2AM-LUP2032
LUPIN MINE SITE
2023 ANNUAL REPORT

Prepared for:

Nunavut Water Board

Crown-Indigenous Relations and Northern Affairs Canada

Prepared by:

Frazer Bourchier, President & CEO Mandalay Resources

EXECUTIVE SUMMARY

The Lupin Mine was in temporary Care and Maintenance Phase throughout 2023 resulting in minimal on-site activities. The Lupin Mine camp opened on August 28, 2023 for 28 days, through September 25, 2023. During this period, care & maintenance and closure activities included the following:

- camp opening and closing, utilizing freshwater, and deposit of sewage to the Sewage Lakes Disposal Facility, and incineration of general camp wastes;
- minor repairs to buildings and equipment and mobile equipment;
- a new Temporary Fuel Farm (TFF) was constructed in September 2023 to store fuel for the completion of closure operations and to allow for the decommissioning of the Main Tank Farm. (The TFF has not yet been put into use. At the end of 2023, there was approx. 170k litres of diesel fuel and 330k litres of Jet A Fuel in storage at the site); and
- annual geotechnical inspection of engineered facilities including the Tailings Containment Area;

The following activities did not occur:

- no reclamation work undertaken on the underground, waste rock, borrow and quarry areas, landfill, site roads, water management facilities, or explosives magazine;
- no mobilization or demobilization of equipment was undertaken.

EXECUTIVE SUMMARY INUKTITUT

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ᑕᑦᓇ ᓗᐱᓵ ᐅᓴᖃᓯᐅᖅᕕᐊ ᒪᓇᓴᐅᑲᓂᐊᓇᖅᑐᖅ ᐊᒻᒪ ᐊᖅᑭᐅᒪᓂᖅᓗ ᐊᑐᖅᑕᐅᓂᖅᓗ ᑕᒪᓕᕆᑕᖅᓄᓕᓄᑦ 2023 ᐱᐟᓕᐊ ᒥᑭᓂᖅᒥᐅ ᓴᓇᕕᕐᒥ ᐱᓕᕆᓂᖅᓕ. ᑕᑦᓇ ᓗᐱᓵ ᐅᓴᖃᓯᐅᖅᕕᐊ ᓴᓇᕕᕐᓗᖅ ᐊᖅᒪᖃᑐᖅ ᑕᑦᓭᓂ ᐊᑎᓯ 28, 2023 ᑕᐸᔪᓇᖅᓗ 28 ᐅᐟᓕᑦ, ᑐᑭᑦᓕᐊ ᔪᑎᐱᓕ 25, 2023. ᐊᑐᖅᑎᑦᓕᐊ ᐅᓇ ᐱᓕᕆᕕᖅᓗ ᒥᐊᓂᓴᐅᓂᖅᓗ ᐊᒻᒪ ᐊᖅᑭᐅᒪᓂᖅᓗ ᐊᒻᒪ ᐅᒥᐅᑎᖅᓂᖅᓗ ᐱᓕᕆᐊᖅᓯᐸᑦ ᐃᓕᖅᑐᑦᑕ ᑕᒪᔪᓂᖅᓗ:

- ᓴᓇᕕᕐᓄ ᐊᖅᓚᖅᓂᖅᓗ ᐊᒻᒪ ᐅᒥᐅᓂᖅᓗ, ᐊᑐᖅᓂᖅᑎ ᐃᒥᑎᐅᔪᖅᓇᖅᑐᓂᐅ ᐃᓚᖅᒥᐅ, ᐊᒻᒪ ᔪᕕᑦᑕᖅᓂᖅᑎ ᕿᔪᖅᑕᐃᑦ ᑕᑲᓕᖅ ᕿᔪᖅᑕᐃᑦ ᑕᔪᖅᓗᒍᑦ ᑐᓕᖅᑎᑦᓯᒪᓂᖅᑎ, ᐊᒻᒪ ᐃᔪᐊᓪᓚᑦᑎᓂᖅᑎ ᐊᐅᑕᔪᓪᐊᐸᑦ ᓴᓇᕕᕐᓄᓕᐅᖅᒥᐅ ᐊᐅᑕᔪᓂ;

- ᒥᑭᔪᑦ ᓴᓇᓂᖅᑎ ᐃᓗᓐᖅᔪᐊᑦ ᐊᒻᒪ ᓴᓇᓪᑕᑎᑦ ᐊᒻᒪ ᓄᐅᑎᕿᑐᓇᖅᑐᑦ ᓴᓇᓪᑕᑎᑦ;

- ᓄᑕᖅ ᐊᑐᐅᐃᓇᕐᑐᖅ ᐅᖅᔪᖅᖅᓄᖅ (TFF) ᓴᓇᓴᐅᔪᖅ ᑕᒪᕆᓂ ᔪᑎᐱᓕ 2023 ᑐᑦᕕᒪᓂᖅᑎᓄᑦ ᐅᖅᔪᖅᔪᐊᑦ ᐃᓂᖅᑎᖅᓂᓄᑦ ᐅᒥᐅᑕᐅᓂᖅᓯᓄᑦ ᐊᐅᓪᓚᑦᔪᑎᖅᑎ ᐊᒻᒪ ᐱᔪᖅᓇᖅᑎᓂᓂᖅᑎ ᐃᑐᑦᑎᐊᖅᑎᓂ ᑕᐸᔪᒥᖅᓯ ᐊᑐᖅᑎᑦᓂᖅᓄᖅ ᐅᖅᔪᖅᖅᓄᖅ. (ᑕᑦᓇ ᐅᖅᔪᖅᖅᓄᖅ ᔪᓂ ᐊᑐᓕᓚᐊᖅᑎᑦᑐᖅ. ᑕᒪᕐᒥᓂ ᓄᖅᔭᐊᓂ 2023, ᐱᖅᖅᑐᖅ ᒥᕀᓂ 170 ᑕᐅᕀᓂ ᓪᓕᑦ ᐅᖅᔪᖅᔪᐊᖅ ᐊᒻᒪ 330 ᑕᐅᕀᓂ ᓪᓕᑦ ᐳᐸᓪᑐᖅᑐᑦ A ᐅᖅᔪᓴᖅᑎᒋᑦ ᑐᑦᕕᒪᔪᖅ ᑕᒪᕐᒥᓂ ᓴᓇᕕᕐᓄᖅ); ᐊᒻᒪ

- ᐊᕿᔭᒍᑦ ᓄᓇᓕᕐᔪᑎᑦ ᖃᐅᔨᓴᖅᓂᖅᓂᒃ ᖃᐅᔨᓕᓕᐅᔪᓂᑦ ᐱᓕᕆᑦᔪᑎᑦ ᐃᓕᐅᑎᑦᓗᑦᑎ ᐅᓴᖅᑕᖅᓂᓯᔪᑦ ᔪᕕᑦᑕᖅᓂᒋᓪᓗ ᐃᓂᖅᓄᑦ ᐃᓕᖅᑐᑦᑕ;

ᑕᒪᔪᐊᑦ ᐱᓕᕆᐊᑦ ᐊᑐᖅᑕᐅᖅᑎᑦᑐᑦ:

- ᐋᑦᑐᖅ ᓴᓗᒪᖅᓴᐅᓂᖅᓂ ᐱᓕᕆᓴᐅᖅᑎᑦᑐᑦ ᓄᓇᕐ ᐃᓗᐊᓂ, ᐊᖅᑕᔪᓂ ᐅᓴᖅᑕ, ᐃᓗᑦᑐᖅᑎᖅᓂᖅᓗᑦ ᐊᒻᒪ ᑐᐊᐸᖅᑕᖅᓚᑦ ᐃᓂᓂᖅᑎ, ᐃᒪᖅ ᐊᐅᓪᓚᑕᐅᓂᖅᓂᖅᓂ ᐱᓕᕆᐊᖅᑎᑦᑐᑦ, ᐅᓂᒃᓗᓂᑦ ᖃᖅᑕᐅᑎᖅᓂᖅᓂᖅᓂ.

- ᐋᑦᑐᖅ ᓄᖅᑎᖅᓂᖅᓂ ᐅᓂᒃᓗᓂᑦ ᐊᐅᑕᔪᓂ ᐃᓂᖅᑎᖅᓂᖅᓂ.

ATANIUYUNUT NAINAQHIMAYUQ

Tamna Lupin Uyarakhiuqvik atullakta Munaqtaunia Ihuaqhihimanialu Atuqta atuqtitlugu 2023 pityutauyut atuqpalangitni havakvikmi huliniit. Tamna Lupin Uyarakhiuqvik havakvik angmaqtuq talvani Aagasi 28, 2023 taphumunga 28 ublut, tikittugu Saptaipa 25, 2023. Atuqtitlugu tamna pivigiya, munaqtaunia ihuaqhihimanialu tamnalu umikni huliniit ilalgit tahapkuninga:

- havakvik angmaqnia umiknialu, atuqni imigaulat imait, iqaqnilu anait talvunga Anait Tahiit Kuviraqvia Havaguta, ikualattinilu havakvikmi iqakunguqtauyut;

- mikiyut hanayaunit igluqpait hanalrutitlu nuktiralatlu hanalrutit;

- tamna nutaq Atullaktuq Uqhukhaqaqvik (TFF) hanayauyuq talvani Saptaipa 2023 tutqumaninut uqhukhat iniqtirutikhat umiktiqnianut aulataunit pipkaqnilu ituq=ptiriniq taphuminga Aturniqhaq Uqhukhaqaqvik. (Tamna Atullaktuq Uqhukhaqaqvik huli atulingittuq. Talvani nunguani 2023, piqaqhimayuq mikhaani 170k li of itat uqhuqyuaq tamnalu 330k liitat Puplalgit A Uqhukhat tutqumayut havakvikmi); tamnalu

- ukiumut nunaliqutit qauyihaqni qauyimayiuyut havakvitni ilautitlugit tamna Uyaraktaqvikmit Kuviraqvia Inaa;

Tahapkuat huliniit pingittut atuqtauni:

- piittuq halumaqtiriniq havat havaktauni nunap iluani, iqakut uyaqat, iluttuqtiqni tuapaliaqtaqvitlu, nunami iqakuqvik, havakvikmi apqutit, imaq aulatauvi havagutit, uvaluniit qaqtautiqaqvik;

- piittuq nuktiraqni uvaluniit aturuiqpaliani hanalrutit havariyaungittut.

Contents

ABBREVIATIONS

BOD	Biological Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene and total Xylenes
CDSG	Canadian Dam Safety Guidelines
CIRNAC	Crown Indigenous Relations and Northern Affairs Canada
DEOR	Deputy Engineer of Record
DMS	Discovery Mining Services
DSI	Dam Safety Inspection
DSR	Dam Safety Review
EOR	Engineer of Record
FCRP	Final Closure and Reclamation Plan
JDS	JDS Energy & Mining Inc.
LMI	Lupin Mines Incorporated
NWB	Nunavut Water Board
NWNSRTA	Nunavut Waters and Nunavut Surface Rights Tribunal Act
SLR	SLR Consulting (Canada) Ltd.
TCA	Tailings Containment Area
TFF	Temporary Fuel Farm
TKN	Total Kjeldahl Nitrogen
TPDS	Third-Party Drum Storage
WSP	William Sale Partnership Ltd.

DOCUMENT CONTROL

Version	Date (YMD)	Section	Page	Comment
0	2024/04/30	All	All	This report has been prepared in cooperation with Discovery Mining Services (DMS), Stantec , WSP Canada Inc., and JDS Mining & Energy Services (JDS) for Mandalay Resources Inc. on behalf of Lupin Mines Inc.

Approved By:

Frazer Bourchier,
President & CEO, Mandalay Resources

INTRODUCTION

The Lupin Mine is located approximately 285 km southeast of Kugluktuk in the Kitikmeot Region of Nunavut and is owned by Lupin Mines Incorporated (LMI), a wholly owned, indirect subsidiary of Mandalay Resources Corporation. The mine site is situated on the western shore of Contwoyto Lake, approximately 60 km south of the Arctic Circle. It is an underground gold mine that was in operation from 1982 to 2005 with temporary suspensions of activities between January 1998 and April 2000, and again between August 2003 and March 2004. The mine resumed production in March 2004 until February 2005 when the Site was placed into Care and Maintenance, and no active mining has taken place since.

On October 20, 2017, Mandalay Resources Corporation, through its wholly owned, independent subsidiary Lupin Mines Incorporated (LMI), announced that the Lupin Mine will transition from care and maintenance to full closure and reclamation, beginning in 2018 through to 2020. An application for renewal and amendment of the current water licence (Application), as well as a Final Closure and Reclamation Plan (FCRP) was submitted to the Nunavut Water Board on July 27, 2018 which underwent an extensive review process and culminated in the issuance of amended Type A Water Licence 2AM-LUP2032 on February 29, 2020 by the Nunavut Water Board (NWB) and approval by the Minister of Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) on April 9, 2020. LMI continued active preparatory work and initiated year one of the active closure phase in Q1 of 2020. At the beginning of 2022 LMI once again entered into Care and Maintenance with limited on-site activities in 2023.

Under Part B, Item 2 of the Licence 2AM-LUP2032, an Annual Report is required to be submitted to the NWB prior to March 31 of the year following the calendar year being reported and prepared in accordance with Schedule B of the Licence.

The following sections provide the information as required under Schedule B of Water Licence No. 2AM-LUP2032.

SCHEDULE B REPORTING

Item 1 (a): Monthly and annual quantities of water pumped from Contwoyto Lake at Station LUP-01 and other sources.

The Lupin Mine camp opened on August 28, 2023. Pumping water from Contwoyto Lake at the causeway began on August 29, 2023 until September 25, 2023 utilizing a submersible pump, filling a 4,542 litre (1,200 US gal) plastic tank within a water truck that is used to transport water to the camp's two (2) 4,542 litre storage tanks. The water is then run through a series of filters with disinfection provided by a flow-through ultraviolet chamber prior to distribution in camp. The camp was open for 28 days in 2023, through September 25, 2023, using a total of approximately 160 m^3 of freshwater, for an approximate average water use of 5.71 m^3/day (Footnote 1 - A Blue-White Industries Model F-1000-RT Totalizer flow meter is used to calculate the daily freshwater consumption.) for domestic purposes, well within the maximum authorized water use of 250,025 m^3/year during Active Closure and Reclamation Phase under the water licence.

The following table summarizes the monthly and annual quantities in cubic metres of Water pumped from Contwoyto Lake at Monitoring Station LUP-01.

2023	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Water Use (m^3/day)								5.71	5.71				160 m^3/year

Item 1 (b): Monthly and annual quantities of water pumped from ponds against the roads, or ponds or lakes proximal to the road for industrial purpose, including dust suppression.

No water was pumped from ponds against roads, or ponds or lakes proximal to the road for industrial purpose or for dust suppression in 2023.

Item 1 (c): Monthly and annual quantities of treated Tailings Effluent discharged at Station LUP-10.

No tailings effluent discharge at Station LUP-10 occurred in 2023.

Item 1 (d): Monthly and annual quantities of Minewater discharged at Station LUP-11.

No minewater effluent discharge at Station LUP-11 occurred in 2023.

Item 1 (e): Monthly and annual quantities of treated Sewage Effluent discharged at Station LUP-14.

No treated sewage effluent discharge at Station LUP-14 occurred in 2023.

Item 1 (f): Details on the types and quantities of Hazardous Waste and Chemicals stored on site.

The following table summarizes the types and quantities of hazardous waste and chemicals remaining on site as of 31 December 2023, to be used or eventually transported offsite.

Type Hazardous Waste or Chemicals	Quantity
Waste Motor Oil	2,000 litres (2 ea - 1000L totes) in equipment shop; 14,350 litres (70 ea - 205L drums) in TPDS; 19,000 litres (19 ea - 1000L Steel totes) in TPDS; 15,750 litres (21 ea - 750L plastic totes) in TPDS;
Contaminated (old) Diesel Fuel	7380 litres (36 ea - 205L drums) expired Diesel in Seacan; 17,015 litres expired diesel in Fuel Berm
Contaminated (old) Jet Fuel	4,305 litres (21 ea - 205L drums) expired AV gas in TPDS; 9,840 litres (48 ea - 205L Drums) expired AV gas in Seacan;
Contaminated (old) Gasoline	3,075 litres (15 ea - 205L drums) in fuel berm
Oily Water	3,000 litres (3 ea - 1,000L tanks) in TPDS;
Acid Filled Batteries	15 ea - 12V lead/acid batteries in Shop
Hydrated Lime	Approx. 800kg (40 ea - 20kg bags) in Cold Storage
Soda Ash	Approx. 10 ea - 907kg totes in Cold Storage
Portland Cement	3,000 kg (150 - 20kg bags) in Cold Storage
Calcium Chloride	Approx. 30 ea - 900kg sacks in Cold Storage
Other	20,820 litres (1 ea - 5500 gallon pup trailer) antifreeze, motor oil, waste oil mix in TPDS

No waste was shipped offsite in 2023, as all waste, hazardous waste and chemicals will be shipped to Yellowknife via the winter road in 2025.

The pre-existing fuel storage facilities at Lupin included a Main Tank Farm (including a system of 14 diesel tanks, 1 Jet A tank and 9 individual tanks), a Satellite Tank Farm (STF) (including a system of 10 diesel tanks and 2 gasoline tanks and a waste oil tank farm which included 2 waste oil tanks). As of December 2023:

- two of the diesel storage tanks and the Jet A tank are in use. 11 diesel storage tanks have been cleaned and placed in the landfill. 7 individual tanks have been cleaned and will be disposed in the landfill. Clean tanks in the boneyard were also demolished and placed in the landfill.
- LMI's fuel and petroleum inventory as of 31 December 2023 includes approximately:

  169,627 litres of diesel fuel and 338,743 litres of jet fuel in storage in large fuel tanks within the Bulk Fuel Storage (Main Tank Farm).

Additionally, there are several empty 205 litre drums and twenty (20) empty 1,000 litre totes on site available for spill contingency and/or temporary storage of hydrocarbons or hydrocarbon contaminated water.

Item 1 (g): Tabular Summaries of all data generated under the "Monitoring Program".

Summary of Monitoring Program (Type A Water Licence 2AM-LUP2032, Schedule J)

Station ID	Location	Frequency	Parameter	Annual Update
LUP-01	Freshwater Intake from Contwoyto Lake	Annually	Field, Conventional, Total Metals, and Biological	Care and Maintenance - No sample taken.
		Monthly	Quantity of water measured and recorded in cubic metres	Refer to Item 1 (a) above.
LUP-10	Pond 2 discharge at Dam 1A	Daily during periods of Discharge	Field, Conventional, Total Metals, Cyanide, no visible sheen of Oil & Grease	No discharge in 2023
			Quantity of treated effluent discharged, measured and recorded in cubic metres	No discharge in 2023
		Weekly during periods of discharge from the Tailings Containment Area	Nutrients Radium (^{226}RA)	No discharge in 2023
		Monthly (no less than one month Intervals) commencing with the first day of decant	Cyanide Bioassay	No discharge in 2023
LUP-10a (LUP- 102)	Internal station in TCA Pond 2, approximately 100 m upstream from siphon intake	Once prior to initiation of decant and once prior to termination of decant	Field, Conventional, Nutrients, Total Metals, Cyanide, and Radium (^{226}RA), and Bioassay	No decant in 2023
LUP-11	Minewater discharge at automatic sampler in the mill	Not Active		Not Active
LUP-12	Mill tailings taken at the mill	Not Active		Not Active
LUP-14	Decant structure from the Sewage Lakes Disposal Facilities	First day of discharge and then monthly thereafter during periods of flow	Field, Conventional, Nutrients, Total Metals, Biological, and Other: Biochemical Oxygen Demand (BOD5), Total Phosphorus, Total Orthophosphorus - (OPO4), Total Kjeldahl Nitrogen (TKN))	No discharge in 2023

Station ID	Location	Frequency	Parameter	Annual Update
		Monthly	Quantity of treated effluent discharged in cubic metres	No discharge in 2023
LUP-15	Discharge from TCA Pond 1 (east pond) into TCA Pond 2 (west pond)	Not Active		Not Active
LUP-16	TCA Pond 2 at center	Not Active		Not Active
LUP-17	TCA Pond 2 upstream of Station LUP-10	Not Active		Not Active
LUP-19	East end of Seep Creek in Dam 2 Lake	Not Active		Not Active
LUP-20	West end of Seep Creek before discharge into Unnamed Lake	Weekly during discharge from the Tailings Containment Area commencing with the first day of discharge	Field, Conventional, Nutrients, Total Metals, Cyanide, and Radium (^{226}RA)	No discharge in 2023
LUP-21	North end of Concession Creek before discharge into Unnamed Lake	Weekly during discharge from the Tailings Containment Area commencing with the first day of discharge	Field, Conventional, Nutrients, Total Metals, Cyanide, and Radium (^{226}RA)	No discharge in 2023
LUP-22	Inner Sun Bay near center and midway between end of peninsula and west shore	Weekly at mid-depth, commencing one (1) week prior to discharge from the Tailings Containment Area and concluding two (2) weeks after cessation of the discharge	Field, Conventional, Nutrients, Total Metals, Cyanide, and Radium (^{226}RA)	No discharge in 2023
LUP-24	Inner Sun Bay near narrows	Weekly at mid-depth, commencing one (1) week prior to discharge from the Tailings Containment Area, and concluding two (2) weeks after cessation of the discharge and when bioassay sample is collected at LUP-10 just prior to termination of decant	Field, Conventional, Nutrients, Total Metals, Cyanide, and Radium (^{226}RA)	No discharge in 2023
LUP-25	Outer Sun Bay (Total Rather than specific metals)	Weekly at mid-depth, commencing one (1) week prior to discharge from the Tailings Containment Area, and concluding two (2) weeks after cessation of the discharge	Field, Conventional, Nutrients, Total Metals, Cyanide, and Radium (^{226}RA)	No discharge in 2023
LUP-26	Contwoyto Lake in bay east of water intake	Not Active		Not Active

Station ID	Location	Frequency	Parameter	Annual Update
LUP-27	Bulk Fuel Storage Facility	Once prior to discharge and weekly during periods of discharge	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No discharge in 2023
LUP-28	Discharge from the Landfarm Facility	Once prior to discharge and weekly during periods of discharge	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No discharge in 2023
LUP-29	Landfarm Facility Monitoring Well – Up gradient	Monthly during periods of observed flow – June through September	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No observed flow while on site
LUP-30a	Landfarm Facility Monitoring Well – Down gradient	Monthly during periods of observed flow – June through September	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No observed flow while on site
LUP-30b	Landfarm Facility Monitoring Well – Down gradient	Monthly during periods of observed flow – June through September	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No observed flow while on site
LUP-31	Seepage from the Landfill Facility	Monthly during periods of observed flow	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No observed flow while on site
LUP-32	Landfill Facility Monitoring Well – Up gradient	Monthly during periods of observed flow – June through September	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No observed flow while on site
LUP-33a	Landfill Facility Monitoring Well – Down gradient	Monthly during periods of observed flow – June through September	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No observed flow while on site
LUP-34b	Landfill Facility Monitoring Well – Down gradient	Monthly during periods of observed flow – June through September	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No observed flow while on site

Station ID	Location	Frequency	Parameter	Annual Update
LUP-35	Seepage from the Landfill Facility	Monthly during periods of observed flow	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No observed flow while on site
LUP-36	Demolition Landfill Facility Monitoring Well – Up gradient	Monthly during periods of observed flow – June through September	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No observed flow while on site
LUP-37a	Demolition Landfill Facility Monitoring Well – Down gradient	Monthly during periods of observed flow – June through September	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No observed flow while on site
LUP-37b	Demolition Landfill Facility Monitoring Well – Down gradient	Monthly during periods of observed flow – June through September	Field, Conventional, Nutrients, Total Metals, Total Oil and Grease, BTEX	No observed flow while on site
LUP-EL-01	East Lake near shoreline near the potential seepage inputs	Twice-yearly: Once in freshet and once in late open-water season, ensuring that baseline samples are collected prior to construction of the waste rock dome.	Field, Conventional, Total Metals	No dome construction initiated
LUP-BL-01	Boot Lake near shoreline near the potential seepage inputs	Twice-yearly: Once in freshet and once in late open-water season, ensuring that baseline samples are collected prior to construction of the waste rock dome.	Field, Conventional, Total Metals	No dome construction initiated
LUP-LSL-01	Lower Sewage Lake near shoreline near the potential seepage inputs	Twice-yearly: Once in freshet and once in late open-water season, ensuring that baseline samples are collected prior to construction of the waste rock dome.	Field, Conventional, Total Metals	No dome construction initiated
LUP-SP-01 to LUP-SP-XX(a)	Seeps from the Waste Rock Dome, Locations of observed seepage or flow from waste rock pile	Twice-yearly: Once in freshet and once in late open-water season	Field, Conventional, Total Metals	No dome construction initiated. No seepage was observed

Station ID	Location	Frequency	Parameter	Annual Update
LUP-TCA-01 to LUP-TCA-XX(a)	Seeps from the Tailings Containment Area (TCA), Locations of observed seepage or flow from waste rock pile	Twice-yearly: Once in freshet and once in late open-water season	Field, Conventional, Total Metals	No observable seepage.

Notes:

(a) Seep Sampling locations will be added to the post-closure monitoring program as new seeps are documented.

Geotechnical monitoring is included in the Dam Safety Inspection documented in Item 1 (i) and Appendix A.

Item 1 (h): Summary of actions taken to address concerns or deficiencies listed in inspection reports and/or compliance reports filed by an Inspector.

Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) enforces terms and conditions of NWB water licences in accordance with the *Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSRTA)* section 85-88. CIRNAC did not undertake any on site inspections or issue compliance reports for the Lupin Mine Site between 01 January 2023 and 31 December 2023.

Item 1 (i): Summary of modification and/or major maintenance work carried out on the Water Supply and the Waste Management Facilities, including associated structures.

Geotechnical Inspection (Stantec, 2024)

Lupin Mines Incorporated (LMI) retained Stantec Consulting Ltd. (Stantec) to complete the annual dam safety inspection (DSI) at the Lupin Mine tailings containment area (TCA). The DSI was completed by the Engineer of Record (EOR) and Deputy Engineer of Record (DEOR) for the TCA and included a walkover, visual observation, and photography of the TCA upstream and downstream embankments, dam crest and toe areas, Cell 3 and 5 outfall structures, the Cell 4/Divider Dyke spillway, the two emergency tailings dump ponds (outside of the TCA), and the upper and lower sewage lagoons (outside of the TCA). The inspection team observed for visible signs of instability (cracking, settling, slumping, toe heave or other displacement), over-steepened slopes, uneven crests, erosion, ponded water, seeps, exposed tailings and other indicators of changing or unfavorable physical conditions. General geochemical observations (mineralization, precipitate, colour and vegetation changes, etc.) were also collected. Thermistor, pressure sensor, and VWCA instrumentation was monitored, and instrumentation conditions were documented with photographs. Water sampling and monitoring was carried out at 15 locations including:

- Pond 2 – five locations
- Pond 1 – three locations
- Cell 4 – four locations
- Cell 4 NW corner seep – one location
- Cell N seeps – two locations

Water samples were packaged, transported, and delivered to the ALS laboratory in Yellowknife on September 18th, 2023.

In general, dams were found to be in stable condition and pond elevations were noted to be low. At least 5.0 m of freeboard was identified at most dams. Additional details related to the annual geotechnical inspection, including instrumentation plots, photographs, map layouts, and findings and recommendations for maintenance and closure priorities are presented in the annual inspection report, attached as Appendix A. At this time, LMI has not had sufficient time to review the annual inspection report or respond to the identified maintenance and closure priorities via letter.

It is anticipated that TCA work will be completed in 2024 and 2025, including M Dam repairs/resloping, remediating the remaining exposed tailings in the TCA, addressing Cell 3 drainage swale erosion, managing acidic seeps within the TCA, designing spillways for Dam 1A, J Dam, and the two sewage lagoons (outside of the TCA) and repairing or replacing damaged instrumentation. Due to the shortened field season and suspension of work in 2023, recommendations from the 2022 annual inspection report still need to be addressed. It is expected that outstanding recommendations from the 2022 and 2023 annual inspection reports will be addressed as necessary.

In lieu of a cover letter to the DSI, LMI commits to the following in 2024 and 2025:

1. Reslope Dam M in accordance with the closure design.
2. Design and execute remediation for the NW corner of Cell 4.
3. Explore potential improvements for managing the acidic seep(s) at Cell N.
4. Assess onsite conditions and develop final spillway designs for Dam 1A, J Dam, and the two sewage lagoons.
5. Assess the Cell 3/Dam L drainage swale erosion issue for potential to worsen over time and complete needed remediation.

Dam Safety Review (SLR, 2024)

Due to the change in EOR for the TCA, a Dam Safety Review (DSR) was initiated in 2023 in accordance with the Canadian Dam Safety Guidelines (2013). The final DSR report is currently under development and will be provided to the NWB in Q2 of 2024.

Temporary Bulk Fuel Storage (WSP, 2023)

A Temporary Fuel Farm (TFF) was constructed in September 2023 to store fuel for closure operations and to allow the future decommissioning and cleanup of the existing Main Tank Farm. The TFF is a rectangular impoundment lined with a single piece HAZGUARD liner which will host 6 - 3.7 m diameter by 6.1 m high tanks. It was designed by WSP and WSP inspected the construction. An as-built report will be submitted in 2024, after a survey of the TFF is completed. The TFF has not yet been put into use.

Item 1 (j): List of description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.

No unauthorized discharges or spills occurred necessitating reporting in 2023.

Item 1 (k): Applicable revisions as Addendums for Plans, Reports or Manuals.

In accordance with the Water Licence 2AM-LUP2032 Part B, Item 15 which states:

> *The Licensee shall review the Plans referred to in this Licence as required by changes in operation and/or technology and modify the Plans accordingly. Revisions to the Plans are to be submitted in the form of an Addendum to be included with the Annual Report required by Part B, Item 2, complete with a revisions list detailing where significant content changes are made.*

As such LMI proposes two addenda to existing Plans as follows:

1. Addenda to approved Final Closure and Reclamation Plan dated August 2020, Table 14 - Summary of Measures for Final Closure (Refer to Appendix B-1); and
2. Addenda to approved Post Closure Monitoring Plan dated April 2021, Table 9 - Water Quality Monitoring Requirements for Active and Passive Closure at Lupin Mine (Refer to Appendix B-2).

The only significant content changes in the proposed addenda reflect LMI current Closure Phase in Care & Maintenance and new implementation timelines for measure of final closure and monitoring for Post Closure Phase as provided in the applicable tables.

