



# **Pine Point Project**

## **Surveillance Network Program Report – December 2023**

**Water Licence: MV2020L8-0012**

**Version 0**

**April 30, 2025**

# **1 INTRODUCTION**

Pine Point Mining Limited (PPML) is a Joint Venture formed between Osisko Metals Incorporated and Appian Natural Resources Fund III LLP. It holds approximately 40 mineral leases and 100 mineral claims near the south shore of Great Slave Lake (Figure 1). These mineral dispositions comprise the Pine Point Project (Project).

The Project is located between 114° and 115° 15' West longitude and 61° 0' and 61° 45' North latitude, within the Mackenzie Mining Division of the Northwest Territories (NT) of Canada. The western boundary of the Project is located 42 km east of the town of Hay River, NT and approximately 10 km south of the Great Slave Lake. The Property lies about 60 m above the lake level.

The Project is an exploration and development project located partly on a previously disturbed former mine site. Cominco Ltd. operated the Pine Point Mine site between 1964 and 1988 and produced approximately 64 million tonnes of material from 50 open pit and two underground mines. The Project area includes historical disturbances such as open pits, waste rock stockpiles, overburden stockpiles, Pine Point town water ponds, the plant site, haulage and service roads, the footprint of the former townsite of Pine Point and a former airstrip. A tailings impoundment area (TIA), located north of the old mill site, is currently under licence (MV2017L2-007) by Teck Metals Ltd.

This report fulfills Water Licence MV2020L8-0012, Annex A: Surveillance Network Program.

## **2 SNP Station 1**

The quantity of water for each approved water source are included in the weekly reports in Appendix A of this report.

## **3 SNP Station 2**

The lab results of the pumping well water samples are included in Appendix B of this report. Due to the field instrumentation malfunction, field measurement data is not available.

## **4 SNP Station 3**

The lab results of the injection well water samples are included in Appendix C of this report. Due to the field instrumentation malfunction, field measurement data is not available.

## **5 SNP Station 4**

No sewage treatment was conducted at the exploration camp.

## **6 SNP Station 5**

No artesian aquifer was encountered during the exploration program.

## **7 SNP Station 6**

No dust suppression took place during the reporting period.

## **8 SNP Station 7**

The ditching system was not used during the hydrogeological test.

**Appendix A Weekly Water Use Reports**

**Attention:**

Joshua Gauthier  
Water Resource Officer South Slave Region  
Department of Environment and Natural Resources  
Government of the Northwest Territories

December 4th, 2023

RE: Weekly Water Consumption and Drill Progress Report

This week, Mud Bay Drilling (MBD) moved their LS600 drill rig from the area west of the tailings (TSFW) to the historic mill site, completed their program, and demobilized their equipment back to Calgary, AB. MBD withdrew water from the historic L37 pit.

Great Slave Drilling (GSD) continued working on the geotechnical drilling in the W85 deposit area and then moved to the L37 historic pit. They have recently moved to the R190 deposit area west of the camp and will demobilize early this week to Hay River after completing one hole. Water was sourced from the L37 and N81 historical pits.

We plan to install sensors and collect baseline aquifer data in the O556/P499 deposit areas on Dec 5<sup>th</sup>, followed by step-testing the pump on Dec 6<sup>th</sup>. The Pump/injection test is planned to begin on Dec 7<sup>th</sup> and conclude on Dec 17<sup>th</sup>.

Wildlife clearing surveys were performed up to 48 hours before heavy equipment was brought into these sites. Copies of these survey forms are appended to this report.

Water use has been tracked daily and summarized in Table 1. Table 2 details the holes drilled and their respective locations. **Seven drill holes totalling 400 metres were completed this week. One hole is in progress at the time of submission of this report.**



Eric Garcelon

Table 1: Weekly Water Consumption (Drilling)

Week Ending Date	Water Consumption Daily Average (L)	Weekly Total (L)
2023-10-09	4,000	28,000
2023-10-16	7,400	52,000
2023-10-23	12,000	84,000
2023-10-30	58,857	412,000
2023-11-06	56,000	392,000
2023-11-13	53,285	373,000
2023-11-20	55,285	387,000
2023-11-27	21,061	177,400
2023-12-04	29,000	203,000

Table 2: Drill holes Completed During the Reporting Period. Coordinate system in UTM Zone 11 NAD83 CSRS. (\*) Hydrogeological holes.

Hole ID	Location X	Location Y	Drill	Date	Depth
BH-23-15	640240.26	6751149.10	LS600	29-Nov	15.00
BH-23-16	640362.15	6751209.44	LS600	29-Nov	13.00
TSFW-23-001	637415.40	6750616.26	D50	27-Nov	18.10
TSFW-23-005	637163.00	6752265.20	D50	28-Nov	23.20
W85-23-GT-01	619794.72	6746348.46	A5	27-Nov	156.00
L37-23-GT-01	641,062.00	6,750,416.70	A5	29-Nov	81.00
L37-23-GT-02	641,292.70	6,750,479.10	A5	30-Nov	93.00

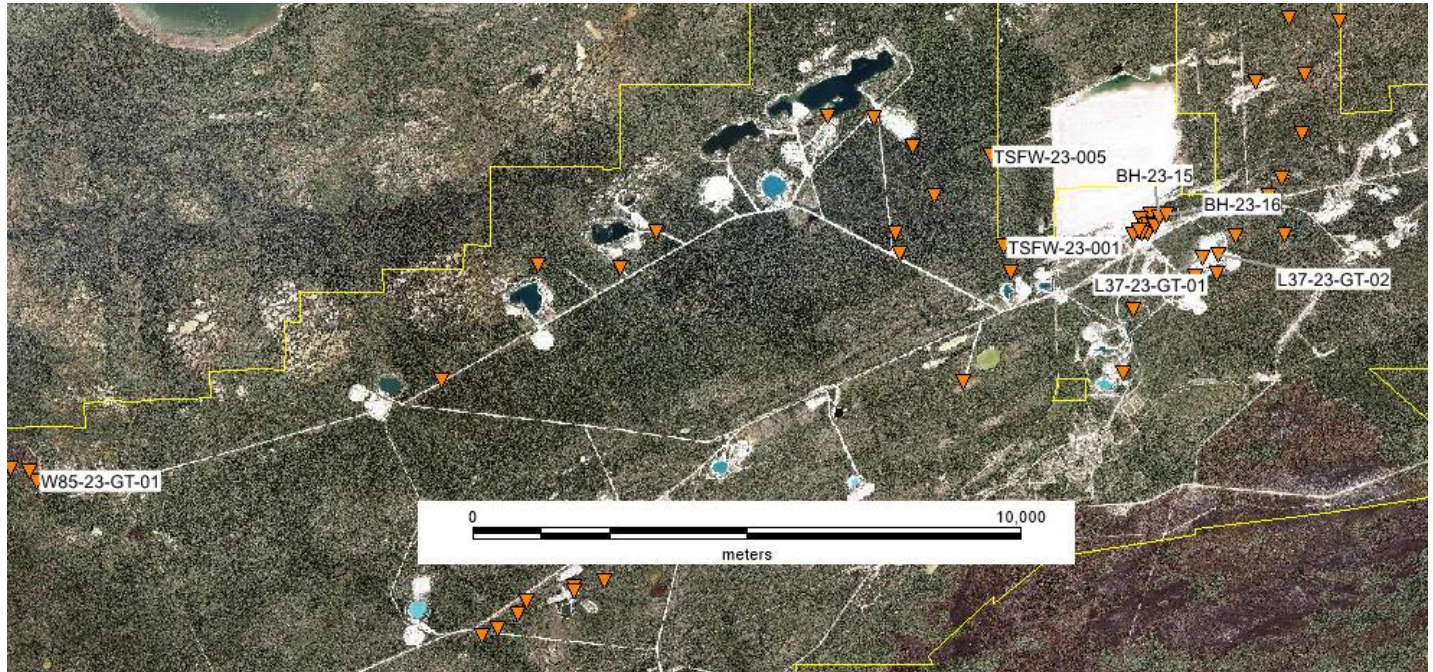


Figure 1. Location of drill holes with those completed this week labelled

Wildlife Management and Monitoring Plan



**PRE-CLEARING WILDLIFE SURVEY**

Date: Nov 29th Start time: 10:00 AM End time: 11:39 Observer(s): Coey  
 Wind: 0 Cloud Cover: 0 Temperature: -2 Precipitation: 0 mm Days Since Last Snow  
 Start location (UTM): 639806 6750476 End location (UTM): 639339 6747212  
 Habitat Description (e.g. vegetation composition, height, density, presence of lichens)

