MEADOWBANK COMPLEX

2021 Annual Report
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Prepared for:
Nunavut Water Board
Nunavut Impact Review Board
Fisheries and Oceans Canada
Crown-Indigenous Relations and Northern Affairs Canada
Kivalliq Inuit Association

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ABBREVIATION

ABA	Acid base accounting
AEMP	Aquatic Ecosystem Monitoring Program
AP	Acid potential
ARD	Acid Rock Drainage
AWAR	All Weather Access Road
BBS	Breeding Bird Survey
BL	Baker Lake
BLDAG	Baker Lake Dust Advisory Group
BV	Bureau Veritas
CCBE	Cover with capillary barrier effects
CCME	Canadian Council of Ministers of the Environment
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CLO	Community Liaison Officers
COQ	Certificate of Qualification
CREMP	Core Receiving Environmental Monitoring Program
CSM	Conceptual Site Model
CWS	Canada-Wide Standard
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Changes Canada
EDF	Environmental design flood
EDI	Estimated daily intake
EEM	Environmental Effect Monitoring
El.	Elevation
EoR	Engineer of Record
ERP/CMP	Emergency Response Plan / Crisis Management Plan
ERT	Emergency Response Team
FDP	Final Discharge Point
FEIS	Final Environmental Impact Statement
FTE	Full-time equivalent
F/T	Freeze/Thaw
GN	Government of Nunavut
GWMP	Groundwater monitoring plan
HCMP	Habitat Compensation Monitoring Plan
HHRA	Human Risk Assessment
HHS	Hunter Harvest Study
HPGR	High Pressure Grinding Rolls
HQ	Hazard quotient
HR	Human Resources
HTO	Hunter Trapping Organization
ICMC	International Cyanide Management Code
ICRP	Interim Closure and Reclamation Plan
ICS	Incident command system
INUG	Innuguguayalik Lake

IOL	Inuit owned land
IPC	Instantaneous pressure change
IQ	Inuit Qaujimajatuqangit
ISV	Inuit Societal Values
IWBS	Inuit work barrier study
KIA / KivIA	Kivalliq Inuit Association
KvSEMC	Kivalliq Socio-economic monitoring committee
LMA	Labour market analysis
LSA	Local Study Area
LMS	Learning Management System
LOAELs	Lowest-observed adverse effect levels
LOM	Life of Mine
MAM	Mammoth Lake
Masl.	Meters above sea level
MBK	Meadowbank
MDL	Method Detection Limit
MDRB	Meadowbank Dike Review Board
MFRAG	Meadowbank Fisheries Research Advisory Group
MMP	Mercury monitoring plan
MOU	Memorandum of Understanding
MPA	Maximum Potential Acidity
MDMER	Metal and Diamond Mining Effluent Regulations
NC	North Cell
NCIS	North Cell Internal Structure
NEM	Nemo Lake
NIRB	Nunavut Impact Review Board
NF	Near-Field
NML	Non metal leaching
NNLP	No Net Loss Plan
NP	Neutralization Potential
NPAG	Non-Potentially Acid Generating
NPC	Nunavut Planning Commission
NPR	Net Potential Ratio
NRCan	Natural Resources Canada
NSERC-UQAT	National Science and Engineering Research Council – University of Quebec in Abitibi-Temiscamingue
NWB	Nunavut Water Board
OHF	Oil Handling Facility
OMS	Operation, Maintenance and Surveillance
PAG	Potentially Acid Generating
PAHs	Polycyclic Aromatic Hydrocarbons
PEAMP	Post-Environmental Assessment Monitoring Program
PDL	Pipe Dream Lake
PHC	Petroleum Hydrocarbon
PMF	Probable maximum flood
PPE	Protective personnel equipment
PRISM	(Program for Regional and International Shorebird Monitoring

PRSF	Portage Waste Rock Storage Facility
PPV	Peak particle velocity
QAQC	Quality Assurance Quality Control
RCMP	Royal Canadian Mounted Police
RDP	Relative Percent Difference
RIME	Research Institute in Mine and Environment
RSA	Regional Study Area
RSF	Rock Storage Facility
SAO	Senior Administrative Officers
SEMP	Socio-Economic Monitoring Program
SSWQO	Site specific water quality objective
STD	Sexually Transmitted Diseases
SWTC	South Whale Tail Channel
TAG	Terrestrial Advisory Group
TAP	Technical Advisory Panel
TARP	Trigger Action Response Plan
TDS	Total Dissolved Solids
TK	Traditional Knowledge
TKN	Total Kjeldahl Nitrogen
TMS	Training Management System
TPL, TPN, TPE	Third Portage Lake
TRVs	Toxicity reference values
TS	Total Sulphur
TSF	Tailings Storage Facility
TSS	Total Suspended Solids
S	Total Sulphur
SC	South Cell
SEMP	Socio-economic monitoring program
SMP	Stormwater Management Pond
SEMR	Socio-economic monitoring report
SEMWG	Socio-economic monitoring working group
SNC	SNC-Lavalin
SPL, SP	Second Portage Lake
SPLE	Second Portage Lake Exposure
Sta.	Station
STP	Sewage Treatment Plan
SWD	Stormwater dike
VECs	Valued Ecosystem Components
VRWF	Vault Rock Storage Facility
WAL	Wally Lake
WEP	Waste Extension Pool
WLE	Wally Lake Exposure
WRSF	Waste rock storage facility
WSLRA	Wildlife Screening Level Risk Assessment
WT	Whale Tail
WTD	Whale Tail Dike
WTHR	Whale Tail haul road