Item 1 (l): Summary of public consultation and participation with local organization and residents of nearby communities, including schedule of upcoming events and information sessions.

The site remained in Care & Maintenance with minimal on-site work in 2023. No public consultation with local organization or residents of nearby communities were undertaken in 2023.

Item 1 (m): Summary of any abandonment and reclamation work completed during the year and an outline of any work anticipated for the next year.

Consistent with the FCRP Table 14 a Summary of any abandonment and reclamation work completed during 2023 and work anticipated in 2024 is summarized in the table below.

Summary of Abandonment and Reclamation Work

Component	Works completed in 2023	Proposed Works proposed in 2024
Underground Mine	▪ No reclamation work completed in 2023.	▪ No reclamation work planned for 2024

Contaminated Soil	▪ No reclamation work completed in 2023.
	▪ Based on the volume of contaminated soils remediated in 2020 and 2021 (approximately 35,000 m^3), it is anticipated that approximately 15,000 m^3 of petroleum hydrocarbon (PHC) contaminated soil still requires excavation and disposal underground.
		▪ Prioritized contaminated soil remediation at:
		  ▪ Landfarm area (approximately 500 m3).
		  ▪ Mill and Office area (approximately 900 m3)
		  ▪ Cold Storage Area #1 (volume to be determined).
		▪ Field time permitting remediation may also include:
		  ▪ Satellite Tank Farm (STF) and Power House (13,800 m^3).
		  ▪ Contaminated soils adjacent to Airstrip (Former Airport) (approximately 750 m^3).

Waste Rock	▪ No reclamation work completed in 2023	▪ No reclamation work planned for 2024
Tailings Containment Area	▪ No reclamation work completed in 2023 ▪ Dam Safety Inspection (DSI) ▪ Dam Safety Review (DSR)	Address outstanding findings and recommendations from 2022 and 2023 annual geotechnical inspection reports, including: ▪ Address Cell 3 drainage swale erosion issues ▪ Assess and design remediation for exposed tailings and seep in the NW corner of Cell 4 ▪ Assess and design remediation for acidic water located at and adjacent to Cell N ▪ Assess and design remediation for exposed tailings between the Pond 1 closure elevation and J Dam ▪ Assess and design remediation for exposed tailings between the Pond 2 closure elevation and the proposed M Dam toe ▪ Potential to treat Cell 4 and Pond 1 and enter two years of water quality observations (2025 and 2026) in the TCA
Buildings and Equipment	▪ Minor repairs to generators (fuel line replacement). No demolition or reclamation work completed in 2023.	▪ No reclamation work planned for 2024

Component	Works completed in 2023	Proposed Works proposed in 2024
Borrow and Quarry Areas	▪ No reclamation work completed in 2023.	▪ No reclamation work planned for 2024
Chemicals and Fuel	▪ A new Temporary Fuel Farm (TFF) was constructed in September 2023 to store fuel for the completion of closure operations and to allow for the decommissioning of the Main Tank Farm. ▪ The TFF has not yet been put into use. ▪ At the end of 2023, there was approx. 170k litres of diesel fuel and 330k litres of Jet A Fuel in storage at the site.	▪ Potentially converting existing Jet A fuel to useable diesel, and transferring to TFF. ▪ Waste fuel, oils and chemicals to be prepped for demobilization on 2024 winter road. ▪ Potential for cleaning of tanks 2, 3, and 15.
Machinery and Mobile Equipment	▪ On-site equipment, that was no longer in use, has been buried in the landfill, including equipment located in the boneyard. ▪ Minor repairs to mobile equipment.	▪ Minor repairs to rock trucks, excavators and dozer planned for 2024. ▪ Further equipment will be drained of fluids and placed in the landfill in 2025, some equipment will remain for post closure, but a majority of the equipment will be shipped to Yellowknife via the winter road in 2025 and 2026. ▪ Fluids drained from the equipment are stored in a bermed area to be shipped off-site on the winter road for disposal. See Item 1(f) above for waste amounts on site as of December 31, 2023.
Landfill	▪ No reclamation work completed in 2023	▪ No reclamation work planned for 2024
Site Roads	▪ No reclamation work completed in 2023	▪ No reclamation work planned for 2024
Water Management Facilities	▪ No reclamation work completed in 2023	▪ No reclamation work planned for 2024
Mobilization/Demobilization	▪ No reclamation work completed in 2023.	▪ Winter Ice Road (WIR) construction to be permitted separately
Explosives Magazine	▪ No reclamation work completed in 2023. Moved from explosives magazine site at TCA to Mine Site.	▪ Planned to be demobilized via Winter Road in 2025
Emergency Dump Ponds	▪ No reclamation work completed in 2023.	▪ Assess and design remediation for exposed tailings impounded by the emergency tailings dump ponds.
Sewage Lagoons	▪ No reclamation work completed in 2023.	▪ Assess and design spillway configuration, sizing, and specifications at the upper and lower sewage lagoon.

Item 1 (n): Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.

Neither Lupin Mines Inc. or its subsidiary Mandalay Resources received additional requests from the NWB on details associated with water use or waste disposal activities in the 2023 calendar year being reported herein.

Item 2: The Post Closure Monitoring Plan shall include an update to Schedule B for Annual Reporting Requirements reflecting the Post Closure Phase.

Following community engagement in 2021, the NWB approved on 27 September 2021, the Post Closure Monitoring Plan (PCMP) dated August 2020 and associated Appendix: Water Quality Monitoring Plan and Water and Soil Quality Assurance and Quality Control Plan dated 9 April 2021.

LMI is currently in modified active care & maintenance of the **Closure Phase** currently scheduled for completion in Q4 of 2025. Refer to addenda provided in Appendix B-1. LMI is committed to updating Schedule B for Annual Reporting Requirements reflecting the **Post Closure Phase** in the 2024 Annual Report to be submitted to the NWB no later than 31 March 2025.

APPENDIX A: GEOTECHNICAL INSPECTION REPORT

2023 Lupin Mine
Tailings Containment Area
Annual Inspection Report

March 21, 2024

Prepared for:

Lupin Mines Incorporated

Prepared by:
Steven Bundrock, P.Eng.
Michael Mahowald

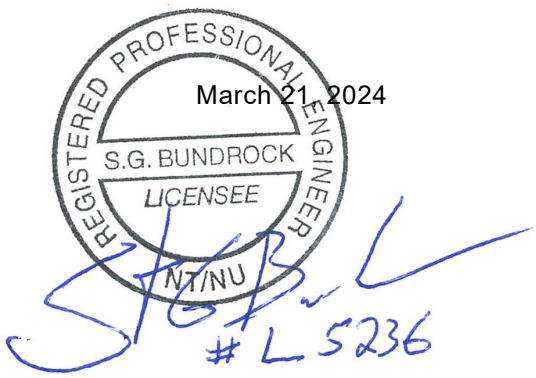
Sign-off Sheet

This document entitled 2023 Lupin Mine Tailings Containment Area Annual Inspection Report was prepared by Stantec Consulting Ltd. (“Stantec”) for the account of Lupin Mines Inc. (the “Client”). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec’s professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by _____

Michael Mahowald

March 21, 2024



Reviewed and Approved by _____

Steven Bundrock, P. Eng.

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1.0 INTRODUCTION

Lupin Mines Incorporated (LMI) retained Stantec Consulting Ltd. (Stantec) to complete the annual dam safety inspection (DSI) at the Lupin Mine tailings containment area (TCA). Mining operations ceased in 2005. The Lupin Mine site is currently undergoing active closure activities and operates under the Nunavut Water Licence 2AM-LUP2032 (NWB, 2020), issued to LMI by the Nunavut Water Board (NWB, or The Board). LMI is a wholly-owned indirect subsidiary of Mandalay Resources.

The Lupin Mine is located on the western shore of Contwoyto Lake, approximately 400 km northeast of Yellowknife, Northwest Territories, in the Kitikmeot Region of Nunavut (Appendix B – Figure 1). The site includes camp and support facilities, fuel storage, an airstrip, overflow and sewage ponds and the TCA as shown in Appendix B – Figure 2. A plan view of the TCA is provided in Appendix B – Figure 3.

Part J, Condition 12 of the water licence requires an annual geotechnical inspection to be completed for the Tailings Containment Area, during ice free, open-water conditions by a Geotechnical Engineer (NWB, 2020). Stantec has provided a qualified person to conduct the geotechnical inspection in order to fulfill the requirements of Part E, Condition 7 of the water licence, which stipulates that the Tailings Containment Area shall be constructed, operated, and maintained to engineering standards such that:

- A minimum Freeboard of 1.0 metre is maintained at all times or as recommended by a Geotechnical Engineer and as approved by the Board in writing
- Seepage from the TCA is minimized
- Seepage that occurs is collected and returned immediately to the TCA
- Erosion of constructed facilities is addressed immediately
- The solids fraction of the mill tailings is permanently contained within the TCA or underground as backfill
- Measures are implemented so that the TCA is adequately covered or managed, including the use of approved binding agents, so as to prevent windblown tailings from impacting other areas of the project site
- Transducers are installed and maintained within existing standpipes to collect water level data and ensure tailings saturation.

The water license further stipulates that during the active Closure and Care and Maintenance Phases, inspections are to be carried out on a bi-weekly basis during freshet (approximately May

and June), and monthly during the remainder of the open water period (approximately July to October) for the following:

- Seepage from dams
- Water levels in ponds/cells
- General surface erosion, tension cracks, and/or anomalies on dams
- Records of these inspection are to be kept for review upon the request of Inspector, or as otherwise approved by the Board. More frequent inspections will be performed at the request of an Inspector.

To meet these conditions, this report summarizes Stantec's observations of the TCA's condition in 2023 and presents our recommendations. Previous annual inspections, safety reviews, and risk assessments with respect to the TCA are as follows:

- Construction reporting during active closure activities including Stantec 2021
- Inspection Reports from 2018-2022 by Stantec Consulting Ltd
- Inspection Reports from 2016 and 2017 by Norwest Corporation
- Inspection Reports from 2012-2015 by SRK Consulting
- 2015 Dam Safety Review Report by SRK Consulting
- 2012 TCA Risk Assessment and Water Quality Review by SRK Consulting.

While the annual inspection is carried out to satisfy the licence requirements, the format and methodology used are in accordance with good engineering practice identified in Canadian Dam Association (CDA) Dam Safety Guidelines (2013, 2014) and Province of British Columbia Water Management Branch (BCWMB, 2011) Dam Safety Guidelines.

1.1 PROJECT DESCRIPTION

1.1.1 Location and Access

The Lupin Mine is accessible by air or winter road. Air access is serviced by a gravel airstrip, capable of handling large aircraft. Charter flights from Yellowknife support the site. When the mine was in operation, the Tibbitt, Northwest Territories to Contwoyto Winter Road was utilized to resupply the mine. This winter road currently ends at the Ekati Diamond Mine and has not been extended to the Lupin Mine since 2005, when the mine went into the Care and Maintenance Phase. An overland access trail was constructed to the Lupin site in the winter of 2020 to facilitate equipment mobilization for closure activities. This trail was reestablished in order to mobilize additional equipment to site in the winter of 2023/2024, and will be reestablished for equipment demobilization once the closure activities have been completed.

1.1.2 History and Current Status

The Lupin Mine current closure activities include, but are not limited to, infrastructure demolition, identification and disposal of contaminated soils, water treatment and discharge, water quality and geochemical monitoring, tailings cover construction, construction of passive outfalls and spillways, tailings dam resloping and dam repairs, and waste management.

1.1.3 Site Infrastructure

Numerous mine facilities have been decommissioned as part of closure activities including:

- The mill underground hoist and wheelhouse, ball mill, concentrator, and paste backfill plant (decommissioned and demolished).
- The camp and support facilities included multiple accommodation wings, an office building, recreation facilities, cold and warm storage, and generators. Most of these structures are demolished, with only two wings of the camp and associated generators remaining.
- Two sewage lagoons and dams, and a waste management incinerator, landfill, and a burn pit.
- Fuel storage included the main tank farm containing diesel and jet fuel for annual operations. Most of the fuel tanks are decommissioned and demolished. In 2023, a temporary fuel storage berm was constructed to facilitate decommissioning and demolition activities.
- The airstrip is a gravel runway capable of accommodating large aircraft.
- Gravel roads are in place to connect facilities.
- The TCA consists of frozen core dams that contain tailings cells undergoing progressive reclamation which has been completed at several cells. Water treatment includes use of Pond 1 for holding effluent, water treatment in a plant or with temporary equipment, and transfer to Pond 2. Pond 2 is used to settle solids and to treat acidic water with soda ash to achieve water licence requirements prior to discharge to the environment.

1.2 CLIMATE

Stantec evaluated the climate data from an automated weather station known as Lupin (CWIJ) available via the Weather Underground database (WU, 2016). Intermittent climate data is also available from the Environment Canada database under station LUPIN CS Climate ID 230N002. The climate data evaluation was completed in 2018 for the period of May 2005 to April 2017. Details from the climate data evaluation are as follows:

- Annual mean temperature: -13°C
- Average winter temperature (from October to April): -21°C

- Average summer temperature (from May to September): 8°C
- Average annual precipitation: 592 mm (*data does not differentiate between snow and rain)
- Average wind direction: south-southwest
- Average wind speed:16 km/h

1.3 SITE GEOLOGICAL CONDITIONS

The Lupin Mine is located in an area underlain by an Archean metaturbidite sequence of the Contwoyto Formation. The rocks have been subjected to both regional and contact metamorphism, which included deformations and intrusions of various ages.

The area was glaciated and experienced isostatic rebound after the glaciers ablated. Runoff related to glaciation washed out erodible soils and formed lakes in low-lying areas. The easily erodible glaciolacustrine and glaciofluvial sands were reworked and displaced by meltwater and resulted in the outcrops present with thin soil veneers, abandoned beaches, and esker formations (Kinross, 2005). Where bedrock is not present at the surface, overburden typically consists of coarse-grained glacial till which is intermittently covered by glaciolacustrine and glaciofluvial deposits. The till is a silty sand with gravel and boulders, with low plasticity and ice content depending on the depth.

A substantial esker deposit, referred to as the Finger Lakes borrow source, is located roughly five km southeast of the TCA. Material at this borrow source has been classified as a gravely sand and was demonstrated to be geochemically stable under various wetting/drying cycles and leaching. Gravely sand sourced from the Finger Lakes borrow source has been used for most of the progressive reclamation and tailings/contaminated materials cover onsite. Prior to selection for progressive reclamation material, sand and gravel from this source was utilized for road and dam construction. Several other inactive borrow sources consisting of similar esker deposits are present near the TCA perimeter.

1.4 PERMAFROST MONITORING

The site is located within a permafrost region. The active layer is observed to be variable between depths of 1.25 m to 3 m based on available data. During operation, scheduled monitoring was completed for instrumentation, water level records, water quality, and production volumes. This monitoring program was reduced accordingly during the Care and Maintenance Phase of the mine and is now carried out when work is being done on site, where applicable. Thermistors are installed in several dams and in the tailings cover to monitor performance. Some thermistors are no longer functional and/or are damaged beyond repair. The remaining thermistors are monitored at least once annually during the geotechnical inspection and more often when site access allows. The results indicate that permafrost remains within the dams and reclaimed tailings, and the results are consistent with reasonable historical variation and limits.

2.0 TAILINGS CONTAINMENT AREA DAMS

The TCA tailings are primarily comprised of amphibole and quartz, which account for 80% of the volume. Pyrrhotite and arsenopyrite make up an additional 17%. Various studies have demonstrated that the tailings have a potential for acid generation (Kinross, 2005).

The TCA consists of eight perimeter dams named Dams 1A, 1B, 1C, 2, 3, 4, 5, and 6 and nine internal dams named Dams 3a, 3b, 3c, 3d, 3e, J, K, L, M, N, and the Divider Dykes.

Five tailings cells (1 to 5) were used for tailings containment. During reclamation, internal dams 3a, 3b, 3c, and 3e were covered and are no longer considered to be dams. Cells 1 and 2 have been reclaimed. Cells 3 and 5 were covered in 2021. Remaining tailings requiring cover includes Ponds 1 and 2 exposed tailings above closure elevations, a Cell 4 northwest corner exposed tailings beach, and emergency dump ponds tailings. No tailings have been produced since 2005.

Dams were constructed with esker sands and gravels and fine-grained tailings material. Perimeter dams and K Dam include a geosynthetic liner for seepage control and reduction of fines migration. The dams have frozen cores overlying a permafrost foundation. Perimeter dams range in height from one to eight metres and internal dams range in height from six to 12 metres.

Most of the tailings are contained within the TCA. There are also two emergency tailings dump ponds which were used during adverse weather conditions. The extent, volume, and location of pond tailings is largely unknown but is expected to be limited based on visual observation. The “North” emergency tailings dump pond is situated between the upper and lower sewage lagoon and the “South” emergency tailings dump pond is located one kilometre south. The active closure procedure for water management includes the following steps:

- Runoff is directed from Cell 3 into Cell 4 via the passive drain outfall structure through L Dam.
- From Cell 4, the water is drained by a spillway constructed through the Divider Dykes, where it enters the Chain of Lakes natural drainage system near the southeast corner of the TCA. Comingled water from the natural system and Cell 3/Cell 4 flows into Pond 1.
- Cell 1 and 2 runoff is directed into Pond 1, while the remainder is left on the cover.
- Cell 5 runoff is directed into Pond 1 via the passively draining outfall structure through J Dam.
- Pond 1 water levels are managed by siphoning water across J Dam and into Pond 2.
- Pond 2 water treatment occurs by adding neutralizing products, such as soda ash or lime, to raise the pH to the acceptable water license discharge criteria. Precipitates from treatment are deposited in Pond 2 and treated water is siphoned to the receiving environment in accordance with the Water Licence requirements (NWB, 2020). Pond 2 does not have a flood overflow structure or means of passively discharging runoff;

instead, water is retained, and discharge is restricted until water quality achieves the discharge requirements outlined in the Water Licence.

2.1 DAM CONSEQUENCE CLASSIFICATIONS

Stantec used the CDA Guidelines (CDA, 2013) to determine dam consequence classifications. Classifications and associated incremental losses are presented in Table 2-1.

Table 2-1: CDA Dam Consequence Classifications

Dam Class	Population at Risk[1]	Incremental Losses		
		Loss of Life[2]	Environmental and Cultural Values	Infrastructure and Economics
Low	None	0	• Minimal short-term loss	Low economic losses
			• No long-term loss	Area contains limited infrastructure or services
Significant	Temporary only	Unspecified	• No significant loss or deterioration of fish or wildlife habitat	Losses to recreational facilities, seasonal workplaces, and infrequently used transportation routes
			• Loss of marginal habitat only	
			• Restoration or compensation in kind highly possible	
High	Permanent	10 or fewer	• Significant loss or deterioration of important fish or wildlife habitat	High economic losses affecting infrastructure, public transportation, and commercial facilities
			• Restoration or compensation in kind highly possible	
Very High	Permanent	100 or fewer	• Significant loss or deterioration of critical fish or wildlife habitat	Very high economic losses affecting important infrastructure or services (e.g. highway, industrial facility, storage facilities for dangerous substances)
			• Restoration or compensation in kind possible but impractical	
Extreme	Permanent	More than 100	• Major loss of critical fish or wildlife habitat	Extreme losses affecting critical infrastructure or services (e.g. hospital, major industrial complex, major storage facilities for dangerous substances)
			• Restoration or compensation in kind impossible	

Note 1. Definition for population at risk:
None - There is no identifiable population at risk, so there is no possibility of loss of life other than through unforeseeable misadventure. **Temporary** - People are only temporary in the dam-breach inundation zone (e.g. seasonal cottage use, passing through on transportation routes, participating in recreational activities).
Permanent - The population at risk is ordinarily located in the dam-breach inundation zone (e.g. as permanent resident); three consequence classes (high, very high, extreme) are proposed to allow for more detailed estimate of potential loss life (to assist in decision-making if the appropriate analysis is carried out).
Note 2. Definition for loss of life:
Unspecified - The appropriate level of safety required at a dam where people are temporarily at risk depends on the number of people, the exposure time, the nature of their activity, and other conditions. A higher class could be appropriate, depending on the requirements. However, the design flood requirement, for example, might not be higher if the temporary population is not likely to be present during the flood season.

Based on Stantec's 2023 inspection, dam consequence classifications are outlined in Table 2-2.

Table 2-2: TCA Dam Consequence Classifications

Dam		Consequence Classification	Rationale
Perimeter Dams	1A	Significant	Release of water that may not meet discharge criteria into the environment
	1B	Significant	Release of water that may not meet discharge criteria into the environment
	1C	Significant	Release of water that may not meet discharge criteria into the environment
	2	Significant	Release of water that may not meet discharge criteria into the environment
	3	Low	No free-standing water; stable reclaimed tailings with very limited impact upon failure
	4	Significant	Release of water that may not meet discharge criteria into the environment
	5	Low	No free-standing water; stable reclaimed tailings with very limited impact upon failure
	6	Low	No free-standing water; stable reclaimed tailings with very limited impact upon failure
Internal Dams	3D	Low	Any release of effluent or tailings are contained within the TCA
	J	Low	Any release of effluent or tailings are contained within the TCA
	K	Low	Any release of effluent or tailings are contained within the TCA
	L	Low	Any release of effluent or tailings are contained within the TCA
	M	Low	Any release of effluent or tailings are contained within the TCA
	N	Low	Any release of effluent or tailings are contained within the TCA
	Divider Dykes	Low	Any release of effluent or tailings are contained within the TCA

These consequence classifications are in line with the classifications outlined in the 2015 Dam Safety Review (SRK, 2015), but may need to be revisited based on the 2023 Dam Safety Review Report and the hazard classification identified in this report.

An emergency preparedness plan (EPP) was noted by the last dam safety reviewer (SRK, 2015) to be in place. SRK deemed this EPP to be appropriate for the Care and Maintenance Phase of the mine. Stantec did not review the EPP. Due to the lack of transportable tailings, as well as the lack of a permanent population or infrastructure downstream of the TCA, a detailed inundation study has been deemed to be non-applicable. It is expected that, with a DSR being completed by SLR Consulting in 2023, a new EPP and emergency response plan (ERP) are needed to reflect the active Closure Phase of the mine as well as an updated DSR. It is expected that a review of the dam consequence classifications will also be completed.

3.0 2023 TCA INSPECTION

3.1 GENERAL

The DSI was completed by Stantec's Steve Bundrock (Engineer of Record) and Mike Mahowald from September 13th to 16th, 2023. Also travelling to/from site on these days was Eric Sellars (SLR Consulting – completing the 2023 Dam Safety Review) and Ray Kennedy (WSP – inspecting the temporary fuel storage berm and liner). Stantec was accompanied in the field during in the dam inspection on September 14th by Eric Sellars. Stantec was accompanied in the field during water sampling tasks in the morning of September 15th by Discovery Mining Services' (DMS) Dana Jackman.

Weather during the site visit was primarily overcast with periods of moderate to dense fog/mist in the mornings and evenings with light to moderate winds. No substantial precipitation events occurred. Temperatures were typically 5° to 10°C during the day. Access roads were clear and mostly dry and were otherwise in good condition. All key TCA areas were accessible via light duty pickup truck, in the site 4WD Kubota, or on foot.

The DSI included a walkover, visual observation, and photography of the TCA upstream and downstream embankments, dam crest and toe areas, Cell 3 and 5 outfall structures, the Cell 4/Divider Dyke spillway, the two tailings dump ponds, and the upper and lower sewage lagoons.

The inspection team observed for visible signs of instability (cracking, settling, slumping, toe heave or other displacement), oversteepened slopes, uneven crests, erosion, ponded water, seeps, fugitive tailings, and other indicators of changing or unfavorable physical conditions. Detailed inspection and photograph logs are provided in Appendix A. Geochemical observations (mineralization, precipitate, colour and vegetation changes, staining etc.) were also collected. Thermistor, pressure sensor, and VWCA instrumentation was monitored, and instrumentation conditions were documented with photographs. Water sampling and monitoring was carried out at 15 locations, including:

- Pond 2 – five locations
- Pond 1 – three locations
- Cell 4 – four locations
- Cell 4 NW corner seep – one location
- Cell N seeps – two locations

Water samples were packaged, transported, and delivered to the ALS laboratory in Yellowknife on September 18th, 2023. Laboratory results were received on October 3rd, 2023.

3.2 INSTRUMENTATION

3.2.1 Thermistors

Thermistors were installed in the TCA between 1995 and 2004 to monitor the thermal performance of the dams, tailings, and covers. Thermistors were monitored monthly during the Operational Phase of the mine, at which point monitoring shifted to semi-annual frequency. Not all functional thermistors were consistently monitored through the Care and Maintenance Phase.

According to historical records, there were 13 thermistors installed in the dams; four of these are currently functioning and are located at less than 20 m depth. Of the four functional thermistors, three are located in the perimeter dams and one in an internal dam. Thermistors D4-3 on Dam 4, D2-00-2N on Dam 2, and DK-3 on Dam 3 are not communicating results and repairs will be attempted.

In addition to thermistors installed in the dam embankments, there are nine thermistors installed in the reclaimed tailings and cover material, but three of these do not have calibration data on record to evaluate the results and two of them are damaged.

For the four functional thermistors in dams, data series were selected to span August to September from the years 2010 to 2022 in the historical plots. Maximum values were calculated using a data series spanning from data points collected in the 1990s and early 2000s to data collected in 2014. Historical maximum lines were based on results collected prior to 2014 and the ranges for historical maximum lines were noted on individual plots. Historically, the internal dam thermistors were not monitored as rigorously as the thermistors installed in the perimeter dams and have a shortened dataset ranging from 2014 to the present day as a result. Monitoring results are presented in Figures 3-1 to 3-4 on the following pages.

Figure 3-1: Dam 1A Thermistor Results

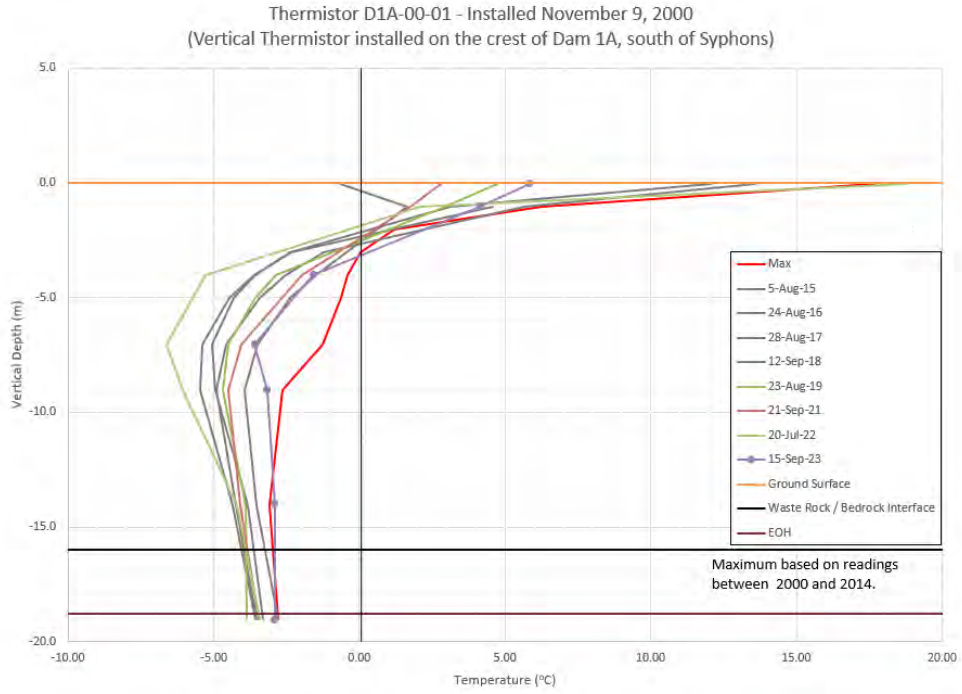


Figure 3-2: Dam 4-1 Thermistor Results

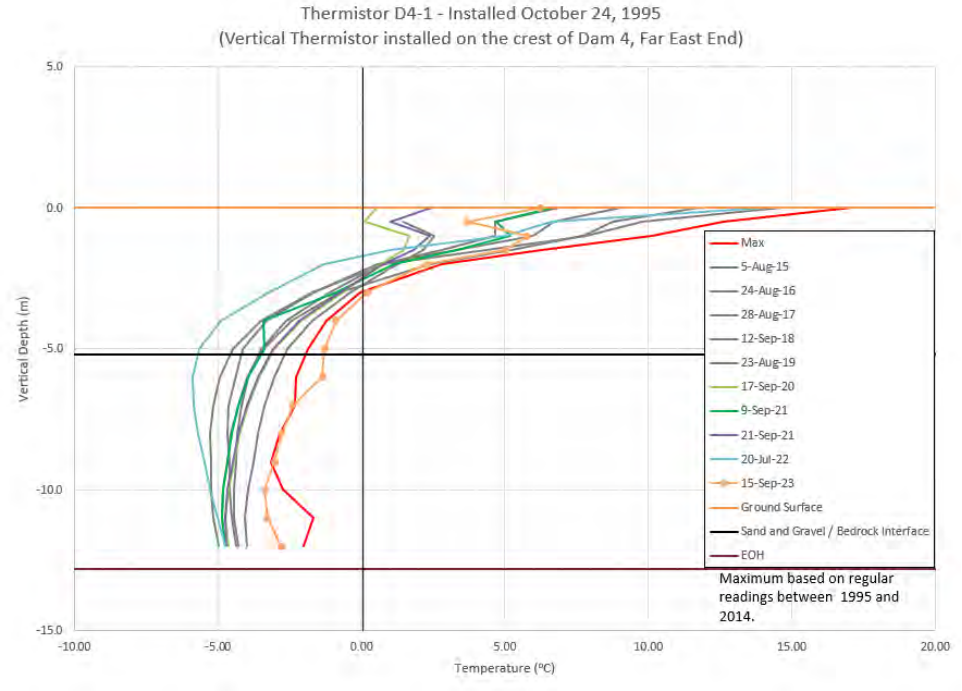


Figure 3-3: Dam 4-4 Thermistor Results

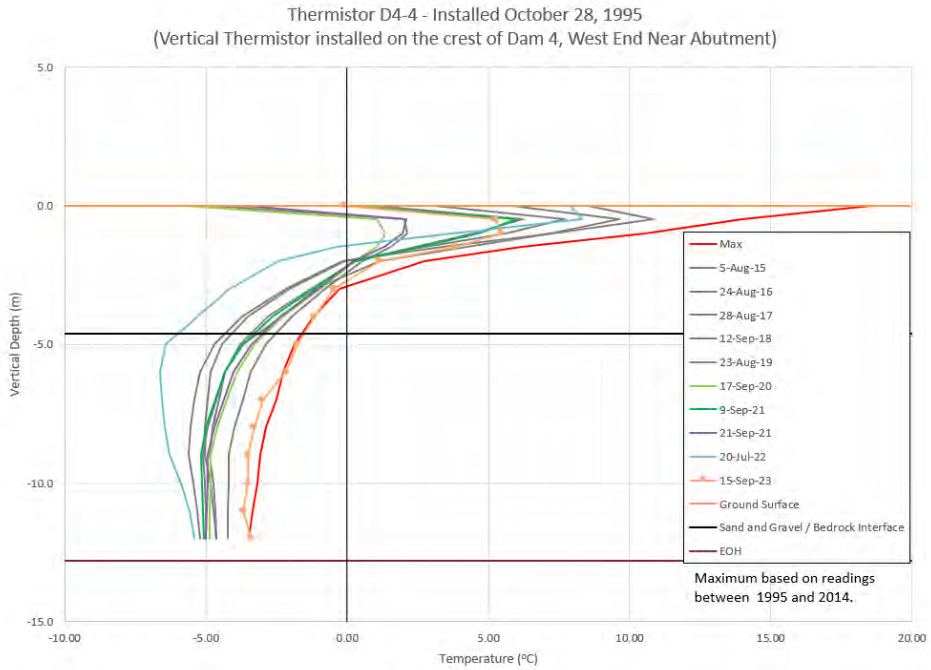
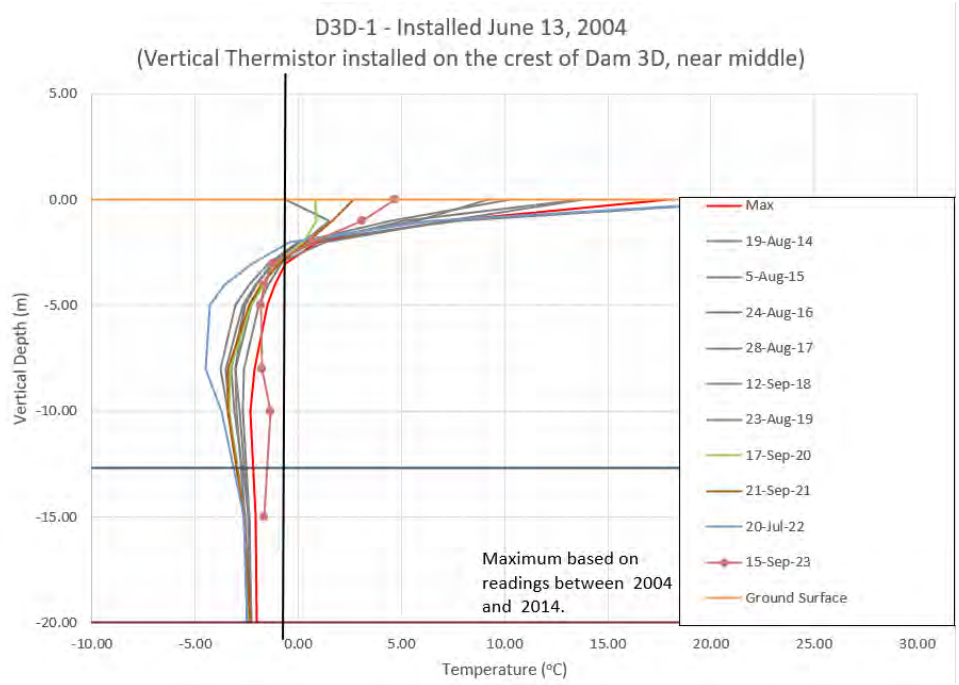


Figure 3-4: Dam 3D Thermistor Results



Based upon monitoring results, the active layer associated with annual summertime permafrost thaw ranges from 2 m to slightly over 3 m deep as interpreted by the 0°C gradient line. The data suggests that several thermistor beads were either at, or in excess of, historical maximums that have been plotted. Although temperatures were at, or in excess of, historical maximums, results indicated intact permafrost dam cores and foundations below the active zone.