Contains biophysical attributes of critical habitat for Boreal Caribou (yes/no) and details: NO  
 Closest Exploration Site Label/Number: Clearing for remediation SE zone

**Wildlife and Wildlife Sign Observations**

Time	Species	Observation (visual, tracks, other sign; estimated age of sign)	Location (UTM)	Comments
10:45	Fox	Tracks Fresh today	641925 6752618	



Wildlife Management and Monitoring Plan



**PRE-CLEARING WILDLIFE SURVEY**

Date: Nov 30 2023 Start time: 9:30 End time: 10:45 Observer(s): Coey  
 Wind: 12km Cloud Cover: partly Temperature: -7 Precipitation: 4mm Days Since Last Snow: 0  
 Start location (UTM): 602589 6734001 End location (UTM): 601682 6734155  
 Habitat Description (e.g. vegetation composition, height, density, presence of lichens): Swampy moss, small willow on edge of thicker carabineous trees  
 Contains biophysical attributes of critical habitat for Boreal Caribou (yes/no) and details: NO  
 Closest Exploration Site Label/Number: B190 GT-01/02

**Wildlife and Wildlife Sign Observations**

Time	Species	Observation (Visual, tracks, other sign; estimated age of sign)	Location (UTM)	Comments
<u>10:30</u>	<u>Grass</u>	<u>Visual</u>	<u>601747 6734244</u>	

**PRE-CLEARING WILDLIFE SURVEY**

Date: Dec 1st 2023 Start time: 10:30 End time: 11:30 Observer(s): Cody  
 Wind: 7K Cloud Cover: Partly Temperature: 9 Precipitation: Cloudy Days Since Last Snow: 1  
 Start location (UTM): 599978 6734150 End location (UTM): 599298 6734323  
 Habitat Description (e.g. vegetation composition, height, density, presence of lichens): Pine, Willow, swampy area to the south  
 Contains biophysical attributes of critical habitat for Boreal Caribou (yes/no) and details: NO  
 Closest Exploration Site Label/Number: 0556/P499

**Wildlife and Wildlife Sign Observations**

Time	Species	Observation (Visual, tracks, other sign; estimated age of sign)	Location (UTM)	Comments
10:40	Rabbit	Visual -	600457 6733413	
10:56	Moose	Tracks - day old? <del>st</del>	599782 673347	Snow covered
11:20	Starmigan	Visual X4 trees and ground	599285 6734010	



**PRE-CLEARING WILDLIFE SURVEY**

Date: Dec 3rd 2023 Start time: 9:30am End time: 10:45 Observer(s): Cody/Dan  
 Wind: 8km/h Cloud Cover: Puffy Temperature: -13 Precipitation: 3mm Days Since Last Snow: 0  
 Start location (UTM): 600108 6733936 End location (UTM): 599148 6734240  
 Habitat Description (e.g. vegetation composition, height, density, presence of lichens): Willow / Marsh area Pine trees, swampy  
 Contains biophysical attributes of critical habitat for Boreal Caribou (yes/no) and details: NO  
 Closest Exploration Site Label/Number: 0556/P499

**Wildlife and Wildlife Sign Observations**

Time	Species	Observation (visual, tracks, other sign; estimated age of sign)	Location (UTM)	Comments
	Fox	Tracks	599713 6733022	Fresh snow

**Attention:**

Joshua Gauthier  
Water Resource Officer South Slave Region  
Department of Environment and Natural Resources  
Government of the Northwest Territories

December 12th, 2023

RE: Weekly Water Consumption and Drill Progress Report

Great Slave Drilling (GSD) completed their final geotechnical drilling in the R190 deposit area and demobilized their drill to Hay River. Water was sourced from a small gravel pit pond on the side of Highway #5 (Fig. 1)

The piezometric pressure sensors and baseline water table measurements were made in the monitoring wells around the O556/P499 pump/injection test area. The pump installation was completed on Dec 9<sup>th</sup>, bump testing with discharge in the adjacent sump was performed on Dec 10<sup>th</sup>, and on Dec 11<sup>th</sup>, the 1km long hose and injection well were connected to the pump for a 7-hour step test.

Today, the 7-day full-flow pumping/injection test from the O556-23-PW-01 pumping well to the P499-23-IW-01 injection well will begin (Fig. 2). We reached ~450 GPM (~2,450 m<sup>3</sup>/day) during the step test, and we hope to maintain that flow for the full seven days. Our permit allows up to 15,000 m<sup>3</sup>/day for hydrogeological testing purposes.

Field probe data, including temperature, electrical conductivity, and pH, will be collected daily during the test and for three days following the test. Water quality laboratory samples will be collected on days 1, 3, and 7 of the test. The Groundwater level is tested manually in the pumping well every 2 hours, and 12 piezometric pressure sensors are installed in monitoring wells in the area. The surface ponds near the pump/injection test (O556, O555, and PP-WB-1428) will be monitored daily for changes in water level under the ice.

Wildlife clearing surveys were performed up to 48 hours before heavy equipment was brought into these sites. Copies of these survey forms are appended to this report.

Water use has been tracked daily and summarized in Table 1. Table 2 details the holes drilled and their respective locations. **One drill hole totalling 186 metres was completed this week.**



Eric Garcelon

*Table 1: Weekly Water Consumption (Drilling)*

Week Ending Date	Water Consumption Daily Average (L)	Weekly Total (L)
2023-10-09	4,000	28,000
2023-10-16	7,400	52,000
2023-10-23	12,000	84,000
2023-10-30	58,857	412,000
2023-11-06	56,000	392,000
2023-11-13	53,285	373,000
2023-11-20	55,285	387,000
2023-11-27	21,061	177,400
2023-12-04	29,000	203,000
2023-12-12	248,607	1,740,250

*Table 2: Drill holes Completed During the Reporting Period. Coordinate system in UTM Zone 11 NAD83 CSRS. (\*) Hydrogeological holes.*

Hole ID	Location X	Location Y	Drill	Date	Depth
R190-23-GT-02	602243.22	6734344.57	A5	3- Dec	186



