting; Consistent cover		
Aspect/Terrain	No the lake level is lower it is very sheltered at this location		

Station ID:	C-2	Sand:	
Date:	9/20/2015	Small Gravel:	
GPS:	14W0603828 7221902	Large Gravel:	
		Small Cobble:	
		Large Cobble:	
		Boulder:	
		Bedrock:	
Microhabitat - Periphyton Cover:	Dense growth particularly on sides of rocks		
Colour:			
Macrohabitat- Periphyton Cover:	Peril mats exposed on many rocks		
Aspect/Terrain	Water level much lower than July; had to move station upstream and felt more like a lake than a stream		

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	C-14	Sand:
Date:	9/20/2015	Small Gravel:
GPS:	14W0632916 7232202	Large Gravel:
		Small Cobble:
		Large Cobble:
		Boulder:
		Bedrock:
Microhabitat - Periphyton Cover:	Moderate Cover; Slimy growth; Not well attached	
Colour:		
Macrohabitat- Periphyton Cover:	Moderate cover; Not as much as other stream crossings; Appears to be more like the lake growth	
Aspect/Terrain		

Station ID:	C-17	Sand:
Date:	9/20/2015	Small Gravel:
GPS:	14W0632916 7232202	Large Gravel:
		Small Cobble:
		Large Cobble:
		Boulder:
		Bedrock:
Microhabitat - Periphyton Cover:	High cover; Appears fine with less filamentous growth (macrophyte growth in appearance)	
Colour:	Mud coloured growth	
Macrohabitat- Periphyton Cover:	High cover; Easily disturbed; Lots of growth	
Aspect/Terrain		

Station ID:	C-20	Sand:
Date:	9/20/2015	Small Gravel:
GPS:	14W0627264 7236464	Large Gravel:
Number of Pictures:		Small Cobble:
		Large Cobble:
		Boulder:
		Bedrock:
Microhabitat - Periphyton Cover:	Moderate cover; Dense "snotty" growth	
Colour:	some light green long strands	
Macrohabitat- Periphyton Cover:	Moderate to high cover; Some matting in deep sections; Long strands of growth	
Aspect/Terrain		

Summary of the qualitative periphyton survey results, Whale Tail Pit Baseline, 2015.

Station ID:	C-41	Sand:
Date:	9/20/2015	Small Gravel:
GPS:	14W0620607 7244690	Large Gravel:
		Small Cobble:
		Large Cobble:
		Boulder:
		Bedrock:
Microhabitat - Periphyton Cover:	Moderate to high cover; Long strands; Lots of organic matter in flow on very windy day (suspect wave action is dislodging growth)	
Colour:	Very dark green; Some light green	
Macrohabitat- Periphyton Cover:	High cover; Macrophyte or filamentous growth evident; Very dense consistent cover	
Aspect/Terrain		

Notes:

Periphyton cover (in percent) defined as follows:

None	0
Sparse	< 5
Low	5-25
Moderate	25-75
High/Dense	> 75

Substrate cover not recorded at some lake and sentinel stations in September as the same locations were sampled in July and September.