Readings from the four thermistors installed in the tailings cover are not presented in this report.

3.2.2 Moisture Sensors

To provide insight related to historical performance of the cover, volumetric moisture sensors were installed in Cell 1 and Cell 3 covers in 2018. These instruments include a TEROS-12 VWC sensor that measures volumetric water content, temperature, and electrical conductivity. The sensor datalogger records results once every 12 hours. Cells 1 and 3 each have one string of five vertical sensors installed within the cover (C2VWC and C3-VWC). Sensor depths and other information is provided in Table 3-1.

Table 3-1: VWC Installation Details

VWC ID	Cell 1-1		Cell 3-1	
	Depth (m)	Material	Depth (m)	Material
Port 5	1.0	Fine Sand (Cover)	0.35	Sand and Gravel (Cover)
Port 4	1.2	Fine Sand (Cover)	0.5	Sand and Gravel (Cover)
Port 3	1.4	Fine Sand (Cover)	0.6	Sand and Gravel (Cover)
Port 2	1.6	Fine Sand (Cover)	0.7	Sand and Gravel (Cover)
Port 1	1.8	Tailings	1.0	Sand and Gravel (Cover)

The Mine Environment Neutral Drainage (MEND) Program (2009) demonstrates that a soil cover moisture content greater that 85% provides an effective barrier against oxidization. The intent of the sensor readings is to analyze the degree of saturation throughout the year at various depths within the cover material. It should be noted that sensors register ice as a dry void. Thus, as pore water freezes and ice forms, the moisture content readings in the sensors drops significantly, as visible for readings collected during the winter months.

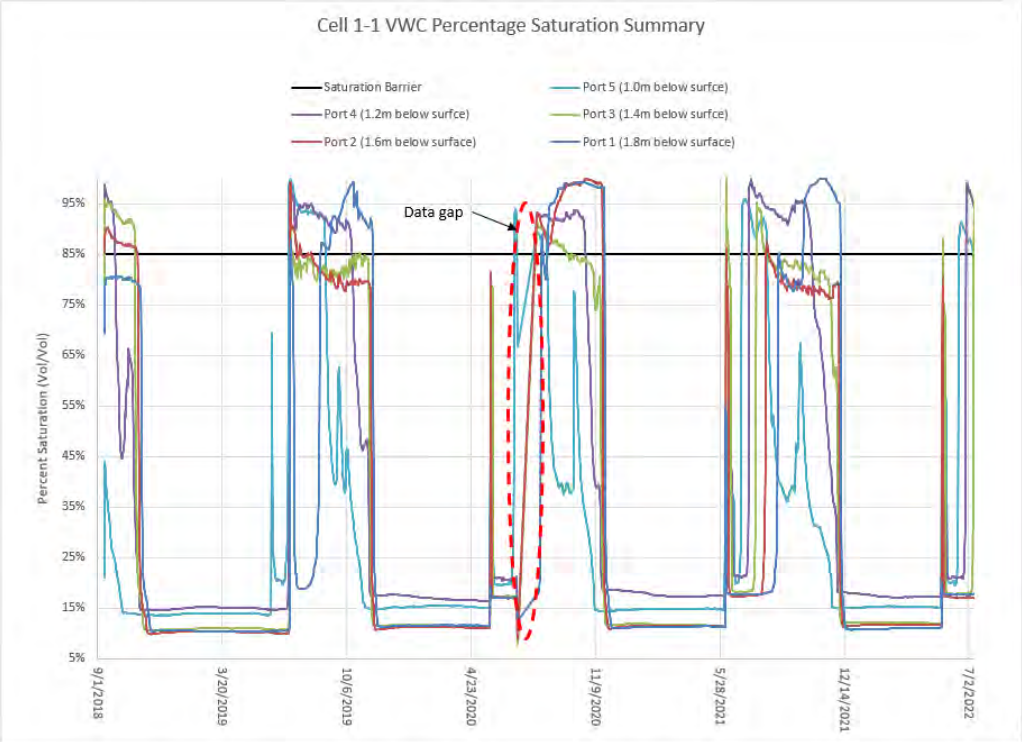
To calculate the volumetric water content from the readings, an assumed void ratio is assigned to each sensor string based on the cover material type. For the Cell 2 cover, the assumed void ratio has been assigned at 0.42, corresponding to a fine sand. At Cell 3, the assumed void ratio has been assigned at 0.33, corresponding to a gravelly sand.

Data collected from VWCs in 2023 was either corrupt or not reporting properly. Additional context related to VWC data and follow-up repair attempts will be required in 2024.

3.2.2.1 Cell 1-1 VWC

Figure 3-5 shows the percentage saturation for the VWC installed in the Cell 1 cover for 2022 and earlier.

Figure 3-5: Cell 1-1 VWC Percentage Saturation Summary



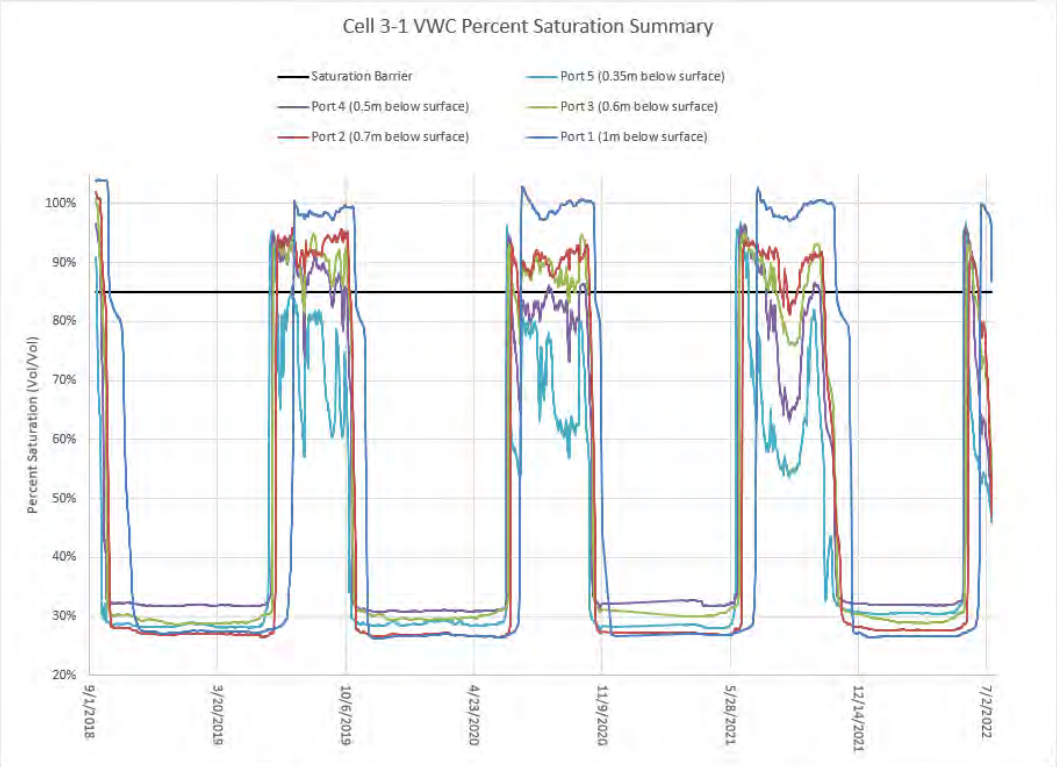
It should be noted that there is a gap in data collection between July 6th to August 7th, 2020. The cause of the data gap is unknown but has been noted for documentation. This data gap has been documented in previous DSI reports authored by Stantec.

3.2.2.2 Cell 3-1 VWC

In 2023, the VWC instrument installed in the Cell 3 cover surface (Cell 3-1 VWC) was not functioning as intended. Troubleshooting was performed for this instrument, but the teams onsite were not able to complete corrective repairs during the site visit. Additional effort will be required at this instrument to restore its functionality.

Figure 3-6, following, shows the measured percentage saturation for VWC in Cell 3 for the years 2018 to 2022.

Figure 3-6: Cell 3-1 Port 1 VWC Result



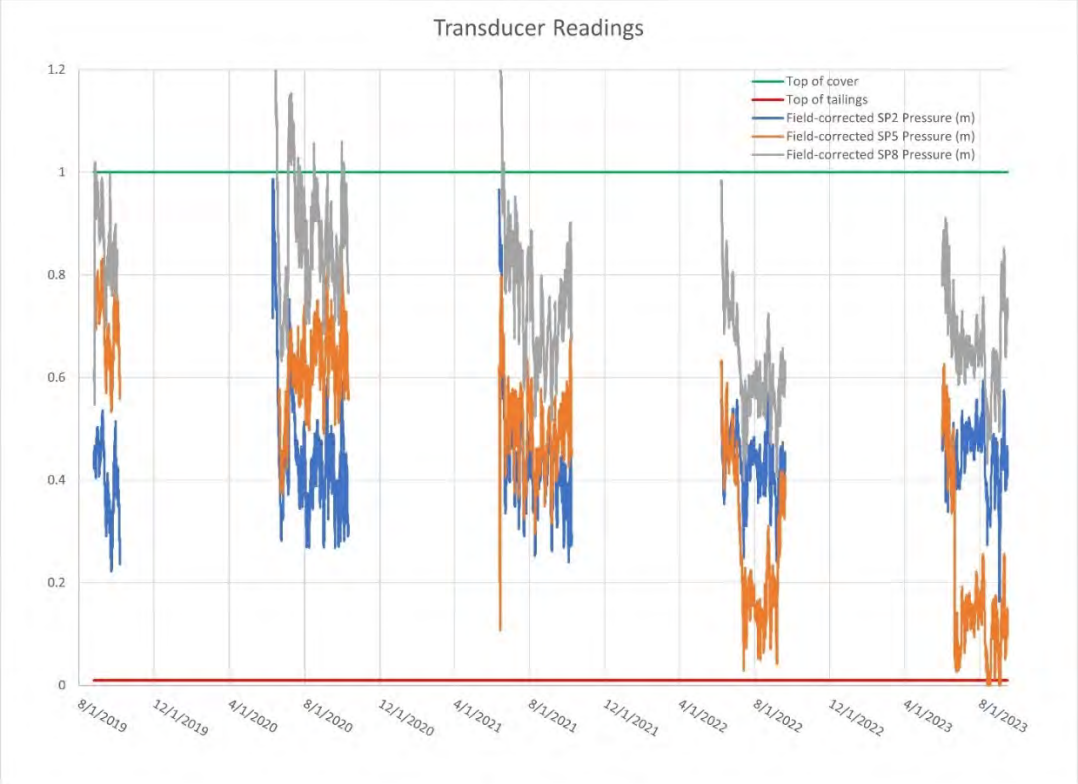
Most of the sensors demonstrate frozen conditions between October and June. The 2022 data indicated Port 4 moisture contents above 85% saturation once thawed. Ports 1, 2, and 3, which are situated deeper than Port 4, showed a variable trend but remain around 80% saturation. It was previously determined that the lower degree of saturation in Ports 1 through 3 could be the result of near freezing temperatures measured at depth. The VWC interprets frozen material as voids, thus reporting a lower degree of saturation. A similar assessment of the data will be required once repairs are made to this instrument and all data can be downloaded. For the 2023 report, observations are restricted to historical observations and data only.

3.2.3 Transducers

Three In-Situ Level TROLL 400 transducers and one In-Situ BaroTROLL transducer were installed in three standpipes in the Cell 1 cover in 2019. Based on historical information from Kinross (2006), the standpipes were installed to the tailings/cover contact. Transducers were installed a few centimetres off the bottom of the standpipe. The installation summaries indicate that there is approximately 1.0 m of cover thickness at the three transducer locations. These transducers provide insight into the historical performance of the tailings and helps in reconciling the VWC data. The transducers are programmed to record the depth of water above the sensor in each standpipe at 4-hour intervals. The transducers are winterized such that their functionality remains operational throughout the freezing period, but any water level readings recorded at temperatures below 0°C are not representative of real water/ice thickness.

Water level data downloaded from the transducers are provided in Figure 3-7.

Figure 3-7: Transducer Results



Data collected during the freezing period have been removed from the plots since these non-representative readings skew the scale for the real data collected in the non-freezing period (summer). Readings collected over the open-water period fluctuate in response to evaporation and precipitation events, but the general trend indicates that there was typically a minimum of 20 cm of water above the contact point of the tailings and cover material over the period of record. Any readings extending beyond the top of cover line plotted in Figure 3-7 indicates ponding on the cover surface.

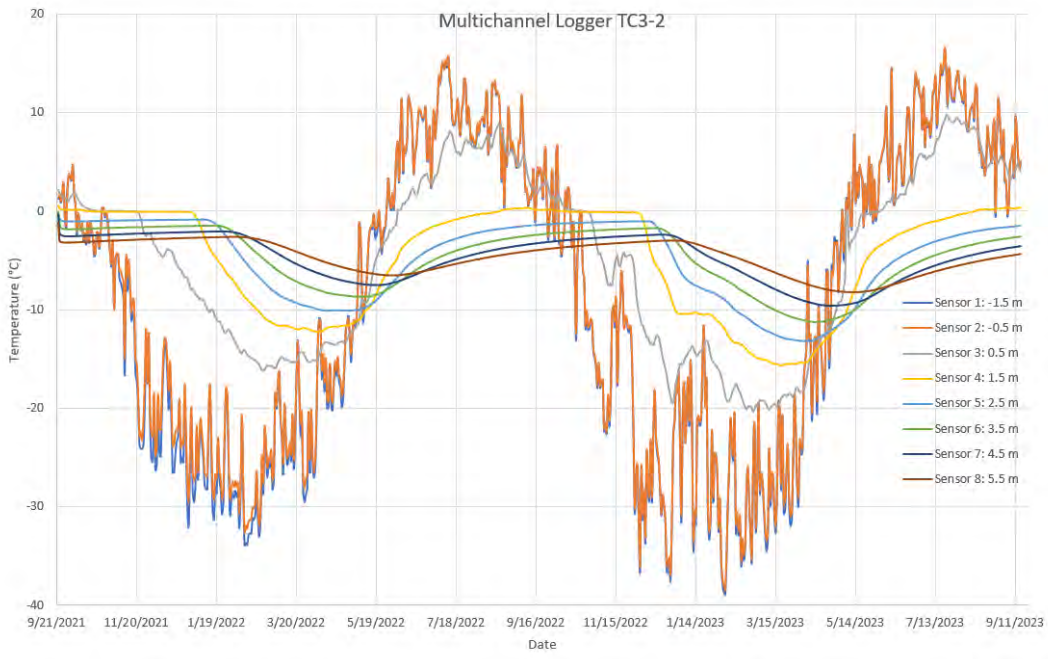
Instrument SP5 was noted to have been repositioned by weather. The EoR team noted that the transducer is not fixed and instead is hung inside the standpipe casing with the use of a low-weight rubber cover/sleeve. In 2023, the low-weight cover/sleeve was sitting on the ground, thereby pulling the instrument cable, and raising the elevation at which the transducer was originally placed. As a result of this in-situ positioning, readings at SP5 were approximately 20 cm lower for the duration of the 2022 and 2023 season. Although a field fix was attempted, this instrument should be revisited in 2024 to ensure the transducer is situated a few centimetres off the bottom of the standpipe as designed and the transducer should be permanently secured.

According to the data from the transducers, the cover and tailings are saturated at these locations, indicating that the cover is functioning as designed.

3.2.4 Multi-Channel Loggers

One multi-channel logger was installed in the Cell 3 cover surface in 2021 (Instrument ID: TC3-2). This instrument records temperature readings once per day at a variety of depths ranging from 1.5 m above ground surface to 5.5 m below ground surface. In total, eight sensors are functional at this instrument; sensors were installed at one metre intervals from 1.5 m above ground surface (Sensor 1) to 5.5 m below ground surface (Sensor 8). Recorded data from this instrument is presented in Figure 3-8, following.

Figure 3-8: Multichannel TC3-2 Data



Upon review of the data, the permafrost active layer was observed to be between 1.5 and 2.5 m depth at Cell 3. As expected, year-round temperature stability increases with depth.

3.3 PERIMETER DAMS

The perimeter dams (Dams 1A through Dam 6) were observed to be in stable condition. Minor variations in crest height (<1m) were observed at most dams.

On some of the upstream embankments of the perimeter dams, existing erosional features resulting from wave action below the high-water mark (HWM) were observed. Erosional features

related to wave action appear to be unchanged from previous years based on visual observation.

Some recently developed erosional features were identified on downstream embankments of the perimeter dams. These runoff eroded areas vary in size and geometry but appear to be made worse by small windrows created by road grading activities. These windrows trap and direct runoff to a single low spot on the dam crest, which produces a higher flow rate and enlarged volume off the dam crest when the windrow is breached. Existing features appeared to be similar in size and geometry when compared to 2023 observations. Since there was no active erosion ongoing at the time of inspection, these minor erosional features may be addressed during construction activities related to final closure spillway construction activities as part of the post-closure monitoring phase.

Once the final closure activities are completed, the water level across the TCA will be passively managed at elevations lower than the Dam 1A, 1B, 1C, Dam 2, and Dam 5 structure elevations such that these embankments will no longer be performing as water retaining structures.

Water levels within Pond 2 were estimated to be similar to those measured in 2022 based on historical survey data and comparisons of visual observations from the two years. As a result, the perimeter dam freeboard values were estimated to be greater than 5.0 m. This is greater than the minimum freeboard amount of 1.0 m required. Dams 1B, 1C, 5, and 6 did not have water at the toe of their upstream embankments due to low water levels.

Previous annual inspections noted seepage from the northern toe buttress at Dam 2. This seepage was historically collected in a seepage collection dam/pond downstream of Dam 2. Since 2021 closure activities, Pond 2 water levels have been maintained at a lower elevation than the seepage collection pond. This supports the conclusion that the source of water in the Dam 2 collection pond is not a result of seepage through, beneath, around, and/or under Dam 2, but instead is likely to be related to runoff from a small catchment area upgradient of this seepage collection pond. Ponded water was observed in the northern seepage collection dam/pond during the inspection. However, deviating from previous years, ponded water in the seepage collection pond was not pumped back into the TCA in 2023.

Numerous animal burrows, likely caused by Siksiks or Lemmings, were observed on perimeter embankments. Burrows were most common on western and southern slopes and near/at the dam crest. Observations related to animal burrows have been largely omitted from previous DSI reports. As such, 2023 will be the baseline year for future comparisons related to size, number, and extent of animal burrows in the perimeter dam embankments. Animal burrows are not expected to be a major concern for the structures due to reduced water levels across the TCA but may serve as a preferential seepage pathway upon elevated water levels and have the potential to convey warmer temperatures directly to material adjacent to the frozen dam core during open-water periods.

3.4 INTERNAL DAMS

Major earthworks activities were carried out/completed in previous years as part of the closure activities as well as routine maintenance. Compared to the previous three seasons, minimal work was performed at the TCA in 2023. Additional closure activities are expected to be advanced and or completed in the coming years, concurrent with the construction of a winter road spur to allow for additional equipment and material to be transported to site.

At J Dam, freeboard was estimated to be 3.0 m on September 16th. Dam 1A through Dam 1C were estimated to have over 5.0 m of freeboard based on the estimated water elevation at Pond 2. Finally, the Divider Dyke was estimated to have approximately 3.0 m of freeboard based on the invert elevation of the constructed spillway and the proximity of Cell 4 to the spillway floor elevation.

Cell N was fully covered as part of the 2022 closure activities. The surface water diversion ditch was constructed at the northern edge to limit run-on from the upstream area into the covered area. With the cover fully in place, there will be no freeboard concerns in Cell N.

An acidic seep was identified in 2023 at the northern edge of the Cell N placed cover surface where it ties into native tundra. Based on water quality readings, pH for runoff associated with this seep was measured to be between 3.48 and 4.79. The most acidic water tested at Cell N was found along the cover tie-in to the tundra, approximately 50 m downstream of the M Dam northern abutment. Iron precipitate was identified at this waterbody, presumably a result of its acidic nature.

Existing erosional features that were identified in previous DSIs and DSRs appeared to be similar in size, shape, and overall geometry based on observations collected in 2023. Additional fresh erosional features of various size were noted on upstream and downstream embankments by the inspection team. Small windrows created by road grading appear to be contributing to this issue as they trap and direct water to a single low spot on dam crests producing a higher volume of flow off the dam. Minor variations in crest height (<1m) were observed at most dams.

New, recent erosion was observed at several locations on the M Dam downstream embankment and crest. It is expected that these erosional features will be covered and remediated during the planned resloping works.

Existing erosional features related to wave action and scour appeared to be similar in size and extent to observations collected in previous years.

Fine-grained material (presumed tailings) has been confirmed as present between the Pond 2 closure shoreline and the proposed toe of M Dam resloping efforts. These were not previously observed due to comparatively higher water levels in all previous years. The technical team is assessing the area to identify required remediation.

The recent K Dam reslope appeared to be performing adequately. Some minor erosional features (rills) were identified. The thermistor on K Dam was damaged during regrading work in 2022 and has not yet been repaired. It is recommended that repairs be performed in 2024.

The Cell 3 tailings cover, drainage swale, and outfall structure incorporated in L Dam were completed in 2021. The drainage swale had multiple erosional gullies (estimated to be 30-50 cm deep and 2 m wide) situated adjacent to it. Some accumulation of sediment was also observed on the floor of the drainage swale. The outfall structure appeared to be functioning adequately and was not actively discharging water at the time of inspection.

The Cell 5 tailings cover and outfall structure incorporated in J Dam were completed in 2021. Minimal to no erosion has been noted for the added Cell 5 infrastructure. The tailings cover and outfall structure appeared to be functioning adequately and no active discharge was occurring at the time of inspection.

Presumed, exposed tailings were observed above the proposed closure elevations within Pond 1, Pond 2, and Cell 4. The technical team is working with the client and construction team to identify appropriate remediation techniques at these locations.

Acidic water was identified for a seep in the NW corner of Cell 4 as well as at the cover tie-in location near the northern extent of Cell N. The technical team is working with the client and construction team to identify appropriate remediation techniques at these locations.

No seepage or saturated areas were identified in the downstream toe areas.

3.5 SURFACE WATER SAMPLING

Fifteen water quality samples and concurrent field parameter readings were collected on September 15th and 16th, 2023 to identify TCA in-situ conditions. For the past three years, surface water samples were collected earlier in the season by Stantec as part of post-freshet sampling stipulated by the Water Licence. Although post-freshet samples were collected in July 2023, surface water samples were also collected during the DSI to allow for experienced personnel to be onsite to target potential items of concern previously identified by the greater Lupin technical team. Field readings were collected with a WTW 330i Conductivity/pH Meter and included conductivity, pH, and water temperature. The Conductivity/pH Meter was calibrated on the morning of September 15th using the three-point buffer method (calibration solutions included a pH of 4.0, 7.0, and 10.0). Water samples were packaged, transported, and delivered in coolers with ice packs to the ALS laboratory in Yellowknife on September 18th, 2023. Laboratory results were received on October 3rd and raw data exports have been included as Appendix C.

Water samples and concurrent field readings were collected from the following locations:

- Pond 2 – five locations (stations P2-A to P2-E),
- Pond 1 – three locations (station P1-A, P1-B, and P1-D),
- Cell 4 – four locations (stations C4-A to C4-C, and C4-E),

- Cell N – two locations (Cell N-Seep 1 and CN-Seep 2), and,
- Cell 4 – one location (Cell 4 seep).

Figure 3-9, following, presents a map of sampling locations. Field readings collected concurrently with water samples are tabulated in Table 3-2.

Figure 3-9: Water Sampling and Monitoring Points Overview

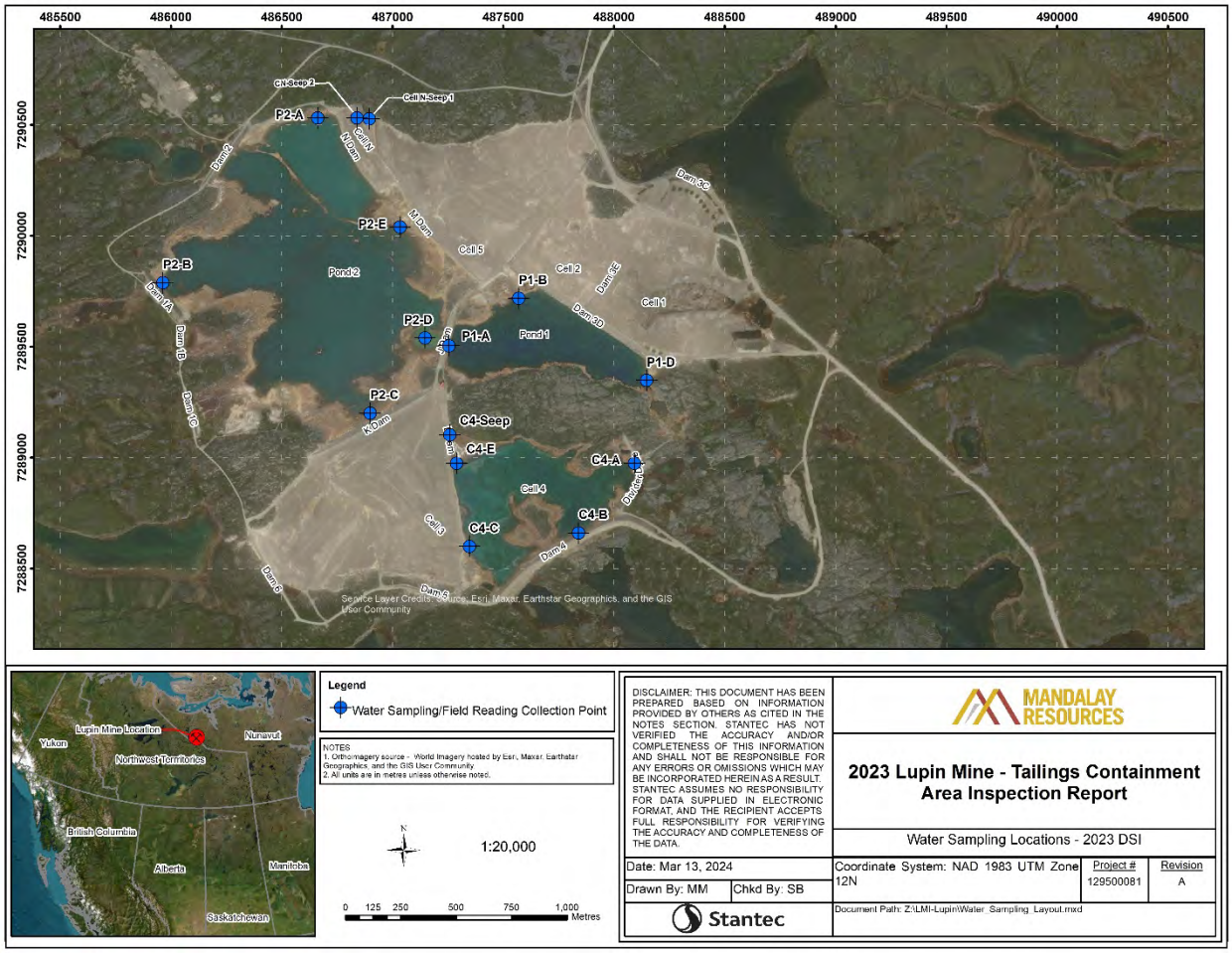


Table 3-2: Water Sampling Field Readings

Station ID	pH Reading (unitless)	Conductivity (µS/cm)	Temperature (°C)	Sample Collection Date and Time	Coordinates (NAD 1983 UTM Zone 12N)
P2-A	6.3	440	6.9	September 15, 2023, 08:00	7290531N, 486664E
P2-B	6.9	447	6.9	September 15, 2023, 08:20	7289795N, 485964E
P2-C	6.4	445	6.9	September 15, 2023, 08:45	7289200N, 486903E
P2-D	6.4	469	6.7	September 15, 2023, 09:00	7289538N, 487146E
P2-E	6.5	450	6.9	September 15, 2023, 09:20	7290047N, 487039E
P1-A	4.2	384	7.8	September 15, 2023, 09:40	729494N, 487258E
P1-B	4.2	380	7.9	September 15, 2023, 10:25	7289724N, 487557E
P1-D	4.7	368	7.9	September 15, 2023, 10:50	7289342N, 488149E
C4-A	3.3	836	6.8	September 15, 2023, 11:15	7288979N, 488099E
C4-B	3.4	834	7.1	September 15, 2023, 11:30	7288664N, 487840E
C4-C	3.4	840	7.1	September 15, 2023, 13:40	7288593N, 487344E
C4-E	3.6	808	7.4	September 15, 2023, 14:00	7288987N, 487287E
Cell N-Seep 1	3.5	364	5.5	September 15, 2023, 10:05	7290525N, 486891E
CN-Seep 2	4.8	575	5.5	September 16, 2023, 07:30	7290531N, 486840E
Cell 4 Seep	3.0	3.7	8.1	September 15, 2023, 14:20	7289119N, 487248E

4.0 RECOMMENDATIONS

Table 4-1 summarizes the observations and recommendations related to the 2023 inspection. For comparison purposes, the findings from the 2022 inspection report have been tabulated. Freeboard amounts were estimated by the inspection team based on photographic documentation and observations collected on September 14th to the 17th, 2023, compared to historical photos and survey data.