Figure 1. Location of drill holes with those completed this week labelled

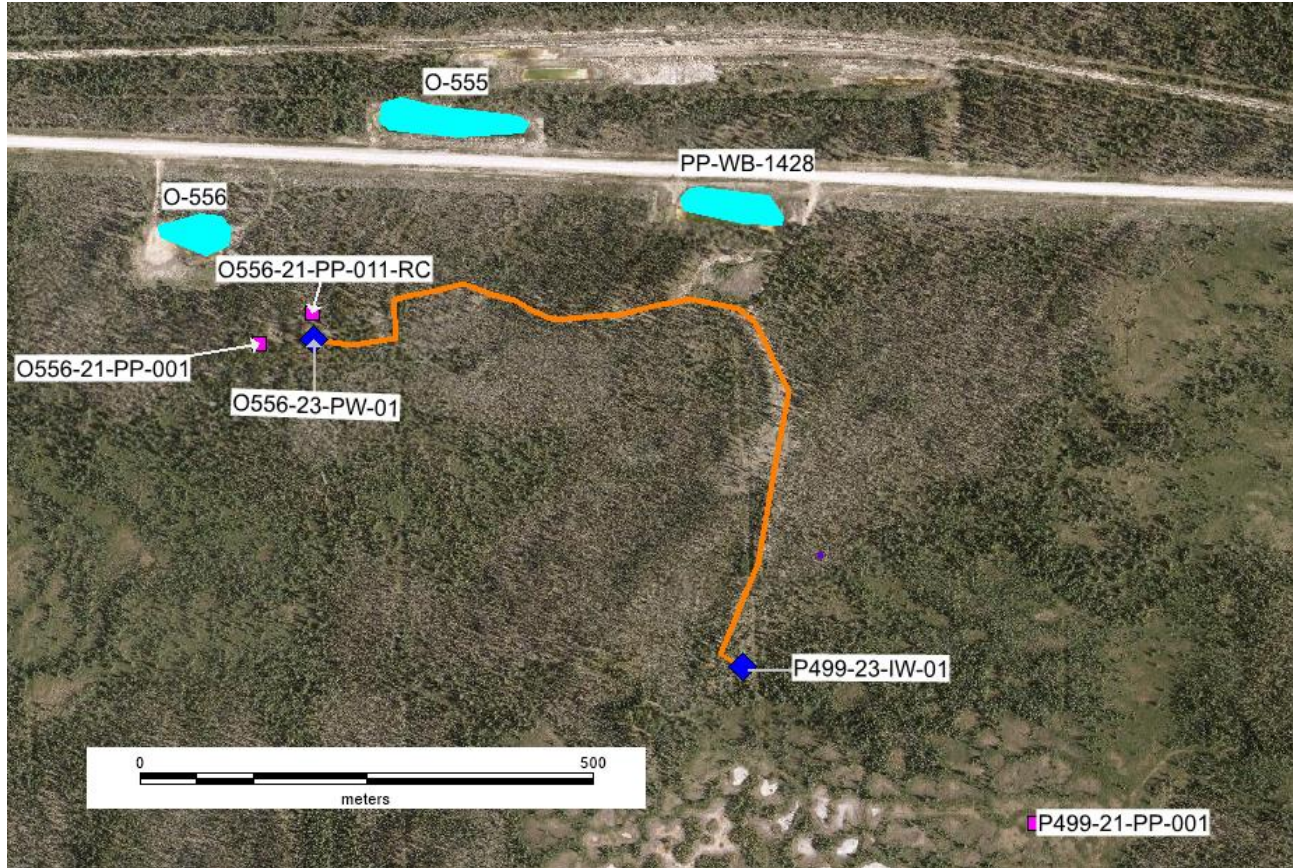


Figure 2. Location of pumping well, injection well, monitoring wells, hose line, and surface ponds at the test site.

Wildlife Management and Monitoring Plan



**PRE-CLEARING WILDLIFE SURVEY**

Date: Dec 5 2023 Start time: 10:00 End time: 11:30 Observer(s): Cady  
 Wind: 8km Cloud Cover: 50% Temperature: -13 Precipitation: Sun Days Since Last Snow: 0  
 Start location (UTM): 600818 6734193 End location (UTM): 599176 6734259  
 Habitat Description (e.g. vegetation composition, height, density, presence of lichens): Mossy

Contains biophysical attributes of critical habitat for Boreal Caribou (yes/no) and details: NO  
 Closest Exploration Site Label/Number: 0556-9499

**Wildlife and Wildlife Sign Observations**

Time	Species	Observation (Visual, tracks, other sign; estimated age of sign)	Location (UTM)	Comments
<u>10:35</u>	<u>Parus</u>	<u>Visual x 4 ground</u>	<u>599644</u>	
	<u>Fox</u>	<u>Tracks 7 day old</u>	<u>6733313</u>	
			<u>599222</u>	
			<u>6733605</u>	



**PRE-CLEARING WILDLIFE SURVEY**

Date: Dec 3rd 2023 Start time: 9:30am End time: 10:45 Observer(s): Cody/Dan  
 Wind: 8km/h Cloud Cover: Puffy Temperature: -13 Precipitation: 3mm Days Since Last Snow: 0  
 Start location (UTM): 600108 6733936 End location (UTM): 599148 6734240  
 Habitat Description (e.g. vegetation composition, height, density, presence of lichens): Willow / Marsh area Pine trees, swampy  
 Contains biophysical attributes of critical habitat for Boreal Caribou (yes/no) and details: NO  
 Closest Exploration Site Label/Number: 0556/P499

**Wildlife and Wildlife Sign Observations**

Time	Species	Observation (visual, tracks, other sign; estimated age of sign)	Location (UTM)	Comments
	Fox	Tracks	599713 6733022	Fresh snow

**PRE-CLEARING WILDLIFE SURVEY**

Date: Dec 1st 2023 Start time: 10:30 End time: 11:30 Observer(s): Cody  
 Wind: 7K Cloud Cover: Partly Temperature: 9 Precipitation: Cloudy Days Since Last Snow: 1  
 Start location (UTM): 599978 6734150 End location (UTM): 599298 6734323  
 Habitat Description (e.g. vegetation composition, height, density, presence of lichens): Pine, Willow, swampy area to the south  
 Contains biophysical attributes of critical habitat for Boreal Caribou (yes/no) and details: NO  
 Closest Exploration Site Label/Number: 0556/P499

**Wildlife and Wildlife Sign Observations**

Time	Species	Observation (Visual, tracks, other sign; estimated age of sign)	Location (UTM)	Comments
10:40	Rabbit	Visual -	600457 6733413	
10:56	Moose	Tracks - day old? <del>st</del>	599782 673347	Snow covered
11:20	Starmigan	Visual X4 trees and ground	599285 6734010	

**PRE-CLEARING WILDLIFE SURVEY**

Date: Nov 30 2023 Start time: 9:30 End time: 10:45 Observer(s): Cody

Wind: 12km Cloud Cover: Partly Temperature: -7 Precipitation: 4mm Days Since Last Snow 0

Start location (UTM): 602589 6734001 End location (UTM): 601682 6734155

Habitat Description (e.g. vegetation composition, height, density, presence of lichens) Swampy moss,

Small willows, on edge of thicker carnivorous trees

Contains biophysical attributes of critical habitat for Boreal Caribou (yes/no) and details: NO

Closest Exploration Site Label/Number: R190 GT-01/02

**Wildlife and Wildlife Sign Observations**

Time	Species	Observation (visual, tracks, other sign; estimated age of sign)	Location (UTM)	Comments
<u>10:30</u>	<u>Grause</u>	<u>Visual</u>	<u>601747 6734244</u>	



**PRE-CLEARING WILDLIFE SURVEY**

Date: Nov 29<sup>th</sup> Start time: 10:00<sup>AM</sup> End time: 11:39 Observer(s): Cody  
 Wind: 10km Cloud Cover: heavy Temperature: -4 Precipitation: None Days Since Last Snow: 0  
 Start location (UTM): 63 9806 6750476 End location (UTM): 63 9339 6747212

Habitat Description (e.g. vegetation composition, height, density, presence of lichens) \_\_\_\_\_

Contains biophysical attributes of critical habitat for Boreal Caribou (yes/no) and details: NO

Closest Exploration Site Label/Number: Clearing for remediation SE zone

**Wildlife and Wildlife Sign Observations**

Time	Species	Observation (visual, tracks, other sign; estimated age of sign)	Location (UTM)	Comments
10:45	Fox	Tracks Fresh today	641925 6752618	

**Attention:**

Joshua Gauthier  
Water Resource Officer South Slave Region  
Department of Environment and Natural Resources  
Government of the Northwest Territories

December 18th, 2023

RE: Weekly Water Consumption and Drill Progress Report

The pump/injection test between from the O556-23-PW-01 extraction well to the P499-23-IW-01 injection well continued without any issues over the last week (Fig. 1). Water quality lab samples, field probe data, manual water level measurements, and piezometric pressure sensor data has been collected from the pumping well, injection well, monitoring wells, and local surface water bodies during the week.