Table 4-1: Inspection Observations and Recommendations

Inspection Item	2023 Inspection			2022 Inspection	
	Estimated Freeboard (m)[2]	Observation	Recommendations	Observations	Recommendations
Perimeter Dams					
Dam 1A	5.71[2]	No progressive deterioration was observed for erosional features. The centre dewatering siphon was broken. Animal burrows present near crest.	Continue to monitor erosional features for progressive deterioration. If no deterioration is observed, make repairs during final spillway construction. Repair the centre siphon if additional dewatering capacity is anticipated. Monitor for increased animal activity and consider backfilling burrows.	No progressive deteriorations were observed for the historical erosion gullies on the embankments.	The erosion gullies should be monitored for any progressive deterioration. Otherwise, the repair can be done during the final spillway construction activities if deemed necessary.
Dam 1B	5.20[2]	No progressive deterioration was observed for erosional features. Animal burrows present near crest. The Pond 2 shoreline was located a significant distance from the upstream toe.	Monitor for increased animal activity and consider backfilling burrows.	No progressive deteriorations were observed for the historical erosion gullies on the embankments. Pond 2 water was approximately >50m upstream from the dam.	The erosion gullies should be monitored for any progressive deterioration. Otherwise, the repair can be done during the final spillway construction activities if deemed necessary.
Dam 1C	5.12[2]	Fresh erosional features were noted near the crest and on the downstream	Continue to monitor erosional features for progressive deterioration. Consider	No progressive deteriorations were observed for the historical erosion gullies on the embankments. Pond 2	The erosion gullies should be monitored for any progressive deterioration. Otherwise, the repair can be done during the final

Recommendations

Inspection Item	2023 Inspection			2022 Inspection	
	Estimated Freeboard (m)[(2)]	**Observation**	**Recommendations**	**Observations**	**Recommendations**
		embankment. The Pond 2 shoreline was located a significant distance from the upstream toe.	backfilling and compacting erosional features with well-graded esker sand and gravels and consider removing windrows from dam crest.	water was approximately >50m upstream from the dam.	spillway construction activities if deemed necessary.
Dam 2	5.76[(2)]	Historical erosional features were observed. The SW seepage collection pond was dry, the NW seepage collection pond contained presumed runoff. The Pond 2 water elevation was lower than the ponded water elevation at the seepage collection system. The damaged thermistor was not repaired. Pond 2 was contacting the upstream toe in some locations.	Continue to monitor erosional features for progressive deterioration. Consider backfilling and compacting erosional features with well-graded esker sand and gravels and consider removing windrows from dam crest. Pump water from seepage collection system back to Pond 2 (or other suitable location in the TCA).	The source of water in the collection pond was concluded not to be seepage from Pond 2 due to elevation difference. Water was pumped back into the TCA. Damaged thermistor was not repaired. Minor embankment erosion.	If new deformation is observed, perform surface maintenance e.g., grading and backfilling. Repair the thermistor if practicable.
Dam 3	No water is impounded by this dam	Tension cracking, erosional features, and animal burrows were observed. Volunteer vegetation is occurring on the tailings cover surface.	Monitor tension cracks and erosional features for progressive deterioration. Consider backfilling and compacting features and regrade if features persist. Monitor for	No progressive deteriorations were observed for the erosion gullies on the downstream embankment.	The erosion gullies should be monitored for any progressive deterioration.

Recommendations

Inspection Item	2023 Inspection			2022 Inspection	
	Estimated Freeboard (m)[2]	**Observation**	**Recommendations**	**Observations**	**Recommendations**
			increased animal activity and consider backfilling burrows.		
Dam 4	N/A[3]	Erosional features on the upstream and downstream embankments were observed. Historical erosional repairs appeared to be performing adequately. One of the three thermistors was not reporting results.	Consider backfilling and compacting erosional features and consider removing windrows from dam crest. Repair the thermistor if practicable.	Minor erosion on the embankment was repaired. One of the three thermistors is not reporting any readings.	Repair the thermistor if practicable.
Dam 5	N/A[1]	No progressive deterioration was observed for the historical erosional features.	Continue to monitor erosional features for progressive deterioration.	No progressive deteriorations were observed for the historical minor erosion on surface.	The erosion gullies should be monitored for any progressive deterioration.
Dam 6	N/A[1]	Erosional features were observed near the crest and downstream embankment. The surface water management feature added in 2021 appeared to be functioning adequately.	Continue to monitor erosional features for progressive deterioration. Consider backfilling and compacting features and removing windrows from dam crest.	No progressive deteriorations were observed for the historical erosion gullies.	The erosion gullies should be monitored for any progressive deterioration.
Internal Dams					

Recommendations

Inspection Item	2023 Inspection			2022 Inspection	
	Estimated Freeboard (m)[2]	**Observation**	**Recommendations**	**Observations**	**Recommendations**
Dam 3D	No water is impounded by this dam	Historical erosional features and wave-action erosion were noted. No progressive deteriorations were observed for the historical erosional features.	Continue to monitor the historical wave-action erosion and erosional features for any progressive deterioration.	No progressive deteriorations were observed for the historical embankment erosion.	The erosion gullies should be monitored for any progressive deterioration.
Dam J	3.00[2]	Historical wave-action erosion was noted. No progressive deterioration was observed for the historical wave-action erosion.	Continue to monitor the historical wave-action erosion for progressive deterioration. Update the Pond 1 closure elevation listed on the detailed design drawings to reflect recent discussions and design changes.	No progressive deteriorations were observed for the over-steepened slope resulting from previous high-water erosion.	The erosion gullies should be monitored for any progressive deterioration. Otherwise, the repair can be done during the final spillway construction activities if deemed necessary.
Dam K	N/A[1]	Overall, the recently completed embankment re-slope has been performing well. Minor erosional features (riling) were noted. A thermistor is damaged at this location.	Continue to monitor these rills and the re-sloped embankment for progressive deterioration. Complete repairs to the damaged thermistor.	Crest regraded and diversion berm constructed. Thermistor was damaged.	Monitor the resloped embankment for deformation. Repair the thermistor in 2023.
Dam L	N/A[4]	Presumed fresh erosional features were noted near the crest and	Monitor erosional features for progressive deterioration. Consider	No deteriorative erosion was observed at the outfall structure.	Monitor the outfall structure for deformation and performance issues.

Recommendations

Inspection Item	2023 Inspection			2022 Inspection	
	Estimated Freeboard (m)[2]	**Observation**	**Recommendations**	**Observations**	**Recommendations**
		downstream embankment at L Dam. The Cell 3 outfall structure incorporated in L Dam appeared to be functioning adequately. Discharge was not occurring at the time of inspection. The Cell 3 drainage swale had multiple erosional gullies and sediment accumulation was observed in the swale bottom. This was also noted by SLR Consulting in their DSR Report.	backfilling and compacting features and removing windrows from dam crest. Continue to monitor the outfall structure for deformation and/or performance issues. Work with the EoR and DSR Engineer to develop a long-term strategy to mitigate freshet-related erosion at the Cell 3 drainage swale.		
Dam M	N/A[4]	The Cell 5 outfall structure in J Dam appeared to be functioning adequately. Discharge was not occurring at the time of inspection. Fresh erosional features were noted near the crest and on the	Continue to monitor the Cell 5 outfall structure for deformation and/or performance issues. Complete resloping of the downstream embankment to the design 2.1H:1V. Continue to monitor fresh and historical	No progressive deteriorations were observed for deformations along M Dam.	Re-slope the downstream embankment to the designed 2.1H:1V for final closure.

Recommendations

Inspection Item	2023 Inspection			2022 Inspection	
	Estimated Freeboard (m)[2]	**Observation**	**Recommendations**	**Observations**	**Recommendations**
		downstream embankment at M Dam. Historical tension cracking/erosion appeared to be largely unchanged from historical observations. Fine-grained material (presumed tailings) exists at the M Dam toe area. This material was underwater prior to 2022 and has largely been uncharacterized. A similar observation was made by SLR Consulting in the DSR Report.	erosional features for progressive deterioration. If no progressive deterioration is observed, complete repairs to these features during re-sloping activities. Consider updating the stability model and designs to reflect the in-situ conditions at M Dam. Add 1 m of clean fill on the exposed tailings between the Pond 2 closure shoreline and the M Dam design toe. Update the Pond 2 closure elevation in the detailed design to reflect changes.		
Dam N	N/A[5]	Ponded water was present on and adjacent to the 1.0 m cover surface at Cell N – water sampling indicated that this water was acidic. No erosion was observed – the cover	Consider having a water quality specialist interpret the laboratory and field parameter results and identify potential improvements. Continue to monitor cell cover, N Dam, and the	The Cell N cover surface was fully constructed. A diversion ditch was built along the northern extent of Cell N to reroute freshet run-on. With the completion of the cover, freeboard will no longer be a concern for this dam.	Monitor the diversion ditch performance to ensure it is functioning as intended to reroute run-on.

Recommendations

Inspection Item	2023 Inspection			2022 Inspection	
	Estimated Freeboard (m)[2]	**Observation**	**Recommendations**	**Observations**	**Recommendations**
		surface and diversion ditches appeared to be performing well.	added diversion ditch for progressive deterioration.		
Divider Dykes	N/A[3]	The spillway incorporated in the Divider Dykes appeared to be functioning adequately. Discharge was not occurring at the time of inspection. A localized section of exposed geotextile was observed, though conditions appeared to be similar to historical observations. Historical tension cracks and erosional features appeared to be largely unchanged when compared to historical observations.	Continue to monitor the spillway for deformation and/or performance issues.	No progressive deteriorations were observed for historical seeps and/or embankment erosion.	Monitor the spillway for deformation and performance issues.

Notes:
1. Water is not adjacent to the dam to determine available freeboard.
2. Freeboard was last measured with survey equipment on July 5th, 2022. In 2023, freeboard was estimated by comparing historical photos and survey data with observations collected in 2023.
3. A spillway is constructed to passively manage water to be below the dam structure.
4. An outfall structure is constructed to passively manage water below the dam structure.
5. Cell has been covered in 1.0 m of esker material. Cover surface ties-in to the dam crest, no water is impounded in this cell as a result.

4.1 DAM 2 COLLECTION POND AND DSR

In response to 2022 dewatering, ponded water levels at Pond 2 remained lower than water impounded in the Dam 2 collection pond. In response to similar water level observations made in 2022, along with supporting water elevation survey data, the previous DSI concluded that the source of water in the collection pond is not seepage from Pond 2, but surface run-on from the surrounding native ground upgradient of the pond. The previous DSI recommended that operational procedures be reconsidered as the water in the pond should not be considered as impacted water. Based on the results of this DSI, this recommendation remains valid.

Previous DSI reports recommended that a dam safety review (DSR) be completed, as the most recent DSR was completed in 2015 by SRK Consulting. A DSR was completed in 2023 by Eric Sellars, P. Eng., of SLR Consulting. The DSR site visit overlapped with the DSI site visit, occurring from September 13th to September 16th. Preliminary findings were provided to Stantec which concluded that no serious stability concerns were identified during the DSR and observed issues were manageable. It is expected that the DSR report will be completed in April 2024.

4.2 MAINTENANCE AND CLOSURE PRIORITIES

The following maintenance and closure items documented in Table 4-1 should be prioritized:

1. Reslope Dam M in accordance with the closure design.
2. Design and execute remediation for the NW corner of Cell 4. This may include placement of clean esker material and a passive water treatment system to mitigate acidic seepage.
3. Design and execute improvements for managing the acidic seep(s) at Cell N.
4. Assess onsite conditions and develop detailed drawings for final spillway designs associated with Dam 1A, J Dam, and the two sewage lagoons.
5. Assess the Cell 3/Dam L drainage swale erosion issue for potential to worsen over time. If needed, identify and implement remediation which may include placement of rip-rap, regrading, realignment or other approaches.

After the completion of the priority maintenance, LMI should consider carrying out the following:

- Monitor the dam crests and embankments historic and developing erosional features. Fill and compact large and progressing erosional features (see Table 4-1 above) with well graded esker sand and gravel during spillway construction and resloping activities. Consider removing windrows from dam crests to reduce the extent to which ponded water can accumulate on the crests.

- Repair the thermistors at Dam 4 and Dam K.

- Secure instruments on mounting systems.

5.0 LIMITATIONS

This annual inspection report has been prepared for the sole benefit of Lupin Mines Inc. or its agent and may not be used by any third party without the express written consent of Stantec and LMI. Any use which a third party makes of this report is the responsibility of such third party.

The annual inspection performed by Stantec is based on information provided by others. Stantec has a right to reasonably rely on the information and data provided by LMI or obtained from generally acceptable sources within the industry without independent verification except to the extent such verification is expressly included in the services. Unless expressly stated otherwise, assumptions, data and information supplied by, or gathered from other sources upon which Stantec opinion as set out herein is based has not been verified by Stantec and Stantec makes no representation as to its accuracy and disclaims all liability with respect thereto.

The findings and conclusions in this annual inspection report are limited in terms of accuracy to the time, scope, and purpose for which the report was prepared and do not necessarily represent the conditions at any other time. An annual inspection is not intended to reflect the status of the dam for any significant period and reflects the current conditions at the time of issuance of the report. It is critical to note that the condition of the dams depends on numerous and constantly changing internal and external conditions and is evolutionary in nature. It would be incorrect to assume that the present conditions of the dams will continue to represent the condition of the dams in the future. Only through continued care and inspection can there be any chance that unsafe conditions will be detected. The information, opinions, and/or recommendations made in this report are in accordance with Stantec's present understanding of the site-specific project as described by LMI and observed by Stantec. The applicability of these is restricted to the site conditions encountered at the time of the investigation or study. If the proposed site-specific project differs or is modified from what is described in this report or if the site conditions are altered, this report is no longer valid unless Stantec is requested by LMI to review and revise the report to reflect the differing or modified project specifics and/or the altered site conditions.

Preparation of this report, and all associated work, was conducted in accordance with the normally accepted standard of care for the specific professional service provided to LMI. No other warranty is made and Stantec does not guarantee the performance of the project in any respect, only that its engineering work and judgements rendered meet the standard of care.

Should any site or sub-surface conditions be encountered that are different from those described in this report, Stantec must be notified immediately to assess if the varying or unexpected conditions are substantial and if reassessments of the report conclusions or recommendations are required. Stantec will not be responsible to any party for damages incurred as a result of failing to notify Stantec that differing site or sub-surface conditions are present upon becoming aware of such conditions.

6.0 REFERENCES

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Appendix A PHOTOGRAPHIC LOG

Photo 1: Overview of the Dam 1A crest as viewed from near the right (northwest) abutment.

Photo 2: Overview of the Dam 1A crest and upstream embankment.

Photo 3: Overview of the downstream embankment at Dam 1A.

Photo 4: Dewatering siphons routed over the crest of Dam 1A. As outlined in red, the centre dewatering siphon was broken at the time of inspection. The remaining two appeared to be functional but were not utilized for Pond 2 drawdown in 2023.

Photo 5: Close-up view of an animal burrow located approximately one metre below the crest. Minor erosional features (rills and small gullies) were also observed in the vicinity of this animal burrow.

Photo 6: Exposed geotextile and existing, minor erosional features on the downstream embankment at Dam 1A.

LMI	Lupin Mines Incorporated
	2023 Dam Safety Inspection
Site Inspection Photograph Log for Dam 1A	
Stantec	PN: 169523685 FIGURE 1 REV. A

Photo 7: Overview of the crest at Dam 1B.

Photo 8: Overview of the downstream embankment and toe area at Dam 1B.

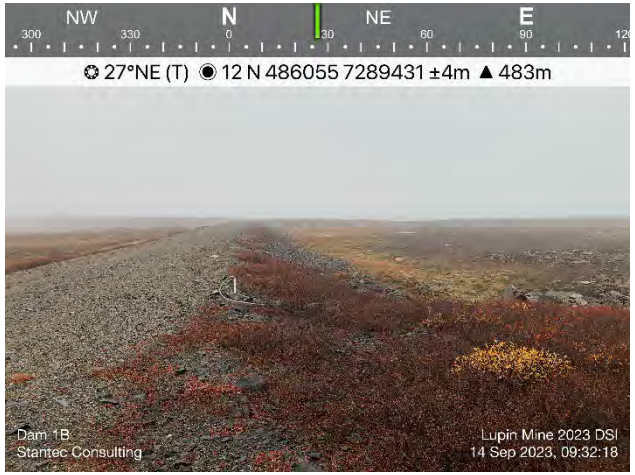


Photo 9: Overview of the crest and upstream embankment at Dam 1B.

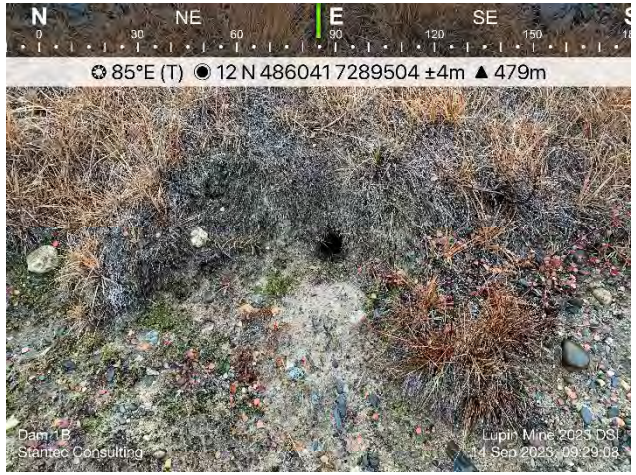


Photo 10: A small animal burrow situated near the crest of Dam 1B.

Photo 11: General conditions at Dam 1B at the time of inspection.

LMI	Lupin Mines Incorporated		
	2023 Dam Safety Inspection		
Site Inspection Photograph Log for Dam 1B			
Stantec	PN: 169523685	FIGURE 2	REV. A

Photo 12: Overview of the crest and upstream embankment at Dam 1C.

Photo 13: Overview of the downstream embankment and toe area at Dam 1C.

Photo 14: Instance of a small erosional feature extending from the crest to the downstream embankment at Dam 1C.

Photo 15: Overview of the crest and the north seepage collection pond at Dam 2. The seepage collection pond had water present at the time of inspection, presumably related to runoff and not seepage.

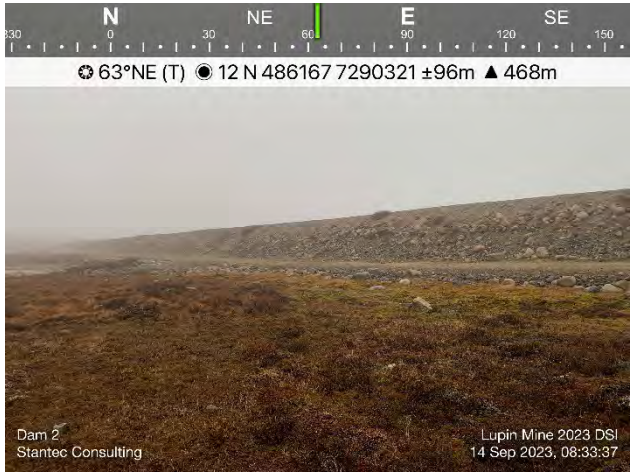


Photo 16: The downstream embankment and toe area at Dam 2.

Photo 17: The upstream embankment at Dam 2.

LMI	**Lupin Mines Incorporated**		
	2023 Dam Safety Inspection		
Site Inspection Photograph Log for Dam 1C and 2			
Stantec	PN: 169523685	FIGURE 3	REV. A

Photo 18: Overview of the crest at Dam 3.

Photo 19: Tension cracking on the downstream embankment.

Photo 20: Overview of the existing tailings cover at Dam 3.

Photo 21: Overview of the surface water management feature at Dam 3.

Photo 22: An erosional feature situated near the crest and on the downstream embankment of Dam 3.

Photo 23: Animal burrow located near the crest of Dam 3.

LMI	**Lupin Mines Incorporated**		
	2023 Dam Safety Inspection		
Site Inspection Photograph Log for Dam 3			
Stantec	PN: 169523685	FIGURE 4	REV. A

Photo 24: Overview of the crest at Dam 4.

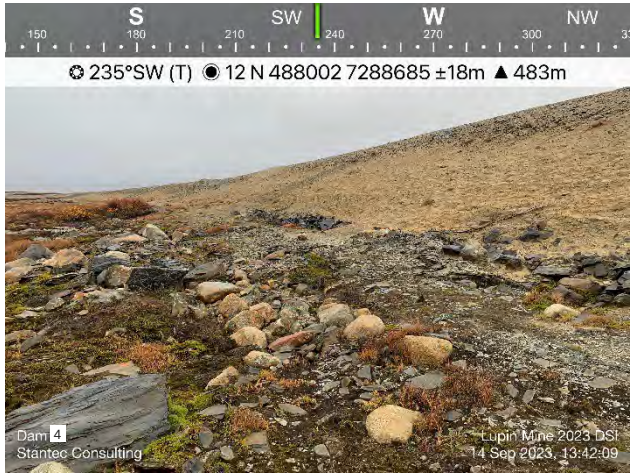


Photo 25: The downstream embankment and toe area at Dam 4.

Photo 26: Overview of the crest and upstream embankment at Dam 4.

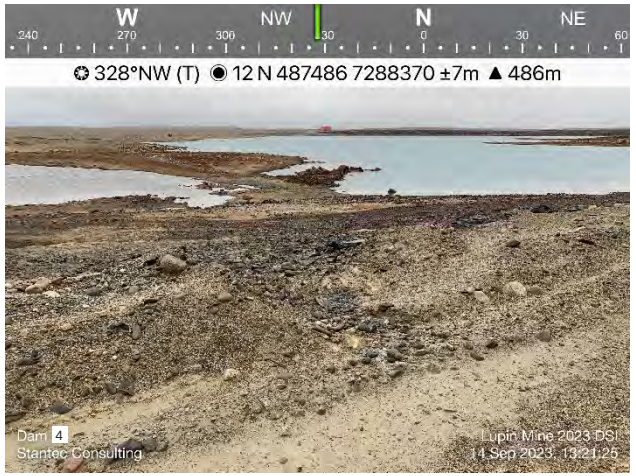


Photo 27: A small erosional feature located near the crest and on the upstream embankment of Dam 4.

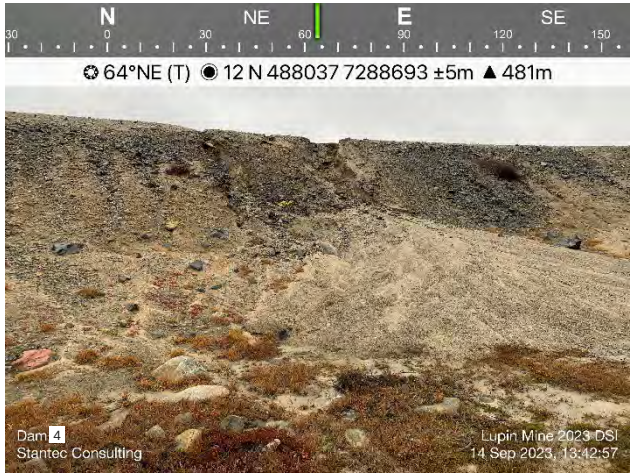


Photo 28: Overview of an existing erosional feature on the downstream embankment at Dam 4.

Photo 29: Overview of a previously repaired erosional feature on the downstream embankment at Dam 4.

LMI	**Lupin Mines Incorporated**		
	2023 Dam Safety Inspection		
Site Inspection Photograph Log for Dam 4			
Stantec	PN: 169523685	FIGURE 5	REV. A

Photo 30: Overview of the crest at Dam 5.

Photo 31: Overview of the upstream embankment at Dam 5.

Photo 32: The downstream embankment and toe area at Dam 6.

Photo 33: Overview of the crest, downstream embankment, and toe area at Dam 6.

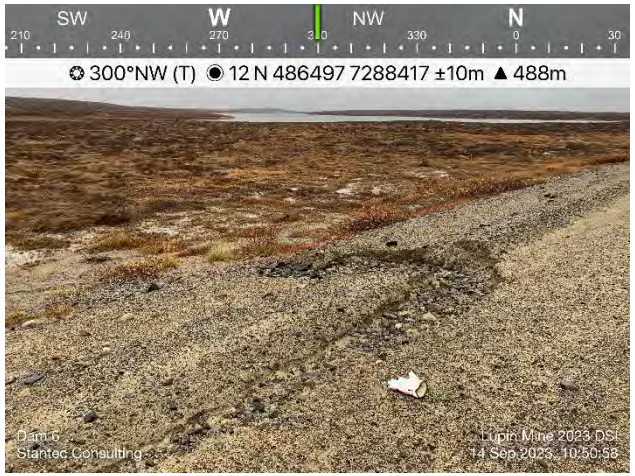


Photo 34: An erosional feature situated near the crest on the downstream embankment at Dam 6.

Photo 35: Overview of the surface water management feature constructed during 2021's freshet period.

LMI	**Lupin Mines Incorporated**		
	2023 Dam Safety Inspection		
Site Inspection Photograph Log for Dams 5 and 6			
Stantec	PN: 169523685	FIGURE 6	REV. A

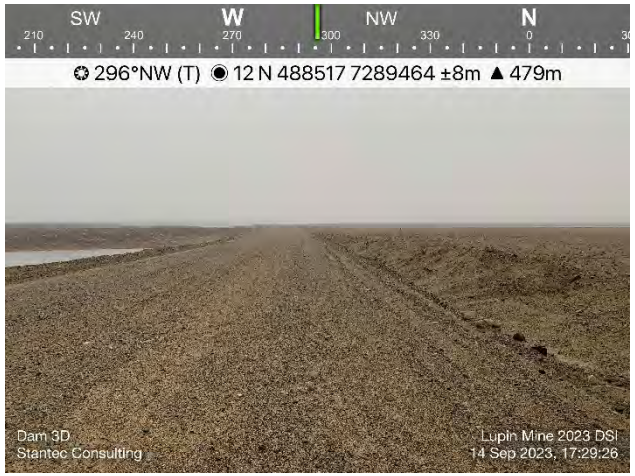


Photo 36: Overview of the crest at Dam 3D.

Photo 37: Overview of the downstream embankment at Dam 3D.

Photo 38: Existing erosional feature near the crest on the downstream embankment at Dam 3D.

Photo 39: The upstream embankment at J Dam.

Photo 40: Downstream embankment at J Dam.

Photo 41: Overview of the Cell 5 outfall structure that was incorporated in J Dam in 2021.

LMI	**Lupin Mines Incorporated**		
	2023 Dam Safety Inspection		
Site Inspection Photograph Log for Dam 3D, Dam J, and the Cell 5 Outfall Structure			
Stantec	PN: 169523685	FIGURE 7	REV. A

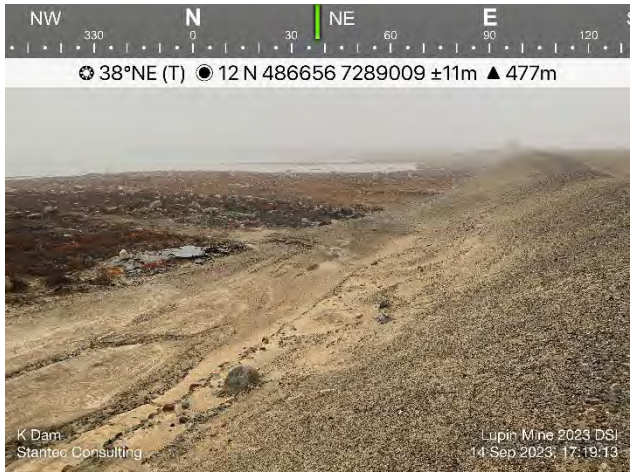


Photo 42: The downstream embankment and toe area at K Dam as viewed from near its left (SW) abutment.

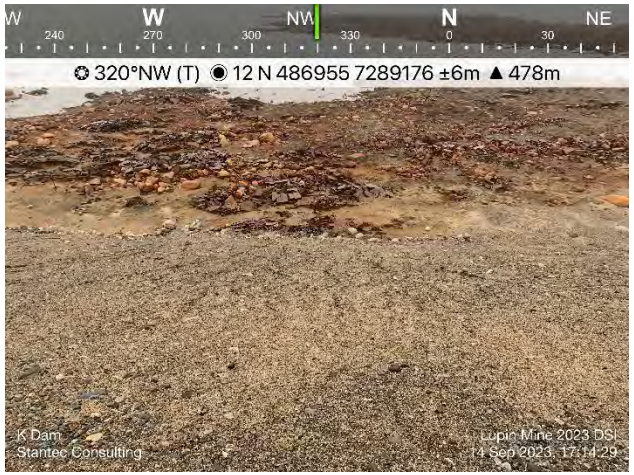


Photo 43: Rilling on the downstream embankment at K Dam.

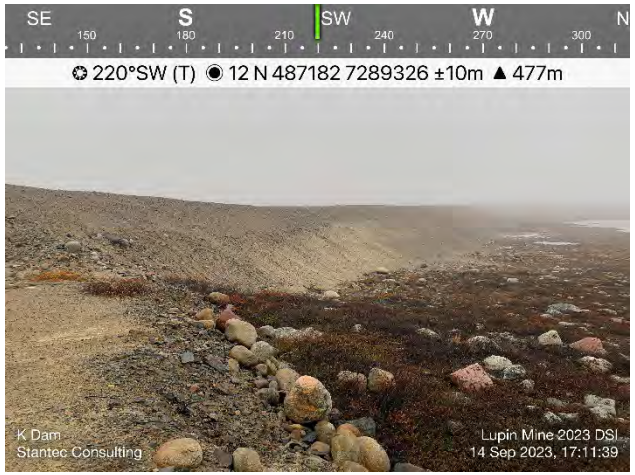


Photo 44: Overview of the K Dam downstream embankment and toe area as viewed from near its right (NE) abutment.

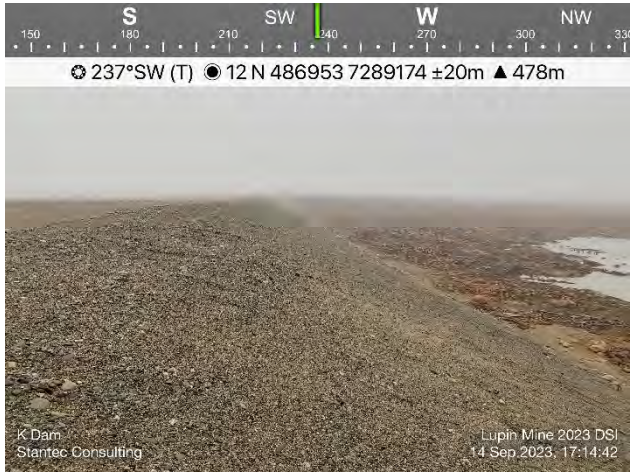


Photo 45: Overview of the K Dam embankment as viewed from the approximate centreline location.

LMI	**Lupin Mines Incorporated**		
	2023 Dam Safety Inspection		
Site Inspection Photograph Log for Dam K			
Stantec	PN: 169523685	FIGURE 8	REV. A

Photo 46: The downstream embankment and existing wave-action erosion at L Dam.

Photo 47: The downstream embankment at L Dam.

Photo 48: Existing erosional feature near the crest and on the downstream embankment at L Dam.

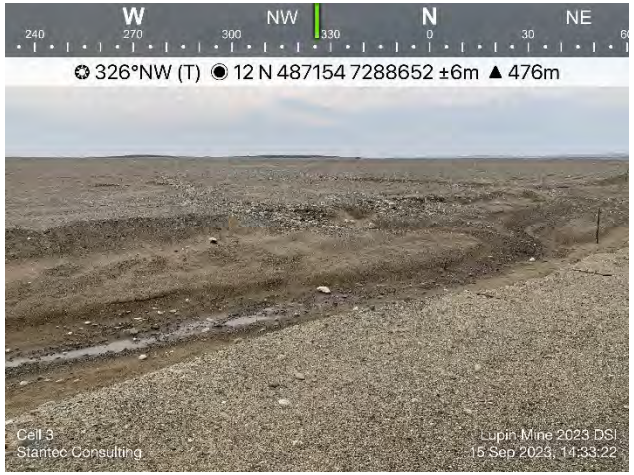


Photo 49: Overview of the Cell 3 drainage swale and localized erosional features adjacent to/within the swale.

Photo 50: Overview of the Cell 3 drainage swale and localized erosional features adjacent to/within the swale.

Photo 51: Overview of the Cell 3 outfall structure that was incorporated in L Dam .

LMI	**Lupin Mines Incorporated**	
	2023 Dam Safety Inspection	
Site Inspection Photograph Log for Cell 3 Outfall Structure, Drainage Ditch, and Dam L		
Stantec	PN: 169523685	FIGURE 9 REV. A

Photo 52: Overview of the crest at M Dam.

Photo 53: Fresh erosional features on the downstream embankment at M Dam.

Photo 54: Existing tension cracking and erosion on the crest of M Dam.

Photo 55: Fresh erosional feature on the crest and downstream embankment at M Dam.

Photo 56: The crest and downstream embankment at N Dam.

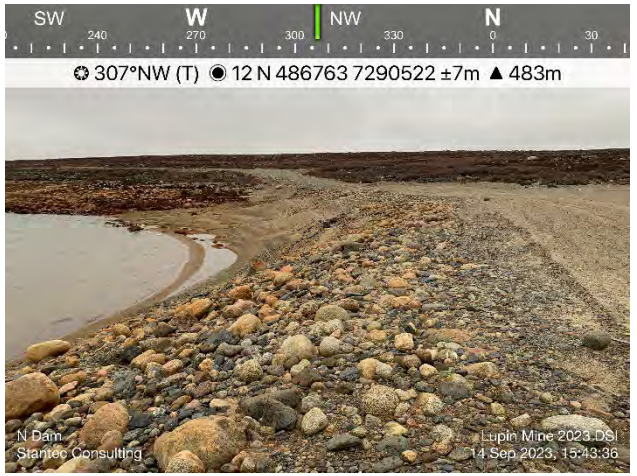


Photo 57: Overview of the downstream embankment at N Dam.

LMI	**Lupin Mines Incorporated**		
	2023 Dam Safety Inspection		
Site Inspection Photograph Log for Dams M and N			
Stantec	PN: 169523685	FIGURE 10	REV. A

Photo 58: Overview of the North Divider Dyke as viewed from near its left (north) abutment.

Photo 59: Overview of the South Divider Dyke crest as viewed from near its right (south) abutment.

Photo 60: Existing erosional feature near the crest and on the embankment of the South Divider Dyke.

Photo 61: Existing tension crack on the crest near the downstream embankment on the South Divider Dyke.

Photo 62: Exposed geotextile at the Cell 4 spillway.

Photo 63: Overview of the Cell 4 spillway added to the Divider Dykes in 2021.

LMI	**Lupin Mines Incorporated**	
	2023 Dam Safety Inspection	
Site Inspection Photograph Log for the Divider Dykes and Cell 4 Spillway		
Stantec	PN: 169523685	FIGURE 11 REV. A

Photo 64: Overview of conditions at the north emergency tailings dump pond at the time of inspection.

Photo 65: Overview of conditions at the south emergency tailings dump at the time of inspection.

LMI	**Lupin Mines Incorporated**	
	2023 Dam Safety Inspection	
Site Inspection Photograph Log for Emergency Tailings Dump Ponds		
Stantec	PN: 169523685	FIGURE 12 REV. A

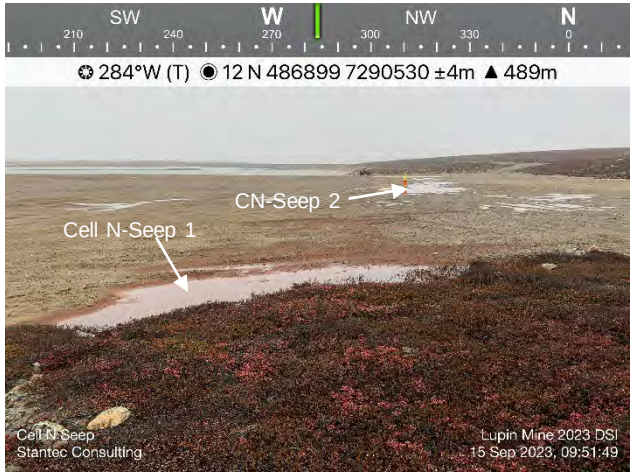


Photo 66: Overview of standing water on the cover surface at Cell N and water sampling points.

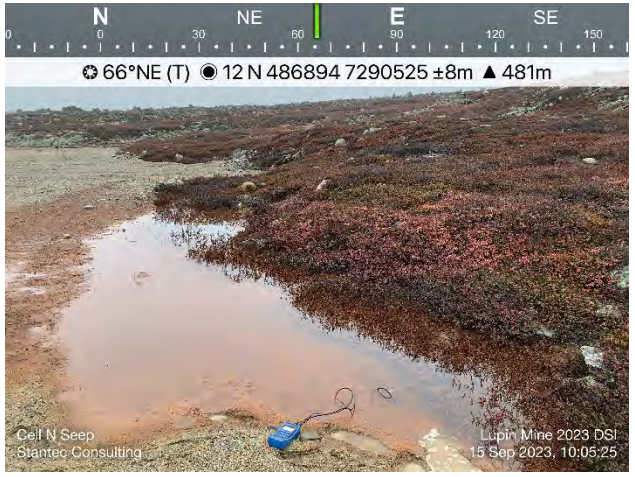


Photo 67: Sample ID Cell N-Seep 1 was collected from this waterbody situated against the native tundra at the Cell N cover tie-in point. Field readings indicated a pH of 3.48 at this location.

Photo 68: Sample ID CN-Seep 2 was collected from this waterbody situated on the Cell N cover. Field readings indicated a pH of 4.79 at this location.

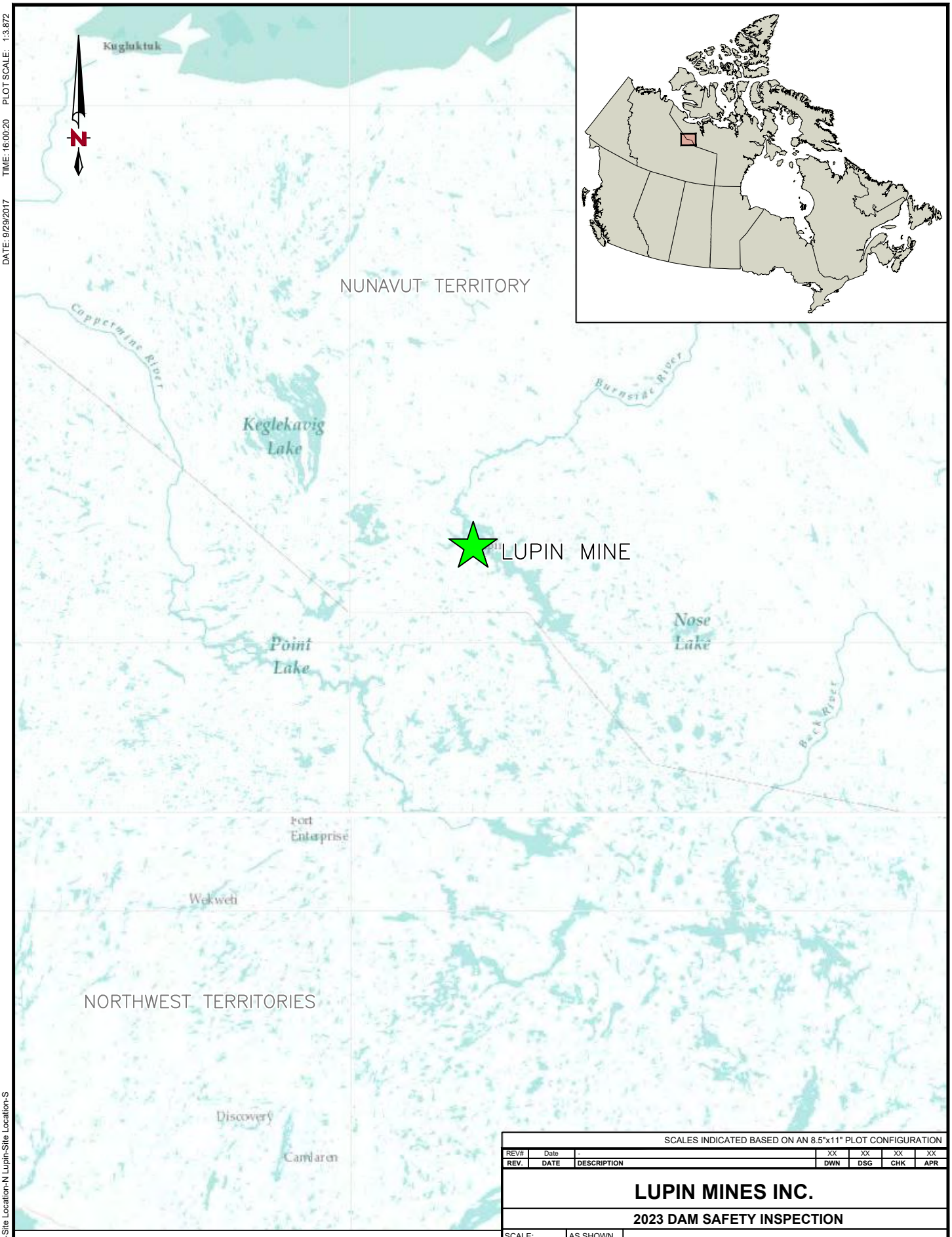
Photo 69: Overview of the NW corner of Cell 4 and the acidic seep.

Photo 70: Close-up view of the point of outflow (outlined in red) for the acidic seep at the NW corner of Cell 4. Water was actively flowing from this acidic source at the time of sample collection.

Photo 71: A water quality sample was collected just downstream of the point of outflow for the Cell 4 acidic seep. Field readings indicated a pH of 2.95 at this location.

LMI	**Lupin Mines Incorporated**		
	2023 Dam Safety Inspection		
Site Inspection Photograph Log for Acidic Seep Water Sampling			
Stantec	PN: 169523685	FIGURE 13	REV. A

Appendix B SITE FIGURES



SCALES INDICATED BASED ON AN 8.5"x11" PLOT CONFIGURATION

REV#	Date	-	XX	XX	XX	XX
REV.	DATE	DESCRIPTION	DWN	DSG	CHK	APR

LUPIN MINES INC.

2023 DAM SAFETY INSPECTION

SCALE:	AS SHOWN
DATE:	2016-10-20
CO-ORD. SYS.:	UTM-NAD83-12
DRW'N BY:	KM
DSG'N BY:	--
REV'D BY:	AT
APP'D BY:	SE

SITE LOCATION

Stantec

PROJECT NO.:	FIG. NO.:	REV.:
169523685	1	A

DATE: 9/29/2017 TIME: 16:00:20 PLOT SCALE: 1:3,872

FILENAME: Z:\924-2_DSI\DISC\DRAFTING\01.SITE LOCATION.DWG
XREF FILE(S):
IMAGE FILE(S): Lupin-Site Location-N Lupin-Site Location-S

1000m 500 0 1000 2000 3000m

SCALE 1:50,000

SCALES INDICATED BASED ON AN 8.5"x11" PLOT CONFIGURATION

REV#	Date	-	XX	XX	XX	XX
REV.	DATE	DESCRIPTION	DWN	DSG	CHK	APR

LUPIN MINES INC.

2023 DAM SAFETY INSPECTION

SCALE:	AS SHOWN
DATE:	2016-10-20
CO-ORD. SYS.:	UTM-NAD83-12
DRW'N BY:	KM
DSG'N BY:	--
REV'D BY:	AT
APP'D BY:	SE

SITE OVERVIEW

Stantec

PROJECT NO.:	FIG. NO.:	REV.:
169523685	2	A

PLOT SCALE: 1:3,872
TIME: 16:03:34
DATE: 9/29/2017

FILENAME: Z:\924-2_DSI\DISC\DRAFTING\02.SITE OVERVIEW.DWG
XREF FILE(S):
IMAGE FILE(S): Lupin-NE Lupin-NW Lupin-SW lupin_mine_wv2_2012aug21_north lupin_mine_wv2_2012aug21_south

LEGEND

THERMISTORS STATUS

- ACTIVELY MONITORED
- STANDPIPE
- ATMOSPHERIC PRESSURE GAUGE
- HYDRAULIC WATER LEVEL TRANSDUCERS
- VOLUMETRIC WATER CONTENT SENSOR STRINGS

500m 0 500 1000m

SCALE 1:20,000

SCALES INDICATED BASED ON AN 8.5"x11" PLOT CONFIGURATION

LUPIN MINES INC.

TAILINGS CONTAINMENT STUDY AREA

SCALE:	AS SHOWN
DATE:	2022.08.19
CO-ORD. SYS.:	CSRS.UTM-8N
DRW'N BY:	KM
DSG'N BY:	--
REV'D BY:	AT
APP'D BY:	SE

TAILINGS CONTAINMENT AREA

Stantec

PROJECT NO.:	FIG. NO.:	REV.:
169523685	3	0

FILENAME: \\CA0200-PPFSS01\SHARED_PROJECTS\129500081\DISC\DRAFTING\07 WATER LEVEL INSTRUMENTATION\WATER LEVEL INSTRUMENTATION.DWG
XREF FILE(S):
IMAGE FILE(S): 2021 TCA ortho mosaic 10cm lupin mine wv2 2012aug21 north lupin mine wv2 2012aug21 south
DATE: 8/22/2022 TIME: 08:50:27 PLOT SCALE: 1:3,872

Appendix C WATER SAMPLING LABORATORY RESULTS

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **YL2301151**	Page	: 1 of 10
Client	: **Elgin Mining Inc.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Karyn Lewis	Account Manager	: Oliver Gregg
Address	: 750 West Pender Street Suite 201 Vancouver BC Canada V6C 2T7	Address	: 314 Old Airport Road, Unit 116 Yellowknife NT Canada X1A 3T3
Telephone	: 604 682 3366	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 18-Sep-2023 10:00
PO	: ----	Date Analysis Commenced	: 22-Sep-2023
C-O-C number	: ----	Issue Date	: 03-Oct-2023 09:48
Sampler	: Michael Mahowald		
Site	: ----		
Quote number	: YL23-ELMI100-001		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Ilnaz Badbezanchi	Supervisor - Metals Prep & Mercury	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Nik Perkio	Inorganics Analyst	Inorganics, Waterloo, Ontario
Owen Cheng		Metals, Burnaby, British Columbia
Parnian Sane	Analyst	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.
Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior 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.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLA	*Detection Limit adjusted for required dilution.*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
DTSE	*Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID: C4-A: 12N 488099E 7288979N	C4-B: 12N 487840E 7288664N	C4-C: 12N 487344E 7288593N	C4-E 12N 487287E 7288987N	C4-Seep: 12N 487248E 7289119N
Client sampling date / time					15-Sep-2023 11:15	15-Sep-2023 11:30	15-Sep-2023 13:40	15-Sep-2023 14:00	15-Sep-2023 14:20
					YL2301151-001	YL2301151-002	YL2301151-003	YL2301151-004	YL2301151-005
					Result	Result	Result	Result	Result
Physical Tests									
Acidity (as CaCO3)	----	E283/VA	2.0	mg/L	55.8	53.0	52.5	78.5	1650
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Conductivity	----	E100/VA	1.0	µS/cm	817	844	891	894	3700
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L	194	197	202	203	1260
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L	192	195	198	223	1230
pH	----	E108/VA	0.10	pH units	3.47	3.38	3.33	3.35	2.74
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	495	498	507	526	4640
Solids, total suspended [TSS]	----	E160-L/VA	1.0	mg/L	<1.0	6.6	12.2	845	84.2
Anions and Nutrients									
Bromide	24959-67-9	E235.Br-U/VA	0.0050	mg/L	0.235	0.231	0.234	0.222	0.119
Chloride	16887-00-6	E235.Cl-L/VA	0.10	mg/L	20.3	20.3	20.3	20.6	12.8
Fluoride	16984-48-8	E235.F-L/VA	0.010	mg/L	0.194	0.199	0.210	0.215	1.98
Nitrate (as N)	14797-55-8	E235.NO3-T/VA	0.0030	mg/L	0.0376	0.0390	0.0956	0.0340	0.0620
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	<0.0050 DLDS	<0.0050 DLDS	<0.0050 DLDS	<0.0050 DLDS	<0.0200 DLDS
Sulfate (as SO4)	14808-79-8	E235.SO4-L/VA	0.050	mg/L	306	304	319	322	2800
Cyanides									
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0050	mg/L	<0.0200 DLM	<0.0050	<0.0050	0.103	0.0144
Total Metals									
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	2.89	2.90	3.20	9.11	48.0
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00050 DLA	<0.00100 DLA
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L	0.264	0.332	0.446	5.68	22.8
Barium, total	7440-39-3	E420/VA	0.00010	mg/L	0.0243	0.0245	0.0254	0.0628	0.00858
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L	0.000349	0.000370	0.000376	0.000517	0.00471
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000547	<0.000500 DLA
Boron, total	7440-42-8	E420/VA	0.010	mg/L	0.062	0.065	0.062	0.070	<0.100 DLA
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L	0.000244	0.000270	0.000274	0.000317	0.00170

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	C4-A: 12N 488099E 7288979N	C4-B: 12N 487840E 7288664N	C4-C: 12N 487344E 7288593N	C4-E 12N 487287E 7288987N	C4-Seep: 12N 487248E 7289119N
					Client sampling date / time	15-Sep-2023 11:15	15-Sep-2023 11:30	15-Sep-2023 13:40	15-Sep-2023 14:00	15-Sep-2023 14:20
						YL2301151-001	YL2301151-002	YL2301151-003	YL2301151-004	YL2301151-005
						Result	Result	Result	Result	Result
Total Metals										
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		58.4	59.8	60.0	65.8	327
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000081	0.000088	0.000169	0.00318	0.00119
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		0.00162	0.00185	0.00306	0.0174	0.0258
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		0.0748	0.0744	0.0831	0.0795	0.415
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.123	0.119	0.118	0.161	0.252
Iron, total	7439-89-6	E420/VA	0.010	mg/L		7.19	7.78	9.42	51.5	752
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.0673	0.0737	0.0786	0.226	0.00187
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0486	0.0512	0.0513	0.0622	0.494
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		11.1	11.0	11.8	14.2	99.5
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		1.40	1.36	1.44	1.48	11.1
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000084	0.000086	0.000126	0.00174	<0.000500 DLA
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.182	0.182	0.190	0.198	1.15
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	<0.050	<0.050	0.480	<0.500 DLA
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		5.10	5.15	5.25	5.98	6.43
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00288	0.00281	0.00324	0.00837	0.0168
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000070	0.000070	0.000071	<0.000250 DLA	0.000606
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		9.35	9.48	9.68	18.4	32.2
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000156	<0.000100 DLA
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		42.1	42.4	41.3	41.9	25.8
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.359	0.363	0.359	0.402	1.49
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		113	115	116	121	1020
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00100 DLA	<0.00200 DLA
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000050 DLA	<0.000100 DLA
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	<0.00010	0.00014	0.00133	0.00408
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00050 DLA	<0.00100 DLA
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.00105	0.00111	0.0127	0.138	0.00438
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	0.00010	0.00018	0.0108	<0.00100 DLA
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000641	0.000665	0.000720	0.00110	0.0116

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	C4-A: 12N 488099E 7288979N	C4-B: 12N 487840E 7288664N	C4-C: 12N 487344E 7288593N	C4-E 12N 487287E 7288987N	C4-Seep: 12N 487248E 7289119N
					Client sampling date / time	15-Sep-2023 11:15	15-Sep-2023 11:30	15-Sep-2023 13:40	15-Sep-2023 14:00	15-Sep-2023 14:20
						YL2301151-001	YL2301151-002	YL2301151-003	YL2301151-004	YL2301151-005
						Result	Result	Result	Result	Result
Total Metals										
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	<0.00050	0.00078	0.00978	0.00957
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		1.35	1.35	1.31	1.44	1.02
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00100 DLA	<0.00200 DLA
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		2.67	2.66	2.78	2.92	42.9
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00200 DLA
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.202	0.247	0.368	1.12	19.3
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0239	0.0237	0.0236	0.0263	0.00864
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		0.000345	0.000345	0.000352	0.000379	0.00466
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.00100 DLA
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		0.061	0.062	0.061	0.062	<0.200 DLA
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		0.000248	0.000250	0.000260	0.000261	0.00152
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		59.5	60.9	61.7	61.9	335
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		0.000072	0.000077	0.000087	0.000121	0.00118
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		0.00129	0.00142	0.00163	0.00298	0.0236
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		0.0741	0.0716	0.0813	0.0756	0.395
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.134	0.116	0.115	0.0761	0.242
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		6.72	7.10	8.74	15.5	725
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		0.0694	0.0728	0.0813	0.107	0.00191
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0482	0.0473	0.0476	0.0482	0.470
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		11.1	11.0	11.6	11.8	102
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		1.33	1.36	1.43	1.41	10.8
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		0.0000084	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.000072	0.000074	0.000100	0.000168	<0.00100 DLA
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.170	0.171	0.178	0.179	1.11
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<1.00 DLA
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		4.87	4.90	4.85	4.96	5.67
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00280	0.00275	0.00280	0.00298	0.0156
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000118	0.000092	0.000080	0.000058	0.00108 DTSE

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	C4-A: 12N 488099E 7288979N	C4-B: 12N 487840E 7288664N	C4-C: 12N 487344E 7288593N	C4-E 12N 487287E 7288987N	C4-Seep: 12N 487248E 7289119N
					Client sampling date / time	15-Sep-2023 11:15	15-Sep-2023 11:30	15-Sep-2023 13:40	15-Sep-2023 14:00	15-Sep-2023 14:20
						YL2301151-001	YL2301151-002	YL2301151-003	YL2301151-004	YL2301151-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		8.63	8.44	8.60	8.88	29.8
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000200 DLA
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		38.2	38.8	38.3	38.6	22.8
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.368	0.368	0.381	0.389	1.50
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		103	104	104	109	914
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00400 DLA
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		0.000017	<0.000010	<0.000010	<0.000010	<0.000200 DLA
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	0.00335
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00200 DLA
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	<0.00030	<0.00030	0.00038	<0.00600 DLA
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00200 DLA
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000623	0.000644	0.000678	0.000783	0.0115
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.0100 DLA
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		1.28	1.26	1.29	1.35	0.927
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00400 DLA
Dissolved mercury filtration location	----	EP509/VA	-	-		Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421/VA	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Cell N-Seep 1: 12N 486891E 7290525N	CN-Seep 2: 486840E 7290531N	----	----	----
					Client sampling date / time	15-Sep-2023 10:05	16-Sep-2023 07:30	----	----	----
						YL2301151-006	YL2301151-007	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
Acidity (as CaCO3)	----	E283/VA	2.0	mg/L		47.0	7.4	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	<1.0	----	----	----
Conductivity	----	E100/VA	1.0	µS/cm		478	605	----	----	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		117	230	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		116	231	----	----	----
pH	----	E108/VA	0.10	pH units		3.41	4.73	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L		334	476	----	----	----
Solids, total suspended [TSS]	----	E160-L/VA	1.0	mg/L		19.0	1.3	----	----	----
Anions and Nutrients										
Bromide	24959-67-9	E235.Br-U/VA	0.0050	mg/L		0.0209	0.0189	----	----	----
Chloride	16887-00-6	E235.Cl-L/VA	0.10	mg/L		0.90	1.11	----	----	----
Fluoride	16984-48-8	E235.F-L/VA	0.010	mg/L		0.294	0.185	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-T/VA	0.0030	mg/L		0.0309	0.766	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		<0.0010	0.0011	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4-L/VA	0.050	mg/L		163	272	----	----	----
Cyanides										
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0050	mg/L		<0.0050	<0.0050	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		2.37	0.541	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.931	0.0131	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0472	0.0220	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		0.000657	0.000510	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.011	0.025	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.000420	0.00228	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		19.1	43.6	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Cell N-Seep 1: 12N 486891E 7290525N	CN-Seep 2: 486840E 7290531N	----	----	----
					Client sampling date / time	15-Sep-2023 10:05	16-Sep-2023 07:30	----	----	----
						YL2301151-006	YL2301151-007	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000257	0.000216	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		0.00081	<0.00050	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		0.180	0.410	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.0560	0.154	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		11.3	0.231	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.000662	0.000110	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0379	0.127	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		16.7	29.7	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		1.82	3.59	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000072	<0.000050	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.417	1.20	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	<0.050	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		3.88	19.1	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00731	0.0171	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000148	0.000173	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		8.81	12.0	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		0.000017	<0.000010	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		3.51	5.80	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.0859	0.142	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		55.7	93.1	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		0.000039	0.000238	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		0.00013	<0.00010	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.00227	0.00176	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000681	0.000898	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Cell N-Seep 1: 12N 486891E 7290525N	CN-Seep 2: 486840E 7290531N	----	----	----
					Client sampling date / time	15-Sep-2023 10:05	16-Sep-2023 07:30	----	----	----
						YL2301151-006	YL2301151-007	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		0.152	0.269	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		0.00027	<0.00020	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		2.16	0.460	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.733	0.00990	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0448	0.0208	----	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		0.000592	0.000478	----	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		0.010	0.025	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		0.000408	0.00220	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		19.2	43.4	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		0.000244	0.000203	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		0.180	0.396	----	----	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.0485	0.142	----	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		11.0	0.134	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		0.000578	0.000084	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0367	0.117	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		16.8	29.5	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		1.80	3.52	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.410	1.14	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	<0.050	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		3.63	18.3	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00682	0.0162	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000136	0.000155	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		8.26	11.1	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Cell N-Seep 1: 12N 486891E 7290525N	CN-Seep 2: 486840E 7290531N	----	----	----
					Client sampling date / time	15-Sep-2023 10:05	16-Sep-2023 07:30	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2301151-006	YL2301151-007	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		3.12	5.16	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.0884	0.148	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		52.5	87.6	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		0.000034	0.000237	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		0.00058	<0.00030	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000614	0.000852	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		0.140	0.242	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Field	Field	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Field	Field	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **YL2301151**	Page	: 1 of 22
Client	: **Elgin Mining Inc.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Karyn Lewis	Account Manager	: Oliver Gregg
Address	: 750 West Pender Street Suite 201 Vancouver BC Canada V6C 2T7	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: 604 682 3366	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 18-Sep-2023 10:00
PO	: ----	Issue Date	: 03-Oct-2023 09:38
C-O-C number	: ----		
Sampler	: Michael Mahowald		
Site	: ----		
Quote number	: YL23-ELMI100-001		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Anions and Nutrients	QC-MRG11-1147855001	----	Nitrate (as N)	14797-55-8	E235.NO3-T	0.0036 B mg/L	0.003 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Recoveries								
Total Metals	QC-MRG3-1147438002	----	Iron, total	7439-89-6	E420	123 % MES	80.0-120%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE										
CN-Seep 2: 486840E 7290531N	E235.Br-U	16-Sep-2023	22-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE										
C4-A: 12N 488099E 7288979N	E235.Br-U	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE										
C4-B: 12N 487840E 7288664N	E235.Br-U	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE										
C4-C: 12N 487344E 7288593N	E235.Br-U	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE										
C4-E 12N 487287E 7288987N	E235.Br-U	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE										
C4-Seep: 12N 487248E 7289119N	E235.Br-U	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE										
Cell N-Seep 1: 12N 486891E 7290525N	E235.Br-U	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
CN-Seep 2: 486840E 7290531N	E235.Cl-L	16-Sep-2023	22-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
C4-A: 12N 488099E 7288979N	E235.Cl-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
C4-B: 12N 487840E 7288664N	E235.Cl-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
C4-C: 12N 487344E 7288593N	E235.Cl-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
C4-E 12N 487287E 7288987N	E235.Cl-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
C4-Seep: 12N 487248E 7289119N	E235.Cl-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
Cell N-Seep 1: 12N 486891E 7290525N	E235.Cl-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE										
CN-Seep 2: 486840E 7290531N	E235.F-L	16-Sep-2023	22-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE										
C4-A: 12N 488099E 7288979N	E235.F-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE C4-B: 12N 487840E 7288664N	E235.F-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE C4-C: 12N 487344E 7288593N	E235.F-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE C4-E 12N 487287E 7288987N	E235.F-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE C4-Seep: 12N 487248E 7289119N	E235.F-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE Cell N-Seep 1: 12N 486891E 7290525N	E235.F-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE CN-Seep 2: 486840E 7290531N	E235.NO3-T	16-Sep-2023	22-Sep-2023	3 days	6 days	✖ EHT	22-Sep-2023	3 days	6 days	✖ EHT
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE C4-A: 12N 488099E 7288979N	E235.NO3-T	15-Sep-2023	22-Sep-2023	3 days	6 days	✖ EHTL	22-Sep-2023	3 days	6 days	✖ EHTL
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE C4-B: 12N 487840E 7288664N	E235.NO3-T	15-Sep-2023	22-Sep-2023	3 days	6 days	✖ EHTL	22-Sep-2023	3 days	6 days	✖ EHTL
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE C4-C: 12N 487344E 7288593N	E235.NO3-T	15-Sep-2023	22-Sep-2023	3 days	6 days	✖ EHTL	22-Sep-2023	3 days	6 days	✖ EHTL