During the first two days of pumping, flow was sustained at ~430 GPM (2,350 m<sup>3</sup>/day). On the third day, temperatures were >0°C allowing the air-relief valve to thaw and remove the remaining air trapped in the pumping well. Once this air was vented, flow increased to ~550 GPM (3,000 m<sup>3</sup>/day) and has been sustained since.

The pumping is planned to end on the 19<sup>th</sup>, followed by three days of continued data collection. The camp will be on care and maintenance with two people until drilling begins in January between the 8<sup>th</sup> and 15<sup>th</sup>.

There were no new areas entered this week so there were no wildlife clearing surveys performed.

Water use has been tracked daily and summarized in Table 1.



Eric Garcelon

*Table 1: Weekly Water Consumption (Drilling)*

Week Ending Date	Water Consumption Daily Average (L)	Weekly Total (L)
2023-10-09	4,000	28,000
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2023-11-20	55,285	387,000
2023-11-27	21,061	177,400
2023-12-04	29,000	203,000
2023-12-12	248,607	1,740,250
2023-12-18	2,812,570	19,688,000

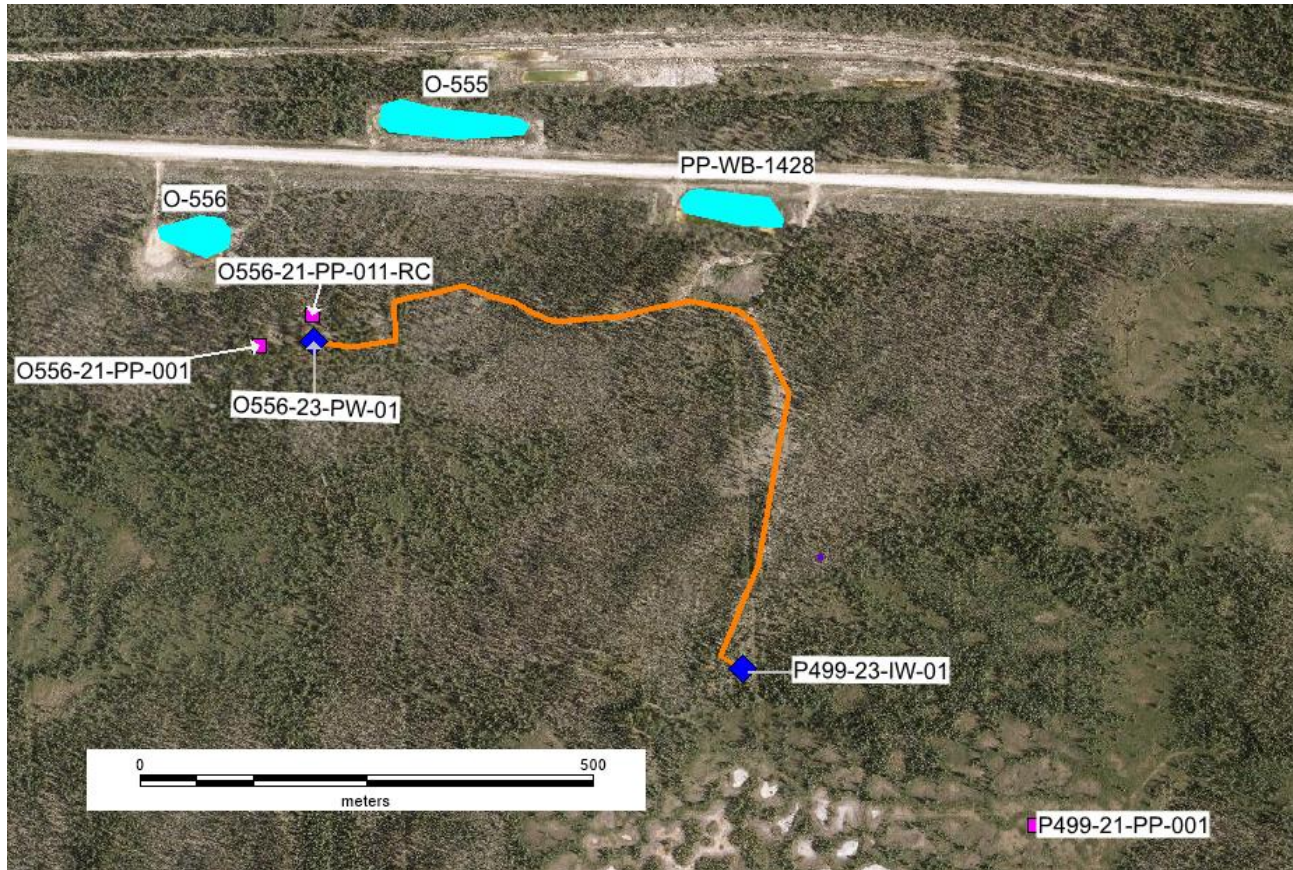


Figure 1. Location of pumping well, injection well, monitoring wells, hose line, and surface ponds at the test site.

## **Appendix B Pumping Well Water Quality Results**



<b>PPML - Hydrogeological Testing - Pumping Well Samples</b>													
<b>ROUTINE WATER &amp; DISS. REGULATED METALS (WATER)</b>													
Bureau Veritas ID		CEM775			CGO268			CGS730			CGX144		
Sampling Date		2023-11-14 13:00			2023-12-12 18:00			2023-12-14 18:10			2023-12-18 18:30		
COC Number		711383-01-01			708789-01-01			708789-01-01			1 of 2		
	<b>UNITS</b>	<b>0556-23-PW-01</b>	<b>RDL</b>	<b>QC Batch</b>	<b>0556.23.PW.01 (D1)</b>	<b>RDL</b>	<b>QC Batch</b>	<b>0556-23-PW-01 (D3)</b>	<b>RDL</b>	<b>QC Batch</b>	<b>055623.PW-01(D7)</b>	<b>RDL</b>	<b>QC Batch</b>
		<b>Pre-Pumping</b>			<b>Day 1</b>			<b>Day 3</b>			<b>Day 7</b>		
Anion Sum	meq/L	42	N/A	B199172	46	N/A	B233740	43	N/A	B236140	45	N/A	B238733
Cation Sum	meq/L	40	N/A	B199172	47	N/A	B233740	46	N/A	B236140	51	N/A	B238733
Hardness (CaCO3)	mg/L	1600	0.50	B199518	2100	0.50	B232854	2100	0.50	B236246	2300	0.50	B238729
Ion Balance (% Difference)	%	2.4	N/A	B199073	1.40	N/A	B233738	4.1	N/A	B236139	6.2	N/A	B238732
<b>Misc. Inorganics</b>													
Acidity (pH 4.5)	mg/L	ND	1.0	B208709	ND	1.0	B237925	ND	1.0	B238191	ND	1.0	B243309
Acidity (pH 8.3)	mg/L	5.0	1.0	B208709	2.7	1.0	B237925	46	1.0	B238191	45.8	1.0	B243309
Conductivity	uS/cm	3100	2.0	B199732	3200	2.0	B235648	3300	1.0	B238191	3300	2.0	B242933
<b>pH</b>	<b>pH</b>	<b>7.91</b>	<b>N/A</b>	<b>B199731</b>	<b>7.95</b>	<b>N/A</b>	<b>B235647</b>	<b>7.93</b>	<b>N/A</b>	<b>B238184</b>	<b>7.62</b>	<b>N/A</b>	<b>B242932</b>
<b>Calculated Total Dissolved Solids</b>	<b>mg/L</b>	<b>2500</b>	<b>26</b>	<b>B199174</b>	<b>2800</b>	<b>26</b>	<b>B233742</b>	<b>2700</b>	<b>26</b>	<b>B236147</b>	<b>2900</b>	<b>29</b>	<b>B238739</b>
Total Suspended Solids	mg/L	9	1.0	B199700	2.5	1.0	B235274	ND	1.0	B238927	4.3	1.0	B241443
True Colour	PtCo Units	25	2.0	B200402	370	10	B235759	610	20	B238496	490	10	B242642