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE C4-E 12N 487287E 7288987N	E235.NO3-T	15-Sep-2023	22-Sep-2023	3 days	6 days	× EHTL	22-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE C4-Seep: 12N 487248E 7289119N	E235.NO3-T	15-Sep-2023	22-Sep-2023	3 days	6 days	× EHTL	22-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE Cell N-Seep 1: 12N 486891E 7290525N	E235.NO3-T	15-Sep-2023	22-Sep-2023	3 days	6 days	× EHTL	22-Sep-2023	3 days	7 days	× EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CN-Seep 2: 486840E 7290531N	E235.NO2-L	16-Sep-2023	22-Sep-2023	3 days	6 days	× EHT	22-Sep-2023	3 days	6 days	× EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE C4-A: 12N 488099E 7288979N	E235.NO2-L	15-Sep-2023	22-Sep-2023	3 days	6 days	× EHTL	22-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE C4-B: 12N 487840E 7288664N	E235.NO2-L	15-Sep-2023	22-Sep-2023	3 days	6 days	× EHTL	22-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE C4-C: 12N 487344E 7288593N	E235.NO2-L	15-Sep-2023	22-Sep-2023	3 days	6 days	× EHTL	22-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE C4-E 12N 487287E 7288987N	E235.NO2-L	15-Sep-2023	22-Sep-2023	3 days	6 days	× EHTL	22-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE C4-Seep: 12N 487248E 7289119N	E235.NO2-L	15-Sep-2023	22-Sep-2023	3 days	6 days	× EHTL	22-Sep-2023	3 days	6 days	× EHTL

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Cell N-Seep 1: 12N 486891E 7290525N	E235.NO2-L	15-Sep-2023	22-Sep-2023	3 days	6 days	✗ EHTL	22-Sep-2023	3 days	7 days	✗ EHTL
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE										
CN-Seep 2: 486840E 7290531N	E235.SO4-L	16-Sep-2023	22-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE										
C4-A: 12N 488099E 7288979N	E235.SO4-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE										
C4-B: 12N 487840E 7288664N	E235.SO4-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE										
C4-C: 12N 487344E 7288593N	E235.SO4-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE										
C4-E 12N 487287E 7288987N	E235.SO4-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE										
C4-Seep: 12N 487248E 7289119N	E235.SO4-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE										
Cell N-Seep 1: 12N 486891E 7290525N	E235.SO4-L	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
CN-Seep 2: 486840E 7290531N	E333	16-Sep-2023	29-Sep-2023	14 days	13 days	✓	29-Sep-2023	14 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) C4-A: 12N 488099E 7288979N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) C4-B: 12N 487840E 7288664N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) C4-C: 12N 487344E 7288593N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) C4-E 12N 487287E 7288987N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) C4-Seep: 12N 487248E 7289119N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Cell N-Seep 1: 12N 486891E 7290525N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) C4-A: 12N 488099E 7288979N	E509	15-Sep-2023	25-Sep-2023	28 days	10 days	✓	25-Sep-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) C4-B: 12N 487840E 7288664N	E509	15-Sep-2023	25-Sep-2023	28 days	10 days	✓	25-Sep-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) C4-C: 12N 487344E 7288593N	E509	15-Sep-2023	25-Sep-2023	28 days	10 days	✓	25-Sep-2023	28 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) C4-E 12N 487287E 7288987N	E509	15-Sep-2023	25-Sep-2023	28 days	10 days	✓	25-Sep-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) C4-Seep: 12N 487248E 7289119N	E509	15-Sep-2023	25-Sep-2023	28 days	10 days	✓	25-Sep-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) Cell N-Seep 1: 12N 486891E 7290525N	E509	15-Sep-2023	25-Sep-2023	28 days	10 days	✓	25-Sep-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) CN-Seep 2: 486840E 7290531N	E509	16-Sep-2023	25-Sep-2023	28 days	9 days	✓	25-Sep-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) CN-Seep 2: 486840E 7290531N	E421	16-Sep-2023	24-Sep-2023	180 days	8 days	✓	25-Sep-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) C4-A: 12N 488099E 7288979N	E421	15-Sep-2023	24-Sep-2023	180 days	9 days	✓	25-Sep-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) C4-B: 12N 487840E 7288664N	E421	15-Sep-2023	24-Sep-2023	180 days	9 days	✓	25-Sep-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) C4-C: 12N 487344E 7288593N	E421	15-Sep-2023	24-Sep-2023	180 days	9 days	✓	25-Sep-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) C4-E 12N 487287E 7288987N	E421	15-Sep-2023	24-Sep-2023	180 days	9 days	✓	25-Sep-2023	180 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) C4-Seep: 12N 487248E 7289119N	E421	15-Sep-2023	24-Sep-2023	180 days	9 days	✓	25-Sep-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Cell N-Seep 1: 12N 486891E 7290525N	E421	15-Sep-2023	24-Sep-2023	180 days	9 days	✓	25-Sep-2023	180 days	10 days	✓
Physical Tests : Acidity by Titration										
HDPE CN-Seep 2: 486840E 7290531N	E283	16-Sep-2023	22-Sep-2023	14 days	6 days	✓	23-Sep-2023	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE C4-A: 12N 488099E 7288979N	E283	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE C4-B: 12N 487840E 7288664N	E283	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE C4-C: 12N 487344E 7288593N	E283	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE C4-E 12N 487287E 7288987N	E283	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE C4-Seep: 12N 487248E 7289119N	E283	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE Cell N-Seep 1: 12N 486891E 7290525N	E283	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE CN-Seep 2: 486840E 7290531N	E290	16-Sep-2023	22-Sep-2023	14 days	6 days	✓	23-Sep-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE C4-A: 12N 488099E 7288979N	E290	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE C4-B: 12N 487840E 7288664N	E290	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE C4-C: 12N 487344E 7288593N	E290	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE C4-E 12N 487287E 7288987N	E290	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE C4-Seep: 12N 487248E 7289119N	E290	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Cell N-Seep 1: 12N 486891E 7290525N	E290	15-Sep-2023	22-Sep-2023	14 days	7 days	✓	23-Sep-2023	14 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE CN-Seep 2: 486840E 7290531N	E100	16-Sep-2023	22-Sep-2023	28 days	6 days	✓	23-Sep-2023	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE C4-A: 12N 488099E 7288979N	E100	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	23-Sep-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE C4-B: 12N 487840E 7288664N	E100	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	23-Sep-2023	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE C4-C: 12N 487344E 7288593N	E100	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	23-Sep-2023	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE C4-E 12N 487287E 7288987N	E100	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	23-Sep-2023	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE C4-Seep: 12N 487248E 7289119N	E100	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	23-Sep-2023	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE Cell N-Seep 1: 12N 486891E 7290525N	E100	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	23-Sep-2023	28 days	8 days	✓
Physical Tests : pH by Meter										
HDPE CN-Seep 2: 486840E 7290531N	E108	16-Sep-2023	22-Sep-2023	0.25 hrs	146 hrs	× EHTR-FM	23-Sep-2023	0.25 hrs	170 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE C4-Seep: 12N 487248E 7289119N	E108	15-Sep-2023	22-Sep-2023	0.25 hrs	164 hrs	× EHTR-FM	23-Sep-2023	0.25 hrs	187 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE C4-C: 12N 487344E 7288593N	E108	15-Sep-2023	22-Sep-2023	0.25 hrs	164 hrs	× EHTR-FM	23-Sep-2023	0.25 hrs	188 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE C4-E 12N 487287E 7288987N	E108	15-Sep-2023	22-Sep-2023	0.25 hrs	164 hrs	× EHTR-FM	23-Sep-2023	0.25 hrs	188 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE C4-B: 12N 487840E 7288664N	E108	15-Sep-2023	22-Sep-2023	0.25 hrs	166 hrs	✗ EHTR-FM	23-Sep-2023	0.25 hrs	190 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE C4-A: 12N 488099E 7288979N	E108	15-Sep-2023	22-Sep-2023	0.25 hrs	167 hrs	✗ EHTR-FM	23-Sep-2023	0.25 hrs	190 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE Cell N-Seep 1: 12N 486891E 7290525N	E108	15-Sep-2023	22-Sep-2023	0.25 hrs	168 hrs	✗ EHTR-FM	23-Sep-2023	0.25 hrs	192 hrs	✗ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE C4-A: 12N 488099E 7288979N	E162	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE C4-B: 12N 487840E 7288664N	E162	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE C4-C: 12N 487344E 7288593N	E162	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE C4-E 12N 487287E 7288987N	E162	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE C4-Seep: 12N 487248E 7289119N	E162	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Cell N-Seep 1: 12N 486891E 7290525N	E162	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE CN-Seep 2: 486840E 7290531N	E162	16-Sep-2023	----	----	----		23-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE C4-A: 12N 488099E 7288979N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE C4-B: 12N 487840E 7288664N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE C4-C: 12N 487344E 7288593N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE C4-E 12N 487287E 7288987N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE C4-Seep: 12N 487248E 7289119N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE Cell N-Seep 1: 12N 486891E 7290525N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE CN-Seep 2: 486840E 7290531N	E160-L	16-Sep-2023	----	----	----		23-Sep-2023	7 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) CN-Seep 2: 486840E 7290531N	E508	16-Sep-2023	22-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) C4-A: 12N 488099E 7288979N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) C4-B: 12N 487840E 7288664N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) C4-C: 12N 487344E 7288593N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) C4-E 12N 487287E 7288987N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) C4-Seep: 12N 487248E 7289119N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) Cell N-Seep 1: 12N 486891E 7290525N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) CN-Seep 2: 486840E 7290531N	E420	16-Sep-2023	22-Sep-2023	180 days	6 days	✓	25-Sep-2023	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) C4-A: 12N 488099E 7288979N	E420	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) C4-B: 12N 487840E 7288664N	E420	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) C4-C: 12N 487344E 7288593N	E420	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) C4-E 12N 487287E 7288987N	E420	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) C4-Seep: 12N 487248E 7289119N	E420	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Cell N-Seep 1: 12N 486891E 7290525N	E420	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	1147869	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	1147866	1	20	5.0	5.0	✓
Bromide by IC (Ultra Trace Level)	E235.Br-U	1147864	1	7	14.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	1147861	1	7	14.2	5.0	✓
Conductivity in Water	E100	1147868	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1152462	2	22	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1150629	1	15	6.6	5.0	✓
Fluoride in Water by IC (Low Level)	E235.F-L	1147862	1	7	14.2	5.0	✓
Nitrate in Water by IC (Trace Level)	E235.NO3-T	1147863	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1147857	1	20	5.0	5.0	✓
pH by Meter	E108	1147867	1	19	5.2	5.0	✓
Sulfate in Water by IC (Low Level)	E235.SO4-L	1147865	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1149423	2	26	7.6	5.0	✓
Total Cyanide	E333	1161201	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	1147598	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1147438	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	1147869	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	1147866	1	20	5.0	5.0	✓
Bromide by IC (Ultra Trace Level)	E235.Br-U	1147864	1	7	14.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	1147861	1	7	14.2	5.0	✓
Conductivity in Water	E100	1147868	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1152462	2	22	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1150629	1	15	6.6	5.0	✓
Fluoride in Water by IC (Low Level)	E235.F-L	1147862	1	7	14.2	5.0	✓
Nitrate in Water by IC (Trace Level)	E235.NO3-T	1147863	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1147857	1	20	5.0	5.0	✓
pH by Meter	E108	1147867	1	19	5.2	5.0	✓
Sulfate in Water by IC (Low Level)	E235.SO4-L	1147865	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1149423	2	26	7.6	5.0	✓
Total Cyanide	E333	1161201	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	1147598	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1147438	1	18	5.5	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	1149405	2	26	7.6	5.0	✓
Method Blanks (MB)							

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Acidity by Titration	E283	1147869	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	1147866	1	20	5.0	5.0	✓
Bromide by IC (Ultra Trace Level)	E235.Br-U	1147864	1	7	14.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	1147861	1	7	14.2	5.0	✓
Conductivity in Water	E100	1147868	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1152462	2	22	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1150629	1	15	6.6	5.0	✓
Fluoride in Water by IC (Low Level)	E235.F-L	1147862	1	7	14.2	5.0	✓
Nitrate in Water by IC (Trace Level)	E235.NO3-T	1147863	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1147857	1	20	5.0	5.0	✓
Sulfate in Water by IC (Low Level)	E235.SO4-L	1147865	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1149423	2	26	7.6	5.0	✓
Total Cyanide	E333	1161201	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	1147598	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1147438	1	18	5.5	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	1149405	2	26	7.6	5.0	✓
Matrix Spikes (MS)							
Bromide by IC (Ultra Trace Level)	E235.Br-U	1147864	1	7	14.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	1147861	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1152462	2	22	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1150629	1	15	6.6	5.0	✓
Fluoride in Water by IC (Low Level)	E235.F-L	1147862	1	7	14.2	5.0	✓
Nitrate in Water by IC (Trace Level)	E235.NO3-T	1147863	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1147857	1	20	5.0	5.0	✓
Sulfate in Water by IC (Low Level)	E235.SO4-L	1147865	1	7	14.2	5.0	✓
Total Cyanide	E333	1161201	1	13	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	1147598	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1147438	1	18	5.5	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 ALS Environmental - Vancouver	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry (Low Level)	E160-L ALS Environmental - Vancouver	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide by IC (Ultra Trace Level)	E235.Br-U ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC (Low Level)	E235.F-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Trace Level)	E235.NO3-T ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfate in Water by IC (Low Level)	E235.SO4-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 ALS Environmental - Vancouver	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	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.
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **YL2301151**	Page	: 1 of 18
Client	: Elgin Mining Inc.	Laboratory	: ALS Environmental - Yellowknife
Contact	: Karyn Lewis	Account Manager	: Oliver Gregg
Address	: 750 West Pender Street Suite 201 Vancouver BC Canada V6C 2T7	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	:	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 18-Sep-2023 10:00
PO	: ----	Date Analysis Commenced	: 22-Sep-2023
C-O-C number	: ----	Issue Date	: 03-Oct-2023 09:37
Sampler	: Michael Mahowald 604 682 3366		
Site	: ----		
Quote number	: YL23-ELMI100-001		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Ilnaz Badbezanchi	Supervisor - Metals Prep & Mercury	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Nik Perkio	Inorganics Analyst	Waterloo Inorganics, Waterloo, Ontario
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Parnian Sane	Analyst	Vancouver Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1147866)											
VA23C2223-002	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	123	123	0.410%	20%	----
Physical Tests (QC Lot: 1147867)											
VA23C2223-002	Anonymous	pH	----	E108	0.10	pH units	8.18	8.17	0.122%	4%	----
Physical Tests (QC Lot: 1147868)											
VA23C2223-002	Anonymous	Conductivity	----	E100	2.0	µS/cm	2030	2030	0.00%	10%	----
Physical Tests (QC Lot: 1147869)											
VA23C2405-001	Anonymous	Acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1149423)											
YL2301151-001	C4-A: 12N 488099E 7288979N	Solids, total dissolved [TDS]	----	E162	20	mg/L	495	490	1.02%	20%	----
Physical Tests (QC Lot: 1149658)											
VA23C2513-004	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	434	434	0.00%	20%	----
Anions and Nutrients (QC Lot: 1147857)											
VA23C2044-024	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0500	mg/L	0.842	0.856	1.62%	20%	----
Anions and Nutrients (QC Lot: 1147861)											
YL2301151-001	C4-A: 12N 488099E 7288979N	Chloride	16887-00-6	E235.Cl-L	0.50	mg/L	20.3	20.4	0.352%	20%	----
Anions and Nutrients (QC Lot: 1147862)											
YL2301151-001	C4-A: 12N 488099E 7288979N	Fluoride	16984-48-8	E235.F-L	0.050	mg/L	0.194	0.199	0.005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1147863)											
YL2301151-001	C4-A: 12N 488099E 7288979N	Nitrate (as N)	14797-55-8	E235.NO3-T	0.0150	mg/L	0.0376	0.0404	0.0027	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1147864)											
YL2301151-001	C4-A: 12N 488099E 7288979N	Bromide	24959-67-9	E235.Br-U	0.0250	mg/L	0.235	0.241	0.0062	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1147865)											
YL2301151-001	C4-A: 12N 488099E 7288979N	Sulfate (as SO4)	14808-79-8	E235.SO4-L	0.250	mg/L	306	304	0.998%	20%	----
Cyanides (QC Lot: 1161201)											
YL2301151-001	C4-A: 12N 488099E 7288979N	Cyanide, strong acid dissociable (Total)	----	E333	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
Total Metals (QC Lot: 1147438)											
YL2301160-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0081	0.0108	0.0027	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1147438) - continued											
YL2301160-001	Anonymous	Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00013	0.00014	0.000008	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00020	0.00020	0.000001	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.122	0.124	1.67%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.681	0.722	5.98%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000300	0.0000294	0.0000006	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	116	124	6.94%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000050	0.000052	0.000003	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00016	0.00015	0.000002	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.014	0.015	0.001	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0230	0.0246	6.46%	20%	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	33.1	33.3	0.775%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0108	0.0108	0.387%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00613	0.00652	6.13%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00415	0.00412	0.00003	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	21.5	21.5	0.133%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.0221	0.0215	2.80%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	0.85	0.86	0.009	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	109	109	0.148%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	1.78	1.89	5.79%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	32.2	32.2	0.0179%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	0.000042	0.000046	0.000004	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	0.00039	0.00038	0.000002	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00034	0.00004	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1147438) - continued											
YL2301160-001	Anonymous	Uranium, total	7440-61-1	E420	0.000010	mg/L	0.00135	0.00140	3.14%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 1147598)											
KS2303519-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1150629)											
YL2301179-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00050	mg/L	0.138	0.138	0.258%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00050	mg/L	9.14	9.03	1.25%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00050	mg/L	0.0389	0.0387	0.517%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.050	mg/L	0.416	0.423	0.008	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000250	mg/L	<0.0000250	<0.0000250	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.250	mg/L	374	373	0.364%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000050	mg/L	0.000100	0.000115	0.000015	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00050	mg/L	0.0306	0.0316	3.15%	20%	----
		Copper, dissolved	7440-50-8	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.050	mg/L	1.95	1.95	0.0644%	20%	----
		Lead, dissolved	7439-92-1	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0050	mg/L	0.0456	0.0458	0.0002	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	124	125	0.799%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00050	mg/L	0.843	0.843	0.0574%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000250	mg/L	0.0242	0.0241	0.249%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00250	mg/L	0.0170	0.0170	0.00005	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.250	mg/L	13.1	13.1	0.00123%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00100	mg/L	0.00941	0.00927	0.00014	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.250	mg/L	6.67	6.75	1.14%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.250	mg/L	157	161	2.43%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 1150629) - continued											
YL2301179-001	Anonymous	Strontium, dissolved	7440-24-6	E421	0.00100	mg/L	3.93	3.88	1.31%	20%	----
		Sulfur, dissolved	7704-34-9	E421	2.50	mg/L	340	348	2.41%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00050	mg/L	<0.00050	0.00051	0.00001	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000050	mg/L	0.00471	0.00477	1.12%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1152462)											
VA23C2410-004	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1152463)											
YL2301151-006	Cell N-Seep 1: 12N 486891E 7290525N	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1147866)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1147868)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 1147869)						
Acidity (as CaCO3)	----	E283	2	mg/L	2.0	----
Physical Tests (QCLot: 1149405)						
Solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 1149423)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 1149658)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 1149660)						
Solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 1147857)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1147861)						
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 1147862)						
Fluoride	16984-48-8	E235.F-L	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 1147863)						
Nitrate (as N)	14797-55-8	E235.NO3-T	0.003	mg/L	# 0.0036	B
Anions and Nutrients (QCLot: 1147864)						
Bromide	24959-67-9	E235.Br-U	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1147865)						
Sulfate (as SO4)	14808-79-8	E235.SO4-L	0.05	mg/L	<0.050	----
Cyanides (QCLot: 1161201)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Total Metals (QCLot: 1147438)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1147438) - continued						
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1147598)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1150629)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1150629) - continued						
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 1152462)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1152463)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1147866)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	107	85.0	115	----
Physical Tests (QCLot: 1147867)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1147868)									
Conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.9	90.0	110	----
Physical Tests (QCLot: 1147869)									
Acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	103	85.0	115	----
Physical Tests (QCLot: 1149405)									
Solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	91.2	85.0	115	----
Physical Tests (QCLot: 1149423)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.6	85.0	115	----
Physical Tests (QCLot: 1149658)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	100	85.0	115	----
Physical Tests (QCLot: 1149660)									
Solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	95.8	85.0	115	----
Anions and Nutrients (QCLot: 1147857)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1147861)									
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1147862)									
Fluoride	16984-48-8	E235.F-L	0.01	mg/L	1 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1147863)									
Nitrate (as N)	14797-55-8	E235.NO3-T	0.003	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1147864)									
Bromide	24959-67-9	E235.Br-U	0.005	mg/L	0.5 mg/L	96.3	85.0	115	----
Anions and Nutrients (QCLot: 1147865)									
Sulfate (as SO4)	14808-79-8	E235.SO4-L	0.05	mg/L	100 mg/L	99.6	90.0	110	----
Cyanides (QCLot: 1161201)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	114	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1147438)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	105	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.2	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	88.6	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	105	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	# 123	80.0	120	MES
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.7	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	110	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	107	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	112	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	110	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	106	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	108	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.0	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	98.0	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	105	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	97.7	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.9	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1147438) - continued									
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	103	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
Total Metals (QCLot: 1147598)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.4	80.0	120	----
Dissolved Metals (QCLot: 1150629)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.7	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	93.6	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.3	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.1	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	95.5	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.9	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.3	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.6	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.8	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.3	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	97.3	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.9	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	97.7	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.0	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.2	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	94.6	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	83.8	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1150629) - continued									
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.2	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	93.6	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.5	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.4	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	93.3	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	94.7	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.7	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	92.8	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	94.9	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	108	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	107	80.0	120	----

Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1147857)										
VA23C2223-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	5.11 mg/L	5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1147861)										
YL2301151-002	C4-B: 12N 487840E 7288664N	Chloride	16887-00-6	E235.Cl-L	505 mg/L	500 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1147862)										
YL2301151-002	C4-B: 12N 487840E 7288664N	Fluoride	16984-48-8	E235.F-L	5.14 mg/L	5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 1147863)										
YL2301151-002	C4-B: 12N 487840E 7288664N	Nitrate (as N)	14797-55-8	E235.NO3-T	12.7 mg/L	12.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1147864)										
YL2301151-002	C4-B: 12N 487840E 7288664N	Bromide	24959-67-9	E235.Br-U	2.45 mg/L	2.5 mg/L	98.0	75.0	125	----
Anions and Nutrients (QCLot: 1147865)										
YL2301151-002	C4-B: 12N 487840E 7288664N	Sulfate (as SO4)	14808-79-8	E235.SO4-L	498 mg/L	500 mg/L	99.7	75.0	125	----
Cyanides (QCLot: 1161201)										
YL2301151-001	C4-A: 12N 488099E 7288979N	Cyanide, strong acid dissociable (Total)	----	E333	2.20 mg/L	2.5 mg/L	87.8	75.0	125	----
Total Metals (QCLot: 1147438)										
YL2301161-001	Anonymous	Aluminum, total	7429-90-5	E420	0.198 mg/L	0.2 mg/L	99.0	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00927 mg/L	0.01 mg/L	92.7	70.0	130	----
		Boron, total	7440-42-8	E420	0.087 mg/L	0.1 mg/L	87.5	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1147438) - continued										
YL2301161-001	Anonymous	Copper, total	7440-50-8	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		Iron, total	7439-89-6	E420	1.96 mg/L	2 mg/L	98.0	70.0	130	----
		Lead, total	7439-92-1	E420	0.0187 mg/L	0.02 mg/L	93.3	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0990 mg/L	0.1 mg/L	99.0	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0394 mg/L	0.04 mg/L	98.5	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.6 mg/L	10 mg/L	106	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		Silicon, total	7440-21-3	E420	9.90 mg/L	10 mg/L	99.0	70.0	130	----
		Silver, total	7440-22-4	E420	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00363 mg/L	0.004 mg/L	90.8	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0171 mg/L	0.02 mg/L	85.4	70.0	130	----
		Tin, total	7440-31-5	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00371 mg/L	0.004 mg/L	92.8	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		Zinc, total	7440-66-6	E420	0.400 mg/L	0.4 mg/L	100	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
Total Metals (QCLot: 1147598)										
VA23C1955-004	Anonymous	Mercury, total	7439-97-6	E508	0.0000959 mg/L	0.0001 mg/L	95.9	70.0	130	----
Dissolved Metals (QCLot: 1150629)										
YL2301179-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.945 mg/L	1 mg/L	94.5	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0949 mg/L	0.1 mg/L	94.9	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.202 mg/L	0.2 mg/L	101	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 1150629) - continued										
YL2301179-002	Anonymous	Bismuth, dissolved	7440-69-9	E421	0.0448 mg/L	0.05 mg/L	89.6	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.505 mg/L	0.5 mg/L	101	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.0190 mg/L	0.02 mg/L	95.3	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0490 mg/L	0.05 mg/L	98.0	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.194 mg/L	0.2 mg/L	96.9	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0939 mg/L	0.1 mg/L	93.9	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0910 mg/L	0.1 mg/L	91.0	70.0	130	----
		Iron, dissolved	7439-89-6	E421	9.55 mg/L	10 mg/L	95.5	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0957 mg/L	0.1 mg/L	95.7	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.509 mg/L	0.5 mg/L	102	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	5 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0991 mg/L	0.1 mg/L	99.1	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.183 mg/L	0.2 mg/L	91.7	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	47.9 mg/L	50 mg/L	95.9	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	18.8 mg/L	20 mg/L	94.0	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0949 mg/L	0.1 mg/L	94.9	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.194 mg/L	0.2 mg/L	97.0	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	48.7 mg/L	50 mg/L	97.3	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.0166 mg/L	0.02 mg/L	83.2	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	100 mg/L	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0938 mg/L	0.1 mg/L	93.8	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0963 mg/L	0.1 mg/L	96.3	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.198 mg/L	0.2 mg/L	99.2	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0947 mg/L	0.1 mg/L	94.7	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.492 mg/L	0.5 mg/L	98.4	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	1.79 mg/L	2 mg/L	89.5	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.205 mg/L	0.2 mg/L	102	70.0	130	----
Dissolved Metals (QCLot: 1152462)										

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 1152462) - continued										
VA23C2430-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----
Dissolved Metals (QCLot: 1152463)										
YL2301151-007	CN-Seep 2: 486840E 7290531N	Mercury, dissolved	7439-97-6	E509	0.0000925 mg/L	0.0001 mg/L	92.5	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 14 -

Page 1 of 1

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Lupin Mines Inc. C/O Mandalay Resources Co.	Select Report Format:	☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Karyn Lewis	Quality Control (QC) Report with Report	☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	76 Richmond Street East, Suite 330 Toronto, Ontario M5C 1P1	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	(778) 386-7340	Email 1 or Fax	k.lewis@mandalayresources.com	Specify Date Required for E2,E or P:
		Email 2	michelle.surette@stantec.com	

Invoice To		Invoice Distribution	
	Same as Report To ☑ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report ☑ Yes ☐ No	Email 1 or Fax	k.lewis@mandalayresources.com
Company:	Lupin Mines Inc. C/O Mandalay Resources Co.	Email 2	
Contact:	k.lewis@mandalayresources.com		

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)