Turbidity	NTU	51	0.10	B199710	100	0.10	B240260	490	0.10	B238125	210	0.10	B240260
<b>Anions</b>													
Alkalinity (PP as CaCO3)	mg/L	ND	1.0	B199729	ND	1.0	B235646	ND	1.0	B238182	ND	1.0	B242931
Alkalinity (Total as CaCO3)	mg/L	450	1.0	B199729	460	1.0	B235646	380	1.0	B238182	450	1.0	B242931
Bicarbonate (HCO3)	mg/L	550	1.0	B199729	560	1.0	B235646	470	1.0	B238182	550	1.0	B242931
Bromide (Br)	mg/L	0.11	0.10	B203452	0.28	0.010	B235739	0.29	0.100	B239562	0.27	0.050	B242505
Carbonate (CO3)	mg/L	ND	1.0	B199729	ND	1.0	B235646	ND	1.0	B238182	ND	1.0	B242931
Hydroxide (OH)	mg/L	ND	1.0	B199729	ND	1.0	B235646	ND	1.0	B238182	ND	1.0	B242931
Chloride (Cl)	mg/L	160	5.0	B200061	150	5.0	B235727	160	5.0	B238483	150	5.0	B242982
<b>Dissolved Fluoride (F)</b>	<b>mg/L</b>	<b>1.3</b>	<b>0.050</b>	<b>B199733</b>	<b>1.3</b>	<b>0.050</b>	<b>B235649</b>	<b>1.5</b>	<b>0.050</b>	<b>B238186</b>	<b>1.4</b>	<b>0.050</b>	<b>B242934</b>
<b>Sulphate (SO4)</b>	<b>mg/L</b>	<b>1400</b>	<b>25</b>	<b>B200061</b>	<b>1600</b>	<b>25</b>	<b>B235727</b>	<b>1500</b>	<b>25</b>	<b>B238483</b>	<b>1500</b>	<b>25</b>	<b>B242982</b>
<b>Nutrients</b>													
Total Ammonia (N)	mg/L	0.84	0.015	B199986	0.22	0.015	B240343	0.23	0.015	B238946	0.2	0.015	B243845
Nitrate (N)	mg/L	ND	0.050	B200695	ND	0.050	B234981	ND	0.100	B239159	ND	0.050	B240743
Nitrate (NO3)	mg/L	ND	0.22	B199427	ND	0.22	B233741	ND	0.44	B236194	ND	0.22	B238735
Nitrite (NO2)	mg/L	ND	0.033	B199427	ND	0.033	B233741	0.057	0.033	B236194	ND	0.16	B238735
Nitrite (N)	mg/L	ND	0.010	B200582	ND	0.010	B235674	0.017	0.010	B238294	ND	0.050	B242203
Nitrate plus Nitrite (N)	mg/L	ND	0.050	B200582	ND	0.050	B235674	ND	0.100	B238294	ND	0.050	B242203
Total Total Kjeldahl Nitrogen (Calc)	mg/L	1.95	0.200	B201206	0.87	0.40	B234985	0.61	0.20	B239164	0.44	0.20	B240747
Total Nitrogen (N)	mg/L	1.9	0.200	B200750	0.87	0.40	B239947	0.61	0.20	B240663	0.44	0.20	B243111
Orthophosphate (P)	mg/L	ND	0.0030	B200034	ND	0.0030	B239113	ND	0.0030	B242639	0.017	0.0030	B242639
Dissolved Phosphorus (P)	mg/L	0.025	0.0030	B199871	0.01	0.0030	B239573	ND	0.030	B242819	ND	0.030	B242819
Total Phosphorus (P)	mg/L	0.032	0.0030	B199897	ND	0.060	B239301	ND	0.0300	B239580	ND	0.030	B243200

Dissolved Organic Carbon (C)	mg/L	7.2	1.00	B199855		21.00	10	B238201		16.0	10.0	B239495		6.0	2.5	B243115
Total Organic Carbon (C)	mg/L	9.2	1.00	B199867		16.00	10	B237914		14.0	10.0	B240867		6.0	2.5	B243470
<b>Total Metals</b>																
<b>Total Aluminum (Al)</b>	mg/L	<b>0.0045</b>	<b>0.0030</b>	<b>B198360</b>		<b>0.0036</b>	<b>0.0030</b>	<b>B237432</b>		<b>0.004</b>	<b>0.0030</b>	<b>B240059</b>		<b>0.0042</b>	<b>0.0030</b>	<b>B242874</b>
Total Antimony (Sb)	mg/L	ND	0.00060	B198360		ND	0.00060	B237432		ND	0.00060	B240059		ND	0.00060	B242874
Total Arsenic (As)	mg/L	0.00210	0.00020	B198360		0.0011	0.00020	B237432		0.0018	0.00020	B240059		0.001	0.00020	B242874
Total Barium (Ba)	mg/L	0.060	0.010	B198367		0.015	0.010	B237434		0.014	0.010	B240108		0.013	0.010	B242875
Total Beryllium (Be)	mg/L	ND	0.0010	B198360		ND	0.0010	B237432		ND	0.0010	B240059		ND	0.0010	B242874
Total Boron (B)	mg/L	0.72	0.020	B198367		0.58	0.020	B237434		0.60	0.020	B240108		0.53	0.020	B242875
<b>Total Cadmium (Cd)</b>	ug/L	<b>ND</b>	<b>0.020</b>	<b>B198947</b>		<b>ND</b>	<b>0.020</b>	<b>B233287</b>		<b>ND</b>	<b>0.020</b>	<b>B236378</b>		<b>ND</b>	<b>0.020</b>	<b>B238724</b>
Total Calcium (Ca)	mg/L	360	0.30	B198367		530	1.5	B237434		540	1.50	B240108		480	0.30	B242875
<b>Total Chromium (Cr)</b>	mg/L	<b>ND</b>	<b>0.0010</b>	<b>B198360</b>		<b>ND</b>	<b>0.0010</b>	<b>B237432</b>		<b>ND</b>	<b>0.0010</b>	<b>B240059</b>		<b>ND</b>	<b>0.0010</b>	<b>B242874</b>
Total Cobalt (Co)	mg/L	ND	0.00030	B198360		0.00041	0.00030	B237432		ND	0.00030	B240059		ND	0.00030	B242874
<b>Total Copper (Cu)</b>	mg/L	<b>ND</b>	<b>0.0010</b>	<b>B198360</b>		<b>ND</b>	<b>0.0010</b>	<b>B237432</b>		<b>0.014</b>	<b>0.0010</b>	<b>B240059</b>		<b>0.0054</b>	<b>0.0010</b>	<b>B242874</b>
<b>Total Iron (Fe)</b>	mg/L	<b>5</b>	<b>0.060</b>	<b>B198367</b>		<b>0.079</b>	<b>0.070</b>	<b>B237434</b>		<b>0.1</b>	<b>0.060</b>	<b>B240108</b>		<b>0.2</b>	<b>0.060</b>	<b>B242875</b>
<b>Total Lead (Pb)</b>	mg/L	<b>ND</b>	<b>0.00020</b>	<b>B198360</b>		<b>0.00037</b>	<b>0.00020</b>	<b>B237432</b>		<b>ND</b>	<b>0.00020</b>	<b>B240059</b>		<b>0.00085</b>	<b>0.00020</b>	<b>B242874</b>
Total Lithium (Li)	mg/L	0.087	0.020	B198367		0.044	0.020	B237434		0.050	0.020	B240108		0.043	0.020	B242875
Total Magnesium (Mg)	mg/L	180	0.20	B198367		210	0.20	B237434		220	0.20	B240108		200	0.20	B242875
Total Manganese (Mn)	mg/L	0.6	0.0040	B198367		0.047	0.0040	B237434		0.04	0.0040	B240108		0.033	0.0040	B242875

Total Mercury (Hg)	mg/L	-	-	-	0.0511	0.0019	B235397	0.0417	0.0019	B237910	ND	0.019	B243220
Total Molybdenum (Mo)	mg/L	0.0018	0.00020	B198360	0.0005	0.00020	B237432	0.00039	0.00020	B240059	ND	0.00020	B242874
Total Nickel (Ni)	mg/L	0.00160	0.00050	B198360	0.011	0.00050	B237432	0.0130	0.00050	B240059	0.0068	0.00050	B242874
Total Phosphorus (P)	mg/L	ND	0.10	B198367	ND	0.10	B237434	ND	0.10	B240108	ND	0.10	B242875
Total Potassium (K)	mg/L	9.4	0.30	B198367	4.5	0.30	B237434	4.4	0.30	B240108	4.5	0.30	B242875
Total Selenium (Se)	mg/L	0.00034	0.00020	B198360	ND	0.00020	B237432	ND	0.00020	B240059	ND	0.00020	B242874
Total Silicon (Si)	mg/L	3.6	0.50	B198367	4.5	0.50	B237434	4.7	0.50	B240108	4.4	0.50	B242875
Total Silver (Ag)	mg/L	ND	0.00010	B198360	ND	0.00010	B237432	ND	0.00010	B240059	ND	0.00010	B242874
Total Sodium (Na)	mg/L	210	0.50	B198367	110	0.50	B237434	110	0.50	B240108	100	0.50	B242875
Total Strontium (Sr)	mg/L	8.7	0.10	B198367	11	0.10	B237434	11.0	0.10	B240108	10	0.10	B242875
Total Sulphur (S)	mg/L	470	0.20	B198367	630	1.0	B237434	610	1.00	B240108	560	1.0	B242875
<b>Total Thallium (Tl)</b>	<b>mg/L</b>	<b>ND</b>	<b>0.00020</b>	<b>B198360</b>	<b>ND</b>	<b>0.00020</b>	<b>B237432</b>	<b>ND</b>	<b>0.00020</b>	<b>B240059</b>	<b>ND</b>	<b>0.00020</b>	<b>B242874</b>
Total Tin (Sn)	mg/L	0.0027	0.0010	B198360	ND	0.0010	B237432	ND	0.0010	B240059	ND	0.0010	B242874
Total Titanium (Ti)	mg/L	ND	0.0010	B198360	ND	0.0010	B237432	ND	0.0010	B240059	ND	0.0010	B242874
<b>Total Uranium (U)</b>	<b>mg/L</b>	<b>0.00061</b>	<b>0.00010</b>	<b>B198360</b>	<b>0.00078</b>	<b>0.00010</b>	<b>B237432</b>	<b>0.00046</b>	<b>0.00010</b>	<b>B240059</b>	<b>0.00047</b>	<b>0.00010</b>	<b>B242874</b>
Total Vanadium (V)	mg/L	ND	0.0010	B198360	ND	0.0010	B237432	ND	0.0010	B240059	ND	0.0010	B242874
Total Zinc (Zn)	mg/L	ND	0.0030	B198360	0.012	0.0030	B237432	0.0069	0.0030	B240059	0.081	0.0030	B242874
<b>Dissolved Metals</b>													
Dissolved Aluminum (Al)	mg/L	ND	0.0030	B200172	ND	0.0030	B236363	ND	0.0600	B240807	ND	0.0060	B242917
Dissolved Antimony (Sb)	mg/L	ND	0.00060	B200172	ND	0.00060	B236363	ND	0.0120	B240807	ND	0.0012	B242917
Dissolved Arsenic (As)	mg/L	0.0018	0.00020	B200172	0.00065	0.00020	B236363	ND	0.00400	B240807	0.00072	0.00040	B242917

Dissolved Barium (Ba)	mg/L	0.057	0.010	B200174	0.016	0.010	B235697	0.015	0.010	B239479	ND	0.20	B242510
Dissolved Beryllium (Be)	mg/L	ND	0.0010	B200172	ND	0.0010	B236363	ND	0.0200	B240807	ND	0.0020	B242917
Dissolved Boron (B)	mg/L	0.73	0.020	B200174	0.61	0.020	B235697	0.60	0.020	B239479	0.61	0.40	B242510
Dissolved Cadmium (Cd)	ug/L	ND	0.020	B199517	ND	0.020	B233286	ND	0.400	B236377	ND	0.020	B238724
Dissolved Calcium (Ca)	mg/L	340	0.30	B200174	490	0.30	B235697	490	0.30	B239479	540	6.0	B242510
Dissolved Chromium (Cr)	mg/L	ND	0.0010	B200172	ND	0.0010	B236363	ND	0.0200	B240807	ND	0.0020	B242917
Dissolved Cobalt (Co)	mg/L	ND	0.00030	B200172	ND	0.00030	B236363	ND	0.00600	B240807	ND	0.00060	B242917
Dissolved Copper (Cu)	mg/L	ND	0.0010	B200172	ND	0.0010	B236363	ND	0.0200	B240807	ND	0.0020	B242917
Dissolved Iron (Fe)	mg/L	ND	0.060	B200174	ND	0.060	B235697	ND	0.060	B239479	ND	1.2	B242510
Dissolved Lead (Pb)	mg/L	ND	0.00020	B200172	ND	0.00020	B236363	ND	0.00400	B240807	ND	0.00040	B242917
Dissolved Lithium (Li)	mg/L	0.081	0.020	B200174	0.05	0.020	B235697	0.049	0.020	B239479	ND	0.40	B242510
Dissolved Magnesium (Mg)	mg/L	170	0.20	B200174	210	0.20	B235697	210	0.20	B239479	230	4.0	B242510
Dissolved Manganese (Mn)	mg/L	0.60	0.0040	B200174	0.044	0.0040	B235697	0.036	0.0040	B239479	ND	0.080	B242510
Dissolved Mercury (Hg)	ug/L	ND	0.0019	B199739	ND	0.019	B237371	0.0152	0.0019	B238687	0.0115	0.0019	B243208
Dissolved Molybdenum (Mo)	mg/L	0.00034	0.00020	B200172	ND	0.00020	B236363	ND	0.00400	B240807	ND	0.00040	B242917
Dissolved Nickel (Ni)	mg/L	0.00051	0.00050	B200172	0.0069	0.00050	B236363	ND	0.0100	B240807	0.0013	0.0010	B242917
Dissolved Phosphorus (P)	mg/L	ND	0.10	B200174	ND	0.10	B235697	ND	0.10	B239479	ND	2.0	B242510
Dissolved Potassium (K)	mg/L	8.9	0.30	B200174	4.4	0.30	B235697	4.8	0.30	B239479	ND	6.0	B242510