ALS Contact: Oliver Gregg **Sampler:** Mike Mahowald

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	General	Total Metals (P)	Dissolved Metals (F/P)	Total Mercury (P)	Dissolved Mercury (F/P)	Total Cyanide (P)	Number of Containers
	C4-A: 12N 488099E 7288979N	15-Sep-23	11:15	Water	R	R	R	R	R	R	6
	C4-B: 12N 487840E 7288664N	15-Sep-23	11:30	Water	R	R	R	R	R	R	6
	C4-C: 12N 487344E 7288593N	15-Sep-23	13:40	Water	R	R	R	R	R	R	6
	C4-E: 12N 487287E 7288987N	15-Sep-23	14:00	Water	R	R	R	R	R	R	6
	C4-Seep: 12N 487248E 7289119N	15-Sep-23	14:20	Water	R	R	R	R	R	R	6
	Cell N-Seep 1: 12N 486891E 7290525N	15-Sep-23	10:05	Water	R	R	R	R	R	R	6
	CN-Seep 2: 12N 486840E 7290531N	16-Sep-23	7:30	Water	R	R	R	R	R	R	6

Environmental Division
Yellowknife
Work Order Reference
YL2301151

Telephone : +1 867 873 5593

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

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		
1.8					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: MIKE MAHOWALD	Date: 16-SEP-23	Time: 1100	Received by:	Date: 18-SEP	Time: 10:00	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-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**.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **YL2301152**	Page	: 1 of 10
Client	: **Elgin Mining Inc.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Karyn Lewis	Account Manager	: Oliver Gregg
Address	: 750 West Pender Street Suite 201 Vancouver BC Canada V6C 2T7	Address	: 314 Old Airport Road, Unit 116 Yellowknife NT Canada X1A 3T3
Telephone	: 604 682 3366	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 18-Sep-2023 11:40
PO	: ----	Date Analysis Commenced	: 21-Sep-2023
C-O-C number	: ----	Issue Date	: 03-Oct-2023 09:37
Sampler	: ----		
Site	: ----		
Quote number	: YL23-ELMI100-001		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Chamoi Beckford	Lab Assistant	Metals, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Kate Dimitrova	Supervisor - Inorganic	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Inorganics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior 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.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	P2-A: 12N 486664E 7290531N	P2-B: 12N 485964E 7289795N	P2-C: 12N 486903E 7289200N	P2-D: 12N 487146E 7289538N	P2-E: 12N 487039E 7290047N
					Client sampling date / time	15-Sep-2023 08:00	15-Sep-2023 08:20	15-Sep-2023 08:45	15-Sep-2023 09:00	15-Sep-2023 09:20
						YL2301152-001	YL2301152-002	YL2301152-003	YL2301152-004	YL2301152-005
						Result	Result	Result	Result	Result
Physical Tests										
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L		1.5	4.6	3.0	<1.0	1.7
Conductivity	----	E100/VA	1.0	µS/cm		453	464	456	481	462
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		128	132	134	143	137
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		132	136	141	142	136
pH	----	E108/VA	0.10	pH units		6.33	6.86	6.63	5.55	6.44
Solids, total suspended [TSS]	----	E160-L/VA	1.0	mg/L		2.6	2.4	1.5	4.6	40.2
Anions and Nutrients										
Bromide	24959-67-9	E235.Br-U/VA	0.0050	mg/L		0.193	0.196	0.201	0.202	0.199
Chloride	16887-00-6	E235.Cl-L/VA	0.10	mg/L		15.9	16.4	16.3	16.3	16.4
Fluoride	16984-48-8	E235.F-L/VA	0.010	mg/L		0.102	0.102	0.106	0.110	0.106
Nitrate (as N)	14797-55-8	E235.NO3-T/VA	0.0030	mg/L		0.273	0.306	0.300	0.289	0.292
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		<0.0010	<0.0010	<0.0010	0.0010	<0.0010
Sulfate (as SO4)	14808-79-8	E235.SO4-L/VA	0.050	mg/L		180	183	183	196	185
Cyanides										
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		0.180	0.0622	0.0806	0.181	0.360
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.0427	0.0420	0.0424	0.0622	0.146
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0161	0.0164	0.0162	0.0181	0.0170
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.044	0.046	0.047	0.048	0.046
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.0000748	0.0000626	0.0000675	0.0000924	0.0000691
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		39.1	40.6	42.1	42.0	40.4
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000041	0.000033	0.000038	0.000038	0.000108

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	P2-A: 12N 486664E 7290531N	P2-B: 12N 485964E 7289795N	P2-C: 12N 486903E 7289200N	P2-D: 12N 487146E 7289538N	P2-E: 12N 487039E 7290047N
					Client sampling date / time	15-Sep-2023 08:00	15-Sep-2023 08:20	15-Sep-2023 08:45	15-Sep-2023 09:00	15-Sep-2023 09:20
						YL2301152-001	YL2301152-002	YL2301152-003	YL2301152-004	YL2301152-005
						Result	Result	Result	Result	Result
Total Metals										
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	0.00076
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		0.00912	0.00491	0.00706	0.0109	0.00578
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00457	0.00325	0.00364	0.00442	0.00631
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.507	0.432	0.692	4.20	2.12
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.000424	0.000316	0.000336	0.000277	0.00175
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0214	0.0214	0.0218	0.0241	0.0215
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		8.36	8.50	8.69	8.97	8.63
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.238	0.200	0.231	0.320	0.220
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000320	0.000379	0.000361	0.000298	0.000449
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.0438	0.0354	0.0362	0.0445	0.0362
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		3.67	3.74	3.72	3.89	3.74
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00200	0.00185	0.00197	0.00204	0.00211
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000055	0.000060	<0.000050	<0.000050	0.000064
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		0.58	0.37	0.39	0.79	0.73
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		31.3	32.9	32.0	32.4	31.4
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.196	0.200	0.202	0.211	0.201
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		62.8	64.5	64.4	68.6	62.3
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.00067	0.00092	0.00068	0.00067	0.00812
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	0.00016
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000038	0.000034	0.000016	0.000083	0.000082
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	0.00060
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		0.0868	0.0910	0.0922	0.134	0.0970

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	P2-A: 12N 486664E 7290531N	P2-B: 12N 485964E 7289795N	P2-C: 12N 486903E 7289200N	P2-D: 12N 487146E 7289538N	P2-E: 12N 487039E 7290047N
					Client sampling date / time	15-Sep-2023 08:00	15-Sep-2023 08:20	15-Sep-2023 08:45	15-Sep-2023 09:00	15-Sep-2023 09:20
						YL2301152-001	YL2301152-002	YL2301152-003	YL2301152-004	YL2301152-005
						Result	Result	Result	Result	Result
Total Metals										
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0698	0.0112	0.0165	0.0265	0.0184
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00515	0.00666	0.00486	0.00444	0.00974
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0147	0.0152	0.0153	0.0170	0.0156
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		0.043	0.042	0.044	0.048	0.044
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		0.0000670	0.0000588	0.0000645	0.0000869	0.0000601
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		37.7	39.0	39.7	42.4	40.5
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		0.000036	0.000027	0.000028	0.000034	0.000032
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		0.00857	0.00475	0.00687	0.0108	0.00553
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00347	0.00246	0.00234	0.00218	0.00190
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.121	0.056	0.265	3.10	0.468
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0206	0.0197	0.0208	0.0244	0.0205
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		8.19	8.42	8.46	9.00	8.64
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.218	0.189	0.217	0.324	0.215
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.000272	0.000331	0.000308	0.000181	0.000288
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.0416	0.0337	0.0347	0.0431	0.0347
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		3.63	3.72	3.76	4.02	3.93
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00187	0.00181	0.00180	0.00194	0.00188
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		<0.000050	0.000054	<0.000050	<0.000050	<0.000050
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		0.490	0.303	0.322	0.715	0.423
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	0.000012	<0.000010	<0.000010	<0.000010

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	P2-A: 12N 486664E 7290531N	P2-B: 12N 485964E 7289795N	P2-C: 12N 486903E 7289200N	P2-D: 12N 487146E 7289538N	P2-E: 12N 487039E 7290047N
					Client sampling date / time	15-Sep-2023 08:00	15-Sep-2023 08:20	15-Sep-2023 08:45	15-Sep-2023 09:00	15-Sep-2023 09:20
						YL2301152-001	YL2301152-002	YL2301152-003	YL2301152-004	YL2301152-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		32.1	33.3	32.6	34.1	33.7
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.181	0.190	0.195	0.209	0.201
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		58.5	59.8	59.9	63.8	60.0
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000019	0.000021	<0.000010	0.000026	<0.000010
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		0.0827	0.0881	0.0888	0.132	0.0892
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved mercury filtration location	----	EP509/VA	-	-		Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421/VA	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	P1-A: 12N 487258E 7289494N	P1-B: 12N 487557E 7289724N	P1-D: 12N 488149E 7289342N	----	----
					Client sampling date / time	15-Sep-2023 09:40	15-Sep-2023 10:25	15-Sep-2023 10:50	----	----
						YL2301152-006	YL2301152-007	YL2301152-008	--------	--------
						Result	Result	Result	----	----
Physical Tests										
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	<1.0	<1.0	----	----
Conductivity	----	E100/VA	1.0	µS/cm		389	389	366	----	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		114	111	108	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		116	114	112	----	----
pH	----	E108/VA	0.10	pH units		4.42	4.41	4.91	----	----
Solids, total suspended [TSS]	----	E160-L/VA	1.0	mg/L		1.5	2.8	1.2	----	----
Anions and Nutrients										
Bromide	24959-67-9	E235.Br-U/VA	0.0050	mg/L		0.117	0.117	0.108	----	----
Chloride	16887-00-6	E235.Cl-L/VA	0.10	mg/L		9.35	9.30	8.89	----	----
Fluoride	16984-48-8	E235.F-L/VA	0.010	mg/L		0.132	0.129	0.119	----	----
Nitrate (as N)	14797-55-8	E235.NO3-T/VA	0.0030	mg/L		0.376	0.380	0.395	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		0.0011	0.0010	<0.0010	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4-L/VA	0.050	mg/L		162	162	153	----	----
Cyanides										
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		1.06	1.06	0.848	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.0163	0.00956	0.00761	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0150	0.0153	0.0138	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		0.000303	0.000282	0.000254	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.033	0.032	0.030	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.000277	0.000294	0.000250	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		33.2	32.4	31.4	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000041	0.000039	0.000032	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	P1-A: 12N 487258E 7289494N	P1-B: 12N 487557E 7289724N	P1-D: 12N 488149E 7289342N	----	----
					Client sampling date / time	15-Sep-2023 09:40	15-Sep-2023 10:25	15-Sep-2023 10:50	----	----
						YL2301152-006	YL2301152-007	YL2301152-008	--------	--------
						Result	Result	Result	----	----
Total Metals										
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		0.0564	0.0569	0.0495	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.0336	0.0334	0.0292	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.693	0.606	0.479	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.00180	0.00173	0.00150	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0275	0.0280	0.0255	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		8.06	8.03	8.11	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.789	0.785	0.681	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		<0.000050	<0.000050	0.000064	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.116	0.117	0.104	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	<0.050	<0.050	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		3.20	3.24	3.17	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00184	0.00182	0.00164	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000051	0.000051	<0.000050	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		3.08	3.06	2.90	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		19.8	19.8	18.4	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.172	0.168	0.159	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		54.2	53.3	50.9	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.00075	0.00090	0.00038	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000205	0.000192	0.000171	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		0.650	0.658	0.576	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	P1-A: 12N 487258E 7289494N	P1-B: 12N 487557E 7289724N	P1-D: 12N 488149E 7289342N	----	----
					Client sampling date / time	15-Sep-2023 09:40	15-Sep-2023 10:25	15-Sep-2023 10:50	----	----
						YL2301152-006	YL2301152-007	YL2301152-008	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		1.03	1.01	0.723	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00666	0.00707	0.00476	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0149	0.0147	0.0134	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		0.000308	0.000282	0.000240	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		0.030	0.030	0.029	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		0.000269	0.000280	0.000235	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		32.1	31.8	30.1	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		0.000038	0.000036	0.000032	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		0.0556	0.0550	0.0494	----	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.0330	0.0317	0.0287	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.570	0.533	0.458	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		0.00165	0.00158	0.00134	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0272	0.0269	0.0246	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		8.18	7.76	7.96	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.776	0.760	0.715	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		<0.000050	<0.000050	0.000053	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.116	0.113	0.103	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	<0.050	<0.050	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		3.33	3.17	3.12	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00180	0.00175	0.00162	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		3.06	2.99	2.89	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		20.8	20.4	19.2	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.174	0.168	0.157	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	P1-A: 12N 487258E 7289494N	P1-B: 12N 487557E 7289724N	P1-D: 12N 488149E 7289342N	----	----
					Client sampling date / time	15-Sep-2023 09:40	15-Sep-2023 10:25	15-Sep-2023 10:50	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2301152-006	YL2301152-007	YL2301152-008	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		49.9	49.5	47.3	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	<0.00030	<0.00030	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000191	0.000177	0.000151	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		0.651	0.650	0.576	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Field	Field	Field	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Field	Field	Field	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **YL2301152**	Page	: 1 of 22
Client	: **Elgin Mining Inc.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Karyn Lewis	Account Manager	: Oliver Gregg
Address	: 750 West Pender Street Suite 201 Vancouver BC Canada V6C 2T7	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: 604 682 3366	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 18-Sep-2023 11:40
PO	: ----	Issue Date	: 03-Oct-2023 09:48
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: YL23-ELMI100-001		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Total Metals	QC-MRG3-1145944 002	----	Iron, total	7439-89-6	E420	124 % MES	80.0-120%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE P1-A: 12N 487258E 7289494N	E235.Br-U	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE P1-B: 12N 487557E 7289724N	E235.Br-U	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE P1-D: 12N 488149E 7289342N	E235.Br-U	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE P2-A: 12N 486664E 7290531N	E235.Br-U	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE P2-B: 12N 485964E 7289795N	E235.Br-U	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE P2-C: 12N 486903E 7289200N	E235.Br-U	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE P2-D: 12N 487146E 7289538N	E235.Br-U	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide by IC (Ultra Trace Level)										
HDPE										
P2-E: 12N 487039E 7290047N	E235.Br-U	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
P1-A: 12N 487258E 7289494N	E235.Cl-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
P1-B: 12N 487557E 7289724N	E235.Cl-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
P1-D: 12N 488149E 7289342N	E235.Cl-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
P2-A: 12N 486664E 7290531N	E235.Cl-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
P2-B: 12N 485964E 7289795N	E235.Cl-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
P2-C: 12N 486903E 7289200N	E235.Cl-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
P2-D: 12N 487146E 7289538N	E235.Cl-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
P2-E: 12N 487039E 7290047N	E235.Cl-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE P1-A: 12N 487258E 7289494N	E235.F-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE P1-B: 12N 487557E 7289724N	E235.F-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE P1-D: 12N 488149E 7289342N	E235.F-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE P2-A: 12N 486664E 7290531N	E235.F-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE P2-B: 12N 485964E 7289795N	E235.F-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE P2-C: 12N 486903E 7289200N	E235.F-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE P2-D: 12N 487146E 7289538N	E235.F-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC (Low Level)										
HDPE P2-E: 12N 487039E 7290047N	E235.F-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE P1-D: 12N 488149E 7289342N	E235.NO3-T	15-Sep-2023	21-Sep-2023	3 days	5 days	× EHTL	21-Sep-2023	3 days	5 days	× EHTL

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE P1-A: 12N 487258E 7289494N	E235.NO3-T	15-Sep-2023	21-Sep-2023	3 days	5 days	× EHTL	21-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE P1-B: 12N 487557E 7289724N	E235.NO3-T	15-Sep-2023	21-Sep-2023	3 days	5 days	× EHTL	21-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE P2-A: 12N 486664E 7290531N	E235.NO3-T	15-Sep-2023	21-Sep-2023	3 days	5 days	× EHTL	21-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE P2-B: 12N 485964E 7289795N	E235.NO3-T	15-Sep-2023	21-Sep-2023	3 days	5 days	× EHTL	21-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE P2-C: 12N 486903E 7289200N	E235.NO3-T	15-Sep-2023	21-Sep-2023	3 days	5 days	× EHTL	21-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE P2-D: 12N 487146E 7289538N	E235.NO3-T	15-Sep-2023	21-Sep-2023	3 days	5 days	× EHTL	21-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrate in Water by IC (Trace Level)										
HDPE P2-E: 12N 487039E 7290047N	E235.NO3-T	15-Sep-2023	21-Sep-2023	3 days	5 days	× EHTL	21-Sep-2023	3 days	6 days	× EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE P1-D: 12N 488149E 7289342N	E235.NO2-L	15-Sep-2023	21-Sep-2023	3 days	5 days	× EHTL	21-Sep-2023	3 days	5 days	× EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE P1-A: 12N 487258E 7289494N	E235.NO2-L	15-Sep-2023	21-Sep-2023	3 days	5 days	× EHTL	21-Sep-2023	3 days	6 days	× EHTL

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE P1-B: 12N 487557E 7289724N	E235.NO2-L	15-Sep-2023	21-Sep-2023	3 days	5 days	✗ EHTL	21-Sep-2023	3 days	6 days	✗ EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE P2-A: 12N 486664E 7290531N	E235.NO2-L	15-Sep-2023	21-Sep-2023	3 days	5 days	✗ EHTL	21-Sep-2023	3 days	6 days	✗ EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE P2-B: 12N 485964E 7289795N	E235.NO2-L	15-Sep-2023	21-Sep-2023	3 days	5 days	✗ EHTL	21-Sep-2023	3 days	6 days	✗ EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE P2-C: 12N 486903E 7289200N	E235.NO2-L	15-Sep-2023	21-Sep-2023	3 days	5 days	✗ EHTL	21-Sep-2023	3 days	6 days	✗ EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE P2-D: 12N 487146E 7289538N	E235.NO2-L	15-Sep-2023	21-Sep-2023	3 days	5 days	✗ EHTL	21-Sep-2023	3 days	6 days	✗ EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE P2-E: 12N 487039E 7290047N	E235.NO2-L	15-Sep-2023	21-Sep-2023	3 days	5 days	✗ EHTL	21-Sep-2023	3 days	6 days	✗ EHTL
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE P1-A: 12N 487258E 7289494N	E235.SO4-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE P1-B: 12N 487557E 7289724N	E235.SO4-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE P1-D: 12N 488149E 7289342N	E235.SO4-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE P2-A: 12N 486664E 7290531N	E235.SO4-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE P2-B: 12N 485964E 7289795N	E235.SO4-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE P2-C: 12N 486903E 7289200N	E235.SO4-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE P2-D: 12N 487146E 7289538N	E235.SO4-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE P2-E: 12N 487039E 7290047N	E235.SO4-L	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	21-Sep-2023	28 days	6 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) P1-A: 12N 487258E 7289494N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) P1-B: 12N 487557E 7289724N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) P1-D: 12N 488149E 7289342N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) P2-A: 12N 486664E 7290531N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
P2-B: 12N 485964E 7289795N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
P2-C: 12N 486903E 7289200N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
P2-D: 12N 487146E 7289538N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
P2-E: 12N 487039E 7290047N	E333	15-Sep-2023	29-Sep-2023	14 days	14 days	✓	29-Sep-2023	14 days	14 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
P1-A: 12N 487258E 7289494N	E509	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
P1-B: 12N 487557E 7289724N	E509	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
P1-D: 12N 488149E 7289342N	E509	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
P2-A: 12N 486664E 7290531N	E509	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
P2-B: 12N 485964E 7289795N	E509	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) P2-C: 12N 486903E 7289200N	E509	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) P2-D: 12N 487146E 7289538N	E509	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) P2-E: 12N 487039E 7290047N	E509	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) P1-A: 12N 487258E 7289494N	E421	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) P1-B: 12N 487557E 7289724N	E421	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) P1-D: 12N 488149E 7289342N	E421	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) P2-A: 12N 486664E 7290531N	E421	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) P2-B: 12N 485964E 7289795N	E421	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) P2-C: 12N 486903E 7289200N	E421	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
P2-D: 12N 487146E 7289538N	E421	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
P2-E: 12N 487039E 7290047N	E421	15-Sep-2023	22-Sep-2023	180 days	7 days	✓	25-Sep-2023	180 days	10 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
P1-A: 12N 487258E 7289494N	E290	15-Sep-2023	21-Sep-2023	14 days	6 days	✓	22-Sep-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
P1-B: 12N 487557E 7289724N	E290	15-Sep-2023	21-Sep-2023	14 days	6 days	✓	22-Sep-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
P1-D: 12N 488149E 7289342N	E290	15-Sep-2023	21-Sep-2023	14 days	6 days	✓	22-Sep-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
P2-A: 12N 486664E 7290531N	E290	15-Sep-2023	21-Sep-2023	14 days	6 days	✓	22-Sep-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
P2-B: 12N 485964E 7289795N	E290	15-Sep-2023	21-Sep-2023	14 days	6 days	✓	22-Sep-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
P2-C: 12N 486903E 7289200N	E290	15-Sep-2023	21-Sep-2023	14 days	6 days	✓	22-Sep-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
P2-D: 12N 487146E 7289538N	E290	15-Sep-2023	21-Sep-2023	14 days	6 days	✓	22-Sep-2023	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE P2-E: 12N 487039E 7290047N	E290	15-Sep-2023	21-Sep-2023	14 days	6 days	✓	22-Sep-2023	14 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE P1-A: 12N 487258E 7289494N	E100	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE P1-B: 12N 487557E 7289724N	E100	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE P1-D: 12N 488149E 7289342N	E100	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE P2-A: 12N 486664E 7290531N	E100	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE P2-B: 12N 485964E 7289795N	E100	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE P2-C: 12N 486903E 7289200N	E100	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE P2-D: 12N 487146E 7289538N	E100	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE P2-E: 12N 487039E 7290047N	E100	15-Sep-2023	21-Sep-2023	28 days	6 days	✓	22-Sep-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE P1-B: 12N 487557E 7289724N	E108	15-Sep-2023	21-Sep-2023	0.25 hrs	141 hrs	× EHTR-FM	22-Sep-2023	0.25 hrs	164 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE P1-D: 12N 488149E 7289342N	E108	15-Sep-2023	21-Sep-2023	0.25 hrs	141 hrs	× EHTR-FM	22-Sep-2023	0.25 hrs	164 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE P1-A: 12N 487258E 7289494N	E108	15-Sep-2023	21-Sep-2023	0.25 hrs	142 hrs	× EHTR-FM	22-Sep-2023	0.25 hrs	165 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE P2-E: 12N 487039E 7290047N	E108	15-Sep-2023	21-Sep-2023	0.25 hrs	142 hrs	× EHTR-FM	22-Sep-2023	0.25 hrs	165 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE P2-D: 12N 487146E 7289538N	E108	15-Sep-2023	21-Sep-2023	0.25 hrs	143 hrs	× EHTR-FM	22-Sep-2023	0.25 hrs	165 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE P2-B: 12N 485964E 7289795N	E108	15-Sep-2023	21-Sep-2023	0.25 hrs	143 hrs	× EHTR-FM	22-Sep-2023	0.25 hrs	166 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE P2-C: 12N 486903E 7289200N	E108	15-Sep-2023	21-Sep-2023	0.25 hrs	143 hrs	× EHTR-FM	22-Sep-2023	0.25 hrs	166 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE P2-A: 12N 486664E 7290531N	E108	15-Sep-2023	21-Sep-2023	0.25 hrs	144 hrs	× EHTR-FM	22-Sep-2023	0.25 hrs	166 hrs	× EHTR-FM
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE P1-A: 12N 487258E 7289494N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE P1-B: 12N 487557E 7289724N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE P1-D: 12N 488149E 7289342N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE P2-A: 12N 486664E 7290531N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE P2-B: 12N 485964E 7289795N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE P2-C: 12N 486903E 7289200N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE P2-D: 12N 487146E 7289538N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE P2-E: 12N 487039E 7290047N	E160-L	15-Sep-2023	----	----	----		22-Sep-2023	7 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) P1-A: 12N 487258E 7289494N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) P1-B: 12N 487557E 7289724N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) P1-D: 12N 488149E 7289342N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) P2-A: 12N 486664E 7290531N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) P2-B: 12N 485964E 7289795N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) P2-C: 12N 486903E 7289200N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) P2-D: 12N 487146E 7289538N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) P2-E: 12N 487039E 7290047N	E508	15-Sep-2023	22-Sep-2023	28 days	7 days	✓	22-Sep-2023	28 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) P1-A: 12N 487258E 7289494N	E420	15-Sep-2023	21-Sep-2023	180 days	6 days	✓	25-Sep-2023	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) P1-B: 12N 487557E 7289724N	E420	15-Sep-2023	21-Sep-2023	180 days	6 days	✓	25-Sep-2023	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) P1-D: 12N 488149E 7289342N	E420	15-Sep-2023	21-Sep-2023	180 days	6 days	✓	25-Sep-2023	180 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) P2-A: 12N 486664E 7290531N	E420	15-Sep-2023	21-Sep-2023	180 days	6 days	✓	25-Sep-2023	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) P2-B: 12N 485964E 7289795N	E420	15-Sep-2023	21-Sep-2023	180 days	6 days	✓	25-Sep-2023	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) P2-C: 12N 486903E 7289200N	E420	15-Sep-2023	21-Sep-2023	180 days	6 days	✓	25-Sep-2023	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) P2-D: 12N 487146E 7289538N	E420	15-Sep-2023	21-Sep-2023	180 days	6 days	✓	25-Sep-2023	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) P2-E: 12N 487039E 7290047N	E420	15-Sep-2023	21-Sep-2023	180 days	6 days	✓	25-Sep-2023	180 days	10 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1145410	1	8	12.5	5.0	✓
Bromide by IC (Ultra Trace Level)	E235.Br-U	1145416	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	1145412	1	8	12.5	5.0	✓
Conductivity in Water	E100	1145409	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1148353	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1145985	1	20	5.0	5.0	✓
Fluoride in Water by IC (Low Level)	E235.F-L	1145413	1	8	12.5	5.0	✓
Nitrate in Water by IC (Trace Level)	E235.NO3-T	1145415	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1145414	1	8	12.5	5.0	✓
pH by Meter	E108	1145411	1	18	5.5	5.0	✓
Sulfate in Water by IC (Low Level)	E235.SO4-L	1145417	1	8	12.5	5.0	✓
Total Cyanide	E333	1161139	2	22	9.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1147598	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1145945	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1145410	1	8	12.5	5.0	✓
Bromide by IC (Ultra Trace Level)	E235.Br-U	1145416	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	1145412	1	8	12.5	5.0	✓
Conductivity in Water	E100	1145409	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1148353	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1145985	1	20	5.0	5.0	✓
Fluoride in Water by IC (Low Level)	E235.F-L	1145413	1	8	12.5	5.0	✓
Nitrate in Water by IC (Trace Level)	E235.NO3-T	1145415	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1145414	1	8	12.5	5.0	✓
pH by Meter	E108	1145411	1	18	5.5	5.0	✓
Sulfate in Water by IC (Low Level)	E235.SO4-L	1145417	1	8	12.5	5.0	✓
Total Cyanide	E333	1161139	2	22	9.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1147598	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1145945	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	1147542	2	24	8.3	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1145410	1	8	12.5	5.0	✓
Bromide by IC (Ultra Trace Level)	E235.Br-U	1145416	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	1145412	1	8	12.5	5.0	✓
Conductivity in Water	E100	1145409	1	8	12.5	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Dissolved Mercury in Water by CVAAS	E509	1148353	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1145985	1	20	5.0	5.0	✓
Fluoride in Water by IC (Low Level)	E235.F-L	1145413	1	8	12.5	5.0	✓
Nitrate in Water by IC (Trace Level)	E235.NO3-T	1145415	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1145414	1	8	12.5	5.0	✓
Sulfate in Water by IC (Low Level)	E235.SO4-L	1145417	1	8	12.5	5.0	✓
Total Cyanide	E333	1161139	2	22	9.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1147598	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1145945	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	1147542	2	24	8.3	5.0	✓
Matrix Spikes (MS)							
Bromide by IC (Ultra Trace Level)	E235.Br-U	1145416	1	8	12.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	1145412	1	8	12.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1148353	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1145985	1	20	5.0	5.0	✓
Fluoride in Water by IC (Low Level)	E235.F-L	1145413	1	8	12.5	5.0	✓
Nitrate in Water by IC (Trace Level)	E235.NO3-T	1145415	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1145414	1	8	12.5	5.0	✓
Sulfate in Water by IC (Low Level)	E235.SO4-L	1145417	1	8	12.5	5.0	✓
Total Cyanide	E333	1161139	2	22	9.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1147598	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1145945	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 ALS Environmental - Vancouver	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry (Low Level)	E160-L ALS Environmental - Vancouver	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Bromide by IC (Ultra Trace Level)	E235.Br-U ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC (Low Level)	E235.F-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Trace Level)	E235.NO3-T ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC (Low Level)	E235.SO4-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	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.
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	“Hardness (as CaCO3), from total Ca/Mg” is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **YL2301152**	Page	: 1 of 18
Client	: Elgin Mining Inc.	Laboratory	: ALS Environmental - Yellowknife
Contact	: Karyn Lewis	Account Manager	: Oliver Gregg
Address	: 750 West Pender Street Suite 201 Vancouver BC Canada V6C 2T7	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	:	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 18-Sep-2023 11:40
PO	: ----	Date Analysis Commenced	: 21-Sep-2023
C-O-C number	: ----	Issue Date	: 03-Oct-2023 09:38
Sampler	: ---- 604 682 3366		
Site	: ----		
Quote number	: YL23-ELMI100-001		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Chamoi Beckford	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Kate Dimitrova	Supervisor - Inorganic	Vancouver Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Vancouver Inorganics, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1145409)											
YL2301152-001	P2-A: 12N 486664E 7290531N	Conductivity	----	E100	1.0	µS/cm	453	453	0.00%	10%	----
Physical Tests (QC Lot: 1145410)											
YL2301152-001	P2-A: 12N 486664E 7290531N	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	1.5	1.5	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1145411)											
YL2301152-001	P2-A: 12N 486664E 7290531N	pH	----	E108	0.10	pH units	6.33	6.33	0.00%	4%	----
Anions and Nutrients (QC Lot: 1145412)											
YL2301152-001	P2-A: 12N 486664E 7290531N	Chloride	16887-00-6	E235.Cl-L	0.10	mg/L	15.9	16.1	1.13%	20%	----
Anions and Nutrients (QC Lot: 1145413)											
YL2301152-001	P2-A: 12N 486664E 7290531N	Fluoride	16984-48-8	E235.F-L	0.010	mg/L	0.102	0.106	4.02%	20%	----
Anions and Nutrients (QC Lot: 1145414)											
YL2301152-001	P2-A: 12N 486664E 7290531N	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0011	0.0001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1145415)											
YL2301152-001	P2-A: 12N 486664E 7290531N	Nitrate (as N)	14797-55-8	E235.NO3-T	0.0030	mg/L	0.273	0.277	1.56%	20%	----
Anions and Nutrients (QC Lot: 1145416)											
YL2301152-001	P2-A: 12N 486664E 7290531N	Bromide	24959-67-9	E235.Br-U	0.0050	mg/L	0.193	0.198	2.38%	20%	----
Anions and Nutrients (QC Lot: 1145417)											
YL2301152-001	P2-A: 12N 486664E 7290531N	Sulfate (as SO4)	14808-79-8	E235.SO4-L	0.050	mg/L	180	182	1.12%	20%	----
Cyanides (QC Lot: 1161139)											
KS2303492-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
Cyanides (QC Lot: 1161140)											
YL2301152-007	P1-B: 12N 487557E 7289724N	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Total Metals (QC Lot: 1145945)											
VA23C2286-002	Anonymous	Aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0376	0.0387	0.0011	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00020	mg/L	0.00020	0.00021	0.000003	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00214	0.00210	2.07%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1145945) - continued											
VA23C2286-002	Anonymous	Barium, total	7440-39-3	E420	0.00020	mg/L	0.0366	0.0366	0.0135%	20%	----
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.020	mg/L	0.556	0.556	0.157%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000200	mg/L	<0.0000200	<0.0000200	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.100	mg/L	149	153	2.61%	20%	----
		Cesium, total	7440-46-2	E420	0.000020	mg/L	0.000035	0.000036	0.0000010	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	0.0158	0.0161	1.94%	20%	----
		Cobalt, total	7440-48-4	E420	0.00020	mg/L	0.00023	0.00023	0.000005	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00100	mg/L	0.00264	0.00281	0.00016	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.020	mg/L	0.106	0.109	0.002	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0020	mg/L	0.0156	0.0161	0.0005	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0100	mg/L	205	209	1.82%	20%	----
		Manganese, total	7439-96-5	E420	0.00020	mg/L	0.0436	0.0451	3.38%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.0259	0.0260	0.421%	20%	----
		Nickel, total	7440-02-0	E420	0.00100	mg/L	0.00301	0.00308	0.00006	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.100	mg/L	32.3	33.1	2.39%	20%	----
		Rubidium, total	7440-17-7	E420	0.00040	mg/L	0.00883	0.00892	0.993%	20%	----
		Selenium, total	7782-49-2	E420	0.000100	mg/L	0.0117	0.0118	1.01%	20%	----
		Silicon, total	7440-21-3	E420	0.20	mg/L	11.3	11.6	3.28%	20%	----
		Silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.100	mg/L	300	305	1.84%	20%	----
		Strontium, total	7440-24-6	E420	0.00040	mg/L	3.00	3.00	0.219%	20%	----
		Sulfur, total	7704-34-9	E420	1.00	mg/L	417	423	1.47%	20%	----
		Tellurium, total	13494-80-9	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00060	mg/L	0.00191	0.00195	0.00004	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000020	mg/L	0.0265	0.0262	1.05%	20%	----
		Vanadium, total	7440-62-2	E420	0.00100	mg/L	0.00650	0.00657	0.00006	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1145945) - continued											
VA23C2286-002	Anonymous	Zinc, total	7440-66-6	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
Total Metals (QC Lot: 1147598)											
KS2303519-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1145985)											
KS2303545-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0068	0.0074	0.0007	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00032	0.00034	0.00002	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0118	0.0118	0.0737%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	16.2	16.3	0.438%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00071	0.00071	0.000003	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.90	2.88	0.472%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00204	0.00206	0.958%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000831	0.000816	1.81%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.19	1.21	2.09%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00140	0.00140	0.000002	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000220	0.000228	0.000008	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.35	3.37	0.618%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.39	2.39	0.0805%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.105	0.103	1.83%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.61	2.74	0.13	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 1145985) - continued											
KS2303545-001	Anonymous	Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000407	0.000404	0.682%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00068	0.00074	0.00006	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1148353)											
FJ2302390-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1145409)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 1145410)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1147542)						
Solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 1147543)						
Solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 1145412)						
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 1145413)						
Fluoride	16984-48-8	E235.F-L	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 1145414)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1145415)						
Nitrate (as N)	14797-55-8	E235.NO3-T	0.003	mg/L	<0.0030	----
Anions and Nutrients (QCLot: 1145416)						
Bromide	24959-67-9	E235.Br-U	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1145417)						
Sulfate (as SO4)	14808-79-8	E235.SO4-L	0.05	mg/L	<0.050	----
Cyanides (QCLot: 1161139)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 1161140)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Total Metals (QCLot: 1145945)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1145945) - continued						
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 1147598)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1145985)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1145985) - continued						
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1145985) - continued						
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 1148353)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1145409)									
Conductivity	----	E100	1	µS/cm	146.9 µS/cm	96.0	90.0	110	----
Physical Tests (QCLot: 1145410)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	110	85.0	115	----
Physical Tests (QCLot: 1145411)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1147542)									
Solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.2	85.0	115	----
Physical Tests (QCLot: 1147543)									
Solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	86.9	85.0	115	----
Anions and Nutrients (QCLot: 1145412)									
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1145413)									
Fluoride	16984-48-8	E235.F-L	0.01	mg/L	1 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 1145414)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1145415)									
Nitrate (as N)	14797-55-8	E235.NO3-T	0.003	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1145416)									
Bromide	24959-67-9	E235.Br-U	0.005	mg/L	0.5 mg/L	96.9	85.0	115	----
Anions and Nutrients (QCLot: 1145417)									
Sulfate (as SO4)	14808-79-8	E235.SO4-L	0.05	mg/L	100 mg/L	103	90.0	110	----
Cyanides (QCLot: 1161139)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	111	80.0	120	----
Cyanides (QCLot: 1161140)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	118	80.0	120	----
Total Metals (QCLot: 1145945)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	109	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1145945) - continued									
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.8	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	103	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	109	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	# 124	80.0	120	MES
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	110	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	108	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	113	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	112	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	110	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	111	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	99.3	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	108	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	99.2	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	99.4	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	99.9	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	109	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1147598)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.4	80.0	120	----
Dissolved Metals (QCLot: 1145985)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.6	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	100.0	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	118	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.5	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	106	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	107	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	118	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.5	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.1	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	105	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.9	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	95.8	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1145985) - continued									
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	100.0	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	95.7	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.2	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	99.5	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----

Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1145412)										
YL2301152-002	P2-B: 12N 485964E 7289795N	Chloride	16887-00-6	E235.Cl-L	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1145413)										
YL2301152-002	P2-B: 12N 485964E 7289795N	Fluoride	16984-48-8	E235.F-L	1.08 mg/L	1 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 1145414)										
YL2301152-002	P2-B: 12N 485964E 7289795N	Nitrite (as N)	14797-65-0	E235.NO2-L	0.524 mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1145415)										
YL2301152-002	P2-B: 12N 485964E 7289795N	Nitrate (as N)	14797-55-8	E235.NO3-T	2.59 mg/L	2.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1145416)										
YL2301152-002	P2-B: 12N 485964E 7289795N	Bromide	24959-67-9	E235.Br-U	0.479 mg/L	0.5 mg/L	95.9	75.0	125	----
Anions and Nutrients (QCLot: 1145417)										
YL2301152-002	P2-B: 12N 485964E 7289795N	Sulfate (as SO4)	14808-79-8	E235.SO4-L	ND mg/L	100 mg/L	ND	75.0	125	----
Cyanides (QCLot: 1161139)										
KS2303492-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.290 mg/L	0.25 mg/L	116	75.0	125	----
Cyanides (QCLot: 1161140)										
YL2301152-007	P1-B: 12N 487557E 7289724N	Cyanide, strong acid dissociable (Total)	----	E333	0.230 mg/L	0.25 mg/L	91.9	75.0	125	----
Total Metals (QCLot: 1145945)										
KS2303563-001	Anonymous	Aluminum, total	7429-90-5	E420	1.08 mg/L	1 mg/L	108	70.0	130	----
		Antimony, total	7440-36-0	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		Barium, total	7440-39-3	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0467 mg/L	0.05 mg/L	93.3	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	0.5 mg/L	ND	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0504 mg/L	0.05 mg/L	101	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1145945) - continued										
KS2303563-001	Anonymous	Chromium, total	7440-47-3	E420	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		Copper, total	7440-50-8	E420	0.0973 mg/L	0.1 mg/L	97.3	70.0	130	----
		Iron, total	7439-89-6	E420	9.93 mg/L	10 mg/L	99.3	70.0	130	----
		Lead, total	7439-92-1	E420	0.0964 mg/L	0.1 mg/L	96.4	70.0	130	----
		Lithium, total	7439-93-2	E420	0.526 mg/L	0.5 mg/L	105	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	5 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		Nickel, total	7440-02-0	E420	0.199 mg/L	0.2 mg/L	99.7	70.0	130	----
		Phosphorus, total	7723-14-0	E420	56.0 mg/L	50 mg/L	112	70.0	130	----
		Potassium, total	7440-09-7	E420	20.8 mg/L	20 mg/L	104	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		Selenium, total	7782-49-2	E420	0.198 mg/L	0.2 mg/L	98.8	70.0	130	----
		Silicon, total	7440-21-3	E420	52.7 mg/L	50 mg/L	105	70.0	130	----
		Silver, total	7440-22-4	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	ND mg/L	100 mg/L	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.211 mg/L	0.2 mg/L	105	70.0	130	----
		Thallium, total	7440-28-0	E420	0.0185 mg/L	0.02 mg/L	92.7	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0949 mg/L	0.1 mg/L	94.9	70.0	130	----
		Tin, total	7440-31-5	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		Titanium, total	7440-32-6	E420	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0965 mg/L	0.1 mg/L	96.5	70.0	130	----
		Uranium, total	7440-61-1	E420	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.534 mg/L	0.5 mg/L	107	70.0	130	----
		Zinc, total	7440-66-6	E420	2.06 mg/L	2 mg/L	103	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.208 mg/L	0.2 mg/L	104	70.0	130	----
Total Metals (QCLot: 1147598)										
VA23C1955-004	Anonymous	Mercury, total	7439-97-6	E508	0.0000959 mg/L	0.0001 mg/L	95.9	70.0	130	----
Dissolved Metals (QCLot: 1145985)										
KS2303545-004	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.192 mg/L	0.2 mg/L	95.9	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 1145985) - continued										
KS2303545-004	Anonymous	Barium, dissolved	7440-39-3	E421	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00930 mg/L	0.01 mg/L	93.0	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.095 mg/L	0.1 mg/L	94.6	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00386 mg/L	0.004 mg/L	96.6	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00992 mg/L	0.01 mg/L	99.2	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.3	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0940 mg/L	0.1 mg/L	94.0	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.6 mg/L	10 mg/L	106	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.76 mg/L	4 mg/L	94.1	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.72 mg/L	10 mg/L	97.2	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00389 mg/L	0.004 mg/L	97.3	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	18.8 mg/L	20 mg/L	93.9	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00365 mg/L	0.004 mg/L	91.2	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0179 mg/L	0.02 mg/L	89.4	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00364 mg/L	0.004 mg/L	91.1	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0981 mg/L	0.1 mg/L	98.1	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.406 mg/L	0.4 mg/L	102	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 1145985) - continued										
KS2303545-004	Anonymous	Zirconium, dissolved	7440-67-7	E421	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
Dissolved Metals (QCLot: 1148353)										
FJ2302390-004	Anonymous	Mercury, dissolved	7439-97-6	E509	0.000117 mg/L	0.0001 mg/L	117	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 14 -

Page 1 of 2

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Lupin Mines Inc. C/O Mandalay Resources Co.	Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Karyn Lewis	Quality Control (QC) Report with Report ☐ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	76 Richmond Street East, Suite 330 Toronto, Ontario M5C 1P1	☐ Criteria on Report - provide details below if box checked	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
Phone:	(778) 386-7340	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
		Email 1 or Fax k.lewis@mandalayresources.com	Specify Date Required for E2,E or P:
		Email 2 michelle.surette@stantec.com	

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Company:	Lupin Mines Inc. C/O Mandalay Resources Co.	Email 1 or Fax k.lewis@mandalayresources.com
Contact:	k.lewis@mandalayresources.com	Email 2

Project Information	Oil and Gas Required Fields (client use)	
ALS Quote #:	Approver ID:	Cost Center:
Job #:	GL Account:	Routing Code:
PO / AFE:	Activity Code:	
LSD:	Location:	

ALS Lab Work Order # (lab use only)

ALS Contact: Oliver Gregg **Sampler:** Mike Mahowald

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	General	Total Metals	Dissolved Metals	Total Mercury	Dissolved Mercury	Total Cyanide							Number of Containers
						P	F/P	P	F/P	P							
	P2-A: 12N 486664E 7290531N	15-Sep-23	8:00	Water	R	R	R	R	R	R							6
	P2-B: 12N 485964E 7289795N	15-Sep-23	8:20	Water	R	R	R	R	R	R							6
	P2-C: 12N 486903E 7289200N	15-Sep-23	8:45	Water	R	R	R	R	R	R							6
	P2-D: 12N 487146E 7289538N	15-Sep-23	9:00	Water	R	R	R	R	R	R							6
	P2-E: 12N 487039E 7290047N	15-Sep-23	9:20	Water	R	R	R	R	R	R							6
	P1-A: 12N 487258E 7289494N	15-Sep-23	9:40	Water	R	R	R	R	R	R							6
	P1-B: 12N 487557E 7289724N	15-Sep-23	10:25	Water	R	R	R	R	R	R							6
	P1-D: 12N 488149E 7289342N	15-Sep-23	10:50	Water	R	R	R	R	R	R							6

Environmental Division
Yellowknife
Work Order Reference
YL2301152

Telephone : +1 867 873 5593

Drinking Water (DW) Samples[1] (client us

Are samples taken from a Regulated DW System? ☐ Yes ☑ No

Are samples for human drinking water use? ☐ Yes ☑ No

pecify 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		
1.8					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: MIKE MAHOWALD	Date: 16-SEP-23	Time: 11:00	Received by:	Date: 18-SEP	Time: 10:00	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-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**.

APPENDIX B: ADDENDA TO PLANS, REPORTS OR MANUALS

B-1: Approved Final Closure and Reclamation Plan dated August 2020

Addenda Update to Table 14: Summary of Measures for Final Closure

B-2: Approved Post Closure Monitoring Plan dated April 2021

Addenda Update to Table 9: Water Quality Monitoring Requirements for Active and Passive Closure at Lupin Mine

Appendix B-1: Addenda to approved Final Closure and Reclamation Plan dated August 2020, Table 14 - Summary of Measures for Final Closure

Component	Description	Closure Phase					Post-Closure Phase				
		2018	2019-2022	2022-2023	2024	2025	2026	2027	2028	2029	2030
		Preparatory Work	Active	C&M	Active Stage		Passive Stage				
Underground Mine	Construction of spillways in Dam 1A and J Dam; place geotextile and rip rap to 2 m depth							X			X
	Operate Winter Ice Road for salvage removal					X	X				
	Backfilling of shafts to prevent animal or human entrance					X					
	Blasting down crown pillars where required for stability or disposal – to be carried out under approved care and maintenance plan		X								
	Disposing of contaminated soil, waste rock and demolition rubble into open crown pillars – to be carried out under approved care and maintenance plan		X		X	X					
	Backfilling of crown pillars with rock fill (to 1.5 m above surface to allow for settlement) – to be carried out under approved care and maintenance plan					X					
	Capping rock fill in crown pillars with 1.0 m of esker material					X					
Waste Rock	Excavate waste rock from perimeter areas and dispose in the open crown pillars, landfill(s) or central waste rock area[(a)] – to be carried out under approved care and maintenance plan					X					
	Excavate waste rock containing high levels[(b)] of As, CN or P_bNO_3 and dispose in shafts or crown pillars to be carried out under approved care and maintenance plan		X								
	Contouring remaining waste rock and capping with 1.0 m of esker material					X					
	Place a 10 m long plug of rock fill in the adit and portal area		X								
Tailings Containment Area	Removal of tailings pipeline; bury in landfill		X								
	Remove any tailings from emergency dump and dispose in crown pillar					X					
	Complete covering of remaining tailings area with 1.0 m of esker material – to be carried out under approved Final TCA Closure Plan	X	X	X	X	X					
	Demolish treatment plant; dispose in landfill(s)					X	X				
	Installation of permanent monitoring instrumentation – to be carried out under approved Final TCA Closure Plan					X					
	Regrading granular slopes on M Dam					X					
Buildings and Equipment	Removal of asbestos containing materials, disposal in landfill(s)		X								
	Remove salvageable materials; consolidate for shipment off-site		X				X				
	Removal of above-ground mechanical and electrical equipment		X								
	Demolition of ancillary buildings (shops, storage, camp); disposal of rubble in open crown pillars or landfill(s)		X								
	Demolition of mine and mill buildings; disposal of rubble in open crown pillars or landfill(s)		X			X					
	Hoe ram concrete foundation slabs; leave in place and cover		X								
	Removal of freshwater supply system pumphouse; remove pipeline and dispose in the landfill(s)		X								
	Placement of 0.3 granular fill over slabs		X								
	Rehabilitation of roads (cut through access roads and removal of culverts scarify and grade)					X					
	Dismantling and removal of sewage pipeline, lagoon shack and pumping facilities					X					
	Disposal of unsalvageable / un-recyclable non-hazardous waste in landfill(s) – to be carried out under existing approved management plan		X			X					
	Burn combustible material – to be carried out under existing approved licence/permit	X	X	X		X					
Borrow and Quarry Areas	Contouring esker area and placement of erosion protection in drainage paths					X					
Chemicals	Decontaminate: oil, fuel and glycol systems		X	X		X					
	Drum paints, solvents, chemicals, glycols, and hazardous materials collection for shipment to off-site disposal		X	X	X	X					
	Remove ashes from burn pit and bury in landfill(s) > 2m below final grade – to be carried out under existing approved licence/permit					X					
	Burn waste oil – to be carried out under existing approved licence/permit		X			X					

Component	Description	Closure Phase					Post-Closure Phase				
		2018	2019-2022	2022-2023	2024	2025	2026	2027	2028	2029	2030
		Preparatory Work	Active	C&M	Active Stage		Passive Stage				
Chemicals	Consume most of diesel fuel for closure operations		X	X	X	X					
	Burn excess fuel at end of closure activities – to be carried out under existing approved licence/permit					X					
	Empty and purge fuel tanks and dispose in accordance with the Canadian Environmental Protection Act Regulation		X	X	X	X					
	Excavation of hydrocarbon contaminated soils, consolidate into containers and bury in open crown pillars		X		X	X					
	Soil currently in landfarm to be removed and disposed of into the crown pillar.;				X						
Machinery and Mobile Equipment	Drain fluid from equipment to be left on-site and dispose equipment in landfill(s)					X					
	Drain fluid from equipment used for long-term maintenance (e.g., excavators)[c] and dispose in landfill(s) or off-site										X
Landfill	Place wastes into existing landfill(s) – to be carried out under existing approved management plan		X			X					
	Use waste rock to infill voids and create a stable contoured surface which drains freely					X					
	Cover contoured landfill(s) with 1 m of esker material					X					
Site Roads	Scarify all-weather roads; remove culverts										X
Water Management Facilities	Treat water inventory with lime and release to lower water level – to be carried out under existing approved licence/permit	X	X	X		X					
	Construction of spillways in Dam 1A and J Dam; place geotextile and rip rap to 2 m depth							X			X
	Excavation of spillways on Upper and Lower Sewage Lakes					X					
Mob/Demob	Move Mobile equipment from Ulu to Lupin - Cancelled										
	Operate Winter Ice Road for salvage removal					X	X				

Appendix B-2: Addenda Update to Table 9 - Water Quality Monitoring Requirements for Active and Passive Closure at Lupin Mine

Station Name[a]	Station Description	Phase 1 – Active Closure			Phase 2 – Passive Closure					Parameters and Sampling Frequency[b]
		2019-2023	2024	2025	2026	2027	2028	2029	2030	
		Preparatory Work and C&M	Active Monitoring		Passive Monitoring					
LUP-01	Freshwater Intake from Contwoyto Lake	Yes	Yes	Yes	Only if still active					Volume: Monthly totals Field, conventional, total metals, and biological: Annually
LUP-10	Pond 2 discharge at Dam 1A	Yes	Yes	Yes	No – Recognized Closured Mine Status anticipated 30 January 2022					Volume: Quantity of treated effluent discharged, measured, and recorded in cubic metres Field, conventional, total metals, and cyanide, no visible sheen oil & grease: Daily during periods of discharge Nutrients, radium: Weekly during discharge Cyanide and bioassay: Monthly (no less than one-month intervals) commencing with the first day of decant
LUP-10a (LUP-102)	Internal station in TCA Pond 2, approximately 100 m upstream from siphon intake	Yes	Yes	Yes	No					Field, conventional, nutrients, total metals, cyanide, radium, and bioassay: Once prior to initiation of decant and once prior to termination of decant
LUP-10b	Pond 2 TCA spillway	Not active	Not active	Not active	Yes – new monitoring station installed at Dam 1A spillway. See Section 6.2.1 for TCA pH triggers and adaptive monitoring requirements.					Field, conventional, nutrients, total metals, cyanide, radium, and bioassay: Twice-yearly, once in freshet and once in late open-water season (aligned with seepage sampling program at TCA and Waste Rock Dome)
LUP-11	Mine-water discharge at automatic sample in the mill	Not active	Not active	Not active	Not active					2AM-LUP2032 confirms station as “Inactive”. Refer to Schedule J, Table 1.
LUP-12	Mill tailings taken at the mill	Not active	Not active	Not active	Not active					2AM-LUP2032 confirms station as “Inactive”. Refer to Schedule J, Table 1
LUP-14	Decant structure from the Sewage Lakes Disposal Facilities	Yes	Yes	Yes	No – decant structure will be decommissioned during Phase 1					Volume: Monthly quantity of treated effluent discharged in cubic meters Field, conventional, nutrients, total metals, biological Other (biochemical oxygen demand), total phosphorus, total orthophosphorus, total Kjeldahl nitrogen: First day of discharge and then monthly thereafter during periods of flow
LUP-15	Discharge from TCA Pond 1 (east pond) not TCA Pond 2 (west pond)	Not active	Not active	Not active	Not active					2AM-LUP2032 confirms station as “Inactive”. Refer to Schedule J, Table 1.
LUP-16	TCA Pond 2 at Centre	Not active	Not active	Not active	Not active					2AM-LUP2032 confirms station as “Inactive”. Refer to Schedule J, Table 1.
LUP-17	TCA Pond 2 upstream of LUP-10	Not active	Not active	Not active	Not active					2AM-LUP2032 confirms station as “Inactive”. Refer to Schedule J, Table 1.
LUP-19	East End of Seep Creek in Dam 2 Lake	Not active	Not active	Not active	Not active					2AM-LUP2032 confirms station as “Inactive”. Refer to Schedule J, Table 1.
LUP-20	West end of Seep Creek before discharge into Unnamed Lake (also known as East Lake)	Yes	Yes	Yes	No – Lupin anticipated to have ceased discharge from TCA in 2021; no further monitoring required in Seep Creek or Sun Bay					Field, conventional, nutrients, total metals, cyanide, and radium: Weekly during discharge from the TCA, commencing with the fist day of decant
LUP-21	North end of Concession Creek before discharge into Unnamed Lake (also known as East Lake). MDMER Reference Area.	Yes	Yes	Yes	No – Lupin anticipated to have ceased discharge from TCA in 2021; no further monitoring required in Seep Creek or Sun Bay					Field, conventional, nutrients, total metals, cyanide, and radium: Weekly during discharge from the TCA, commencing with the fist day of decant
LUP-22	Inner Sun Bay near center and midway between end of peninsula and west shore	Yes	Yes	Yes	No – Lupin anticipated to have ceased discharge from TCA in 2021; no further monitoring required in Seep Creek or Sun Bay					Field, conventional, nutrients, total metals, cyanide, and radium: Weekly at mid-depth commencing one week prior to discharge from the TCA and concluding two weeks after cessation of the discharge

Station Name[a]	Station Description	Phase 1 – Active Closure			Phase 2 – Passive Closure					Parameters and Sampling Frequency[b]
		2019-2023	2024	2025	2026	2027	2028	2029	2030	
		Preparatory Work and C&M	Active Monitoring		Passive Monitoring					
LUP-24	Inner Sun Bay at mid-way point in narrows. MDMER Exposure Area.	Yes	Yes	Yes	No – Lupin anticipated to have ceased discharge from TCA in 2021; no further monitoring required in Seep Creek or Sun Bay					Field, conventional, nutrients, total metals, cyanide, and radium: Weekly at mid-depth commencing one week prior to discharge from the TCA and concluding two weeks after cessation of the discharge and when bioassay sample is collected at LUP-10 just prior to termination of decant
LUP-25	Outer Sun Bay	Yes	Yes	No	No – Lupin anticipated to have ceased discharge from TCA in 2021; no further monitoring required in Seep Creek or Sun Bay					Field, conventional, nutrients, total metals, cyanide, and radium: Weekly at mid-depth commencing one week prior to discharge from the TCA and concluding two weeks after cessation of the discharge
LUP-26	Contwoyto Lake in bay east of water intake	Not active	Not active	Not active	Not active					2AM-LUP2032 confirms station “Inactive”. Refer to Schedule J, Table 1
LUP-27	Bulk Fuel Storage Facility	Yes	Yes	Yes	No – will be remediated by the end of Phase 1					Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Once prior to discharge and weekly during periods of discharge
LUP-28	Discharge from the Landfarm Facility	No	No	Yes	Only if not yet remediated					Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Once prior to discharge and weekly during periods of discharge
LUP-29[c]	Landfarm Facility Monitoring Well – Upgradient	Not required	Not required	Not required	Not required, assuming wells remain inactive					Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Monthly during periods of observed flow (June to September)
LUP-30a[c]	Landfarm Facility Monitoring Well – Downgradient	Not required	Not required	Not required	Not required, assuming wells remain inactive					Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Monthly during periods of observed flow (June to September)
LUP-30b[c]	Landfarm Facility Monitoring Well – Downgradient	Not required	Not required	Not required	Not required, assuming wells remain inactive					Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Monthly during periods of observed flow (June to September)
LUP-31	Seepage from the Landfill Facility	No	No	Yes	Yes – continue confirmatory sampling to check for any residual contaminated soils and inputs into seepage.					Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Monthly during periods of observed flow (June to September)
LUP-32	Landfill Facility Monitoring Well – Upgradient	Well locations will be confirmed after footprint of landfill is confirmed								Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Monthly during periods of observed flow (June to September)
LUP-33a	Landfill Facility Monitoring Well – Downgradient	Well locations will be confirmed after footprint of landfill is confirmed								Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Monthly during periods of observed flow (June to September)
LUP-34b	Landfill Facility Monitoring Well – Downgradient	Well locations will be confirmed after footprint of landfill is confirmed								Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Monthly during periods of observed flow (June to September)
LUP-35	Seepage from the Landfill Facility	No	No	Yes	Yes – continue confirmatory sampling to check for any residual contaminated soils and inputs into seepage.					Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Monthly during periods of observed flow (June to September)
LUP-36	Demolition Landfill Facility Monitoring Well – Upgradient	No	No	No	Demolition landfill is not planned for construction					Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Monthly during periods of observed flow (June to September)
LUP-37a	Demolition Landfill Facility Monitoring Well – Downgradient	No	No	No	Demolition landfill is not planned for construction					Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Monthly during periods of observed flow (June to September)
LUP-37b	Demolition Landfill Facility Monitoring Well – Downgradient	No	No	No	Demolition landfill is not planned for construction					Field, conventional, nutrients, total metals, total oil and grease, and BTEX: Monthly during periods of observed flow (June to September)
LUP-EL-01	Unnamed Lake (also known as East Lake) near shoreline near the potential seepage inputs	Yes	Yes	Yes	Yes – confirmatory sampling for model predictions					Field, conventional, total metals: Twice-yearly; once in freshet and once in late open-water season, ensuring that baseline samples are collected prior to construction of the waste rock dome.

Station Name[a]	Station Description	Phase 1 – Active Closure			Phase 2 – Passive Closure					Parameters and Sampling Frequency[b]
		2019-2023	2024	2025	2026	2027	2028	2029	2030	
		Preparatory Work and C&M	Active Monitoring		Passive Monitoring					
LUP-BL-01	Boot Lake near shoreline near the potential seepage inputs	Yes	Yes	Yes	Yes – confirmatory sampling for model predictions					Field, conventional, total metals: Twice-yearly; once in freshet and once in late open-water season, ensuring that baseline samples are collected prior to construction of the waste rock dome.
LUP-LSL-01	Lower Sewage Lake near shoreline near the potential seepage inputs	Yes	Yes	Yes	Yes – confirmatory sampling for model predictions					Field, conventional, total metals: Twice-yearly; once in freshet and once in late open-water season, ensuring that baseline samples are collected prior to construction of the waste rock dome.
LUP-SP-01 to LUP-SP-XX[d]	Seeps from the Waste Rock Dome, locations of observed seepage or flow from the waste rock pile	Yes	No	Yes, if flowing	Yes, if flowing – continue confirmatory sampling to check for any residual contaminated soils and inputs into seepage. Combine sampling programs with landfill seepage monitoring (LUP-31 and LUP-35).					Field, conventional, total metals: Twice-yearly; once in freshet and once in late open-water season. [Add oil and grease and BTEX as additional parameters not required by Water Licence due to hydrological connectivity with landfill – see parameter list for LUP-31 and LUP-35]
LUP-TCA-01 to LUP-TCA-XX[d]	Seeps from the TCA, locations of observed seepage	No	No	Yes, if flowing	Yes, if flowing					Field, conventional, total metals: Twice-yearly; once in freshet and once in late open-water season.

a) Previous EEM sampling locations are not included unless they are also Water Licence monitoring locations.

b) Parameter list provided in Table 10.

c) Landfarm wells are inactive and monitoring is not required per letter from Nunavut Water Board to LMI (dated 17 April 2017)

d) Seep sampling locations will be added to the post-closure monitoring program as new seeps are documented. MDMER = Metal Diamond Mining Effluent Regulations; EL = East Lake; BL = Boot Lake; LSL = Lower Sewage Lake; SP = seep; TCA = Tailings Containment Area; BTEX = Benzene, toluene, ethylbenzene, and xylenes.