Dissolved Selenium (Se)	mg/L		0.00750	0.00020	B200172		ND	0.00020	B240807		ND	0.00400	B240807		0.004	0.00040	B242917
Dissolved Silicon (Si)	mg/L		3.5	0.50	B200174		4.1	0.50	B235697		4.3	0.50	B239479		ND	10	B242510
Dissolved Silver (Ag)	mg/L		0.00011	0.00010	B200172		ND	0.00010	B236363		ND	0.00200	B240807		ND	0.00020	B242917
Dissolved Sodium (Na)	mg/L		200	0.50	B200174		110	0.50	B235697		110	0.50	B239479		120	10	B242510
Dissolved Strontium (Sr)	mg/L		8.3	0.10	B200174		11	0.10	B235697		11.0	0.10	B239479		12	0.40	B242510
Dissolved Sulphur (S)	mg/L		520	1.00	B200174		1400	1.0	B235697		1000	1.0	B239479		2200	4.0	B242510
Dissolved Thallium (Tl)	mg/L		ND	0.00020	B200172		ND	0.00020	B236363		ND	0.00400	B240807		ND	0.00040	B242917
Dissolved Tin (Sn)	mg/L		0.0022	0.0010	B200172		ND	0.0010	B236363		ND	0.0200	B240807		ND	0.0020	B242917
Dissolved Titanium (Ti)	mg/L		ND	0.0010	B200172		ND	0.0010	B236363		ND	0.0200	B240807		ND	0.0020	B242917
Dissolved Uranium (U)	mg/L		0.00046	0.00010	B200172		0.00063	0.00010	B236363		ND	0.00200	B240807		0.00031	0.00020	B242917
Dissolved Vanadium (V)	mg/L		ND	0.0010	B200172		ND	0.0010	B236363		ND	0.0200	B240807		ND	0.0020	B242917
<b>Dissolved Zinc (Zn)</b>	<b>mg/L</b>		<b>ND</b>	<b>0.0030</b>	<b>B200172</b>		<b>0.014</b>	<b>0.0030</b>	<b>B236363</b>		<b>ND</b>	<b>0.0600</b>	<b>B240807</b>		<b>ND</b>	<b>0.0060</b>	<b>B242917</b>

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## **Appendix C Injection Well Water Quality Results**

<b>PPML - Hydrogeological Testing - Injection Well Samples</b>							
<b>ROUTINE WATER &amp; DISS. REGULATED METALS (WATER)</b>							
Bureau Veritas ID		CEM773			CHA172		
Sampling Date		2023-11-13 14:15			2023-12-21 08:00		
COC Number		711383-01-01			708789-01-01		
	<b>UNITS</b>	<b>P499-23-IW-01</b>	<b>RDL</b>	<b>QC Batch</b>	<b>P499-23-1W-01(AP)</b>	<b>RDL</b>	<b>QC Batch</b>
		<b>Pre-Pumping</b>			<b>Post-pumping</b>		
Anion Sum	meq/L	34	N/A	B199172	42	N/A	B241154
Cation Sum	meq/L	32	N/A	B199172	45	N/A	B241154
Hardness (CaCO3)	mg/L	1200	0.50	B199072	2000	0.50	B241374
Ion Balance (% Difference)	%	2.5	N/A	B199073	3.7	N/A	B241153
<b>Misc. Inorganics</b>							
Acidity (pH 4.5)	mg/L	ND	1.0	B208709	ND	1.0	B243309
Acidity (pH 8.3)	mg/L	2.8	1.0	B208709	42.7	1.0	B243309
Conductivity	uS/cm	2600	2.0	B199732	3000	2.0	B243165
pH	pH	7.93	N/A	B199731	7.69	N/A	B243164
<b>Calculated Total Dissolved Solids</b>	<b>mg/L</b>	<b>2000</b>	<b>25</b>	<b>B199174</b>	<b>2600</b>	<b>25</b>	<b>B241159</b>
Total Suspended Solids	mg/L	30	1.0	B199700	71	1.0	B244169
True Colour	PtCo Units	4.6	2.0	B200402	340	10	B242642
Turbidity	NTU	110	0.10	B199708	95	0.20	B242384
<b>Anions</b>							
Alkalinity (PP as CaCO3)	mg/L	ND	1.0	B199729	ND	1.0	B243163
Alkalinity (Total as CaCO3)	mg/L	370	1.0	B199729	460	1.0	B243163
Bicarbonate (HCO3)	mg/L	450	1.0	B199729	560	1.0	B243163
Bromide (Br)	mg/L	ND	0.10	B203452	0.27	0.010	B244365



Carbonate (CO3)	mg/L		ND	1.0	B199729		ND	1.0	B243163
Hydroxide (OH)	mg/L		ND	1.0	B199729		ND	1.0	B243163
Chloride (Cl)	mg/L		120	1.0	B200061		110	2.0	B243091
<b>Dissolved Fluoride (F)</b>	<b>mg/L</b>		<b>1.3</b>	<b>0.050</b>	<b>B199733</b>		<b>1.4</b>	<b>0.050</b>	<b>B243166</b>
<b>Sulphate (SO4)</b>	<b>mg/L</b>		<b>1100</b>	<b>25</b>	<b>B200061</b>		<b>1400</b>	<b>25</b>	<b>B243091</b>
<b>Nutrients</b>									
Total Ammonia (N)	mg/L		0.73	0.015	B199986		0.21	0.015	B242987
Nitrate (N)	mg/L		ND	0.050	B200695		ND	0.050	B243604
Nitrate (NO3)	mg/L		ND	0.22	B199427		ND	0.22	B241157
Nitrite (NO2)	mg/L		ND	0.033	B199427		ND	0.033	B241157
Nitrite (N)	mg/L		ND	0.010	B200582		ND	0.010	B242393
Nitrate plus Nitrite (N)	mg/L		ND (1)	0.050	B200582		ND (1)	0.050	B242393
Total Total Kjeldahl Nitrogen (Calc)	mg/L		1.18	0.050	B201206		0.61	0.20	B243606
Total Nitrogen (N)	mg/L		1.2	0.020	B200750		0.61	0.20	B243111
Orthophosphate (P)	mg/L		ND	0.0030	B200034		0.02	0.0030	B242639
Dissolved Phosphorus (P)	mg/L		0.02	0.0030	B201646		ND (2)	0.030	B242819
Total Phosphorus (P)	mg/L		0.012	0.0030	B201652		0.0094	0.0030	B242884
Dissolved Organic Carbon (C)	mg/L		3.4	0.50	B199855		5.5	2.5	B243115
Total Organic Carbon (C)	mg/L		3.8	0.50	B199867		6.1	2.5	B243470
<b>Total Metals</b>									
<b>Total Aluminum (Al)</b>	<b>mg/L</b>		<b>0.0094</b>	<b>0.0030</b>	<b>B198360</b>		<b>0.016</b>	<b>0.0030</b>	<b>B244544</b>
Total Antimony (Sb)	mg/L		ND	0.00060	B198360		ND	0.00060	B244544
Total Arsenic (As)	mg/L		0.00073	0.00020	B198360		0.001	0.00020	B244544
Total Barium (Ba)	mg/L		0.064	0.010	B198367		0.014	0.010	B244546
Total Beryllium (Be)	mg/L		ND	0.0010	B198360		ND	0.0010	B244544
Total Boron (B)	mg/L		0.57	0.020	B198367		0.52	0.020	B244546
<b>Total Cadmium (Cd)</b>	<b>ug/L</b>		<b>ND</b>	<b>0.020</b>	<b>B198947</b>		<b>ND</b>	<b>0.020</b>	<b>B241368</b>
Total Calcium (Ca)	mg/L		290	0.30	B198367		440	0.30	B244546
<b>Total Chromium (Cr)</b>	<b>mg/L</b>		<b>0.0011</b>	<b>0.0010</b>	<b>B198360</b>		<b>0.0037</b>	<b>0.0010</b>	<b>B244544</b>
Total Cobalt (Co)	mg/L		ND	0.00030	B198360		ND	0.00030	B244544

<b>Total Copper (Cu)</b>	mg/L		<b>ND</b>	<b>0.0010</b>	<b>B198360</b>		<b>ND</b>	<b>0.0010</b>	<b>B244544</b>
<b>Total Iron (Fe)</b>	mg/L		<b>14</b>	<b>0.060</b>	<b>B198367</b>		<b>9.8</b>	<b>0.060</b>	<b>B244546</b>
<b>Total Lead (Pb)</b>	mg/L		<b>0.00064</b>	<b>0.00020</b>	<b>B198360</b>		<b>0.0018</b>	<b>0.00020</b>	<b>B244544</b>
Total Lithium (Li)	mg/L		0.075	0.020	B198367		0.045	0.020	B244546
Total Magnesium (Mg)	mg/L		160	0.20	B198367		180	0.20	B244546
Total Manganese (Mn)	mg/L		1	0.0040	B198367		0.99	0.0040	B244546
Total Molybdenum (Mo)	mg/L		0.0014	0.00020	B198360		0.00022	0.00020	B244544
Total Mercury (Hg)	mg/L		-	-	-		0.0192	0.0019	B243529
Total Nickel (Ni)	mg/L		0.00089	0.00050	B198360		0.0024	0.00050	B244544
Total Phosphorus (P)	mg/L		ND	0.10	B198367		ND	0.10	B244546
Total Potassium (K)	mg/L		7.9	0.30	B198367		4.3	0.30	B244546
Total Selenium (Se)	mg/L		0.00034	0.00020	B198360		ND	0.00020	B244544
Total Silicon (Si)	mg/L		3.2	0.50	B198367		4.1	0.50	B244546
Total Silver (Ag)	mg/L		ND	0.00010	B198360		ND	0.00010	B244544
Total Sodium (Na)	mg/L		180	0.50	B198367		97	0.50	B244546
Total Strontium (Sr)	mg/L		7.1	0.10	B198367		9.7	0.10	B244546
Total Sulphur (S)	mg/L		390	0.20	B198367		480	0.20	B244546
<b>Total Thallium (Tl)</b>	<b>mg/L</b>		<b>ND</b>	<b>0.00020</b>	<b>B198360</b>		<b>ND</b>	<b>0.00020</b>	<b>B244544</b>
Total Tin (Sn)	mg/L		0.0041	0.0010	B198360		ND	0.0010	B244544
Total Titanium (Ti)	mg/L		ND	0.0010	B198360		ND	0.0010	B244544
<b>Total Uranium (U)</b>	<b>mg/L</b>		<b>0.00013</b>	<b>0.00010</b>	<b>B198360</b>		<b>0.00029</b>	<b>0.00010</b>	<b>B244544</b>
Total Vanadium (V)	mg/L		ND	0.0010	B198360		ND	0.0010	B244544
Total Zinc (Zn)	mg/L		ND	0.0030	B198360		0.006	0.0030	B244544
<b>Dissolved Metals</b>									
Dissolved Aluminum (Al)	mg/L		ND	0.0030	B200172		ND	0.0060	B242917
Dissolved Antimony (Sb)	mg/L		ND	0.00060	B200172		ND	0.0012	B242917
Dissolved Arsenic (As)	mg/L		ND	0.00020	B200172		0.00091	0.00040	B242917
Dissolved Barium (Ba)	mg/L		0.06	0.010	B200174		0.014	0.010	B243443
Dissolved Beryllium (Be)	mg/L		ND	0.0010	B200172		ND	0.0020	B242917
Dissolved Boron (B)	mg/L		0.54	0.020	B200174		0.55	0.020	B243443

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Dissolved Cadmium (Cd)	ug/L		ND	0.020	B198935		ND	0.040	B241367
Dissolved Calcium (Ca)	mg/L		260	0.30	B200174		480	0.30	B243443
Dissolved Chromium (Cr)	mg/L		ND	0.0010	B200172		ND	0.0020	B242917
Dissolved Cobalt (Co)	mg/L		ND	0.00030	B200172		ND	0.00060	B242917
Dissolved Copper (Cu)	mg/L		ND	0.0010	B200172		ND	0.0020	B242917
Dissolved Iron (Fe)	mg/L		2.6	0.060	B200174		ND	0.060	B243443
Dissolved Lead (Pb)	mg/L		ND	0.00020	B200172		ND	0.00040	B242917
Dissolved Lithium (Li)	mg/L		0.069	0.020	B200174		0.053	0.020	B243443
Dissolved Magnesium (Mg)	mg/L		140	0.20	B200174		190	0.20	B243443
Dissolved Manganese (Mn)	mg/L		0.9	0.0040	B200174		1	0.0040	B243443
Dissolved Mercury (Hg)	ug/L		ND	0.0019	B199739		ND	0.0019	B243208
Dissolved Molybdenum (Mo)	mg/L		0.00065	0.00020	B200172		ND	0.00040	B242917
Dissolved Nickel (Ni)	mg/L		ND	0.00050	B200172		ND	0.0010	B242917
Dissolved Phosphorus (P)	mg/L		ND	0.10	B200174		ND	0.10	B243443
Dissolved Potassium (K)	mg/L		7.2	0.30	B200174		4.6	0.30	B243443
Dissolved Selenium (Se)	mg/L		0.00091	0.00020	B200172		0.0035	0.00040	B242917
Dissolved Silicon (Si)	mg/L		2.8	0.50	B200174		4.2	0.50	B243443
Dissolved Silver (Ag)	mg/L		0.00014	0.00010	B200172		ND	0.00020	B242917
Dissolved Sodium (Na)	mg/L		170	0.50	B200174		100	0.50	B243443
Dissolved Strontium (Sr)	mg/L		6.2	0.10	B200174		9.2	0.10	B243443
Dissolved Sulphur (S)	mg/L		450	0.20	B200174		650	1.0	B243443
Dissolved Thallium (Tl)	mg/L		ND	0.00020	B200172		ND	0.00040	B242917
Dissolved Tin (Sn)	mg/L		0.003	0.0010	B200172		ND	0.0020	B242917
Dissolved Titanium (Ti)	mg/L		ND	0.0010	B200172		ND	0.0020	B242917
Dissolved Uranium (U)	mg/L		ND	0.00010	B200172		0.00026	0.00020	B242917
Dissolved Vanadium (V)	mg/L		ND	0.0010	B200172		ND	0.0020	B242917
<b>Dissolved Zinc (Zn)</b>	<b>mg/L</b>		<b>ND</b>	<b>0.0030</b>	<b>B200172</b>		<b>ND</b>	<b>0.0060</b>	<b>B242917</b>