WTN	Whale Tail North
WTP	Water Treatment Plan
WTS	Whale Tail South
W/D	Wet/Dry

DOCUMENT CONTROL

Version	Date (YMD)	Section	Page	Comment
1	2022/04/15	All	All	This has been reviewed by Environmental Staff and will be incorporated into training for all mine staff on behalf of the Mine Manager and Senior Management

Prepared By: Meadowbank Environment Department

Approved By: 

Alexandre Lavallee
Environmental and Critical Infrastructures Superintendent

SECTION 1. INTRODUCTION

In 2021, Agnico Eagle has increased its efforts to monitor and manage risks associated with the Omicron variant of COVID-19. A gradual return of the Nunavut-based workforce began at the end of June 2021 after the reintegration plan was approved by the Chief Public Health Officer of Nunavut. Reintegration of the Nunavummiut workforce at the Meadowbank Complex was completed in October 2021. In December 2021, as a result of an increase in COVID-19 cases at its Nunavut operations, Agnico Eagle took precautionary steps to further protect the continued health of its Nunavut workforce and local residents in the communities in which it operates. In collaboration with the Nunavut public health authorities, the Company sent home the Nunavummiut from Meadowbank operations as well as its Nunavut exploration projects. Furthermore, as a result of the resurgence of COVID-19 cases, personnel levels at site were reduced in December 2021. As a result, there was a reduction of activities at the Company's Nunavut operations for the remainder of December 2021. At this time, case counts appear to be dropping and the Company expects that it will be able to maintain budgeted production levels. The Company expects that its efforts to help protect the northern communities from this COVID-19 variant will have a slightly negative effect on production in the first quarter of 2022. Plans are being reviewed to re-integrate the local workforce as soon as possible in 2022.

The 100% owned Meadowbank Complex is located approximately 110 kilometres by road north of Baker Lake in the Kivalliq District of Nunavut, Canada. The complex consists of the Meadowbank mine and mill, and the Amaruq satellite deposit, which is located 50 kilometres northwest of the Meadowbank mine.

Meadowbank Project, was first licensed by the NWB in 2008. The project involved the construction, operation, maintenance, reclamation, closure and monitoring of an open pit gold mine and milling facility at the Meadowbank mine site, and the processing plant achieved commercial production in March 2010. The original Water Licence was subsequently renewed by the Board in August 2015 and was amended in July 2018 to reflect changes to the Project associated with additional tailings deposition and ore processing at the Meadowbank mine site from Agnico Eagle's new mining undertaking at the Whale Tail Pit site. On March 2019, the Water License was amended for the third time to allow for tailings disposal in the mined-out Goose and Portage pits. On May 2020, the fourth amendment was granted to allow the activities for the Whale Tail Expansion Project, i.e. the term of the Water License was extended by 4 years, now expiring in March 2030. The Project is governed by current Water Licence No: 2AM-MEA1530.

At present, the project components included in the scope of the Water Licence consist of the Meadowbank mine site and the Vault mine site, a Marshalling Facility in Baker Lake, and a 110 kilometre All-Weather Access Road between Baker Lake and the Meadowbank mine site. There are also water retention dikes constructed from mined waste rock to allow for the mining of ore beneath shallow dewatered lakes and a tailings storage facility (Second Portage Lake's northwest dewatered arm), where tailings have been deposited sub-aerially as slurry and water from the ponds reclaimed during operation. No mining at Meadowbank occurred in 2021 since the mineral reserves were exhausted in 2019. Amaruq ore continued to be processed at Meadowbank mill in 2021. As approved by the Water License, in-pit tailings disposal began in Goose Pit on July 5th, 2019 and in Portage Pit E on August 20th, 2020.

The Meadowbank Project is also governed by the NIRB Project Certificate No. 004 first issued in December 2006. The Project Certificate was then amendment in November 2009 to reflect modification associated with the all-weather access road and Proponent Project name change and in August 2016 to allow expansion of Vault Pit operations into Phaser Lake and to allow for the development of two additional pits, Phaser Pit and BB Phaser Pit. A final third amendment was approved in December 2018 to reflect modification of in-pit tailings disposal.

In 2016, Agnico Eagle proposed to develop the Whale Tail Pit Project to continue mine operations and milling at the Meadowbank Mine and extend the Meadowbank Mine to include development of resources from Whale Tail Pit. The Amaruq mining operation uses the existing infrastructure at the Meadowbank mine (mining equipment, mill, tailings, camp and airstrip). Additional infrastructure has been built at the Amaruq site (truck shop/warehouse, fuel storage and an additional camp facility). The deposit was mined as an open pit in 2019 and the commercial production was achieved on September 30th, 2019. Amaruq ore is transported using long haul off-road type trucks to the mill at the Meadowbank site for processing.

In 2018, Agnico Eagle proposed to increase gold production from the original Whale Tail Pit Project by expanding mining activities at the Whale Tail Pit site as proposed in the Expansion Proposal. The Expansion Proposal proposes further developing the Whale Tail Pit open mine in addition to the development of the IVR open pit and Underground operations. The Amaruq expansion started in October 2018 with the application to NPC. The permitting process to amend the Whale Tail Project Certificate and Type A Water Licence to include the Amaruq expansion was completed in early 2020. In a decision issued on October 18th, the NIRB concluded that if conducted in accordance with the NIRB's recommendations, this proposed amendment to the Whale Tail project could proceed to the Type A Water License amendment phase with the NWB. The Minister of Northern Affairs approved the amended Project Certificate Report from the NIRB on January 20th, 2020, completing the NIRB process. The Project Certificate 008 amendment No. 1 was received on February 19th, 2020. The NWB Water License amendment process was completed on May 12th, 2020 and the Water License Amendment No. 2AM-WTP1830 was issued.

In 2021, Agnico Eagle proposed a modification to the Whale Tail Project; specifically, the IVR Pushback and Whale Tail Pushback. On April 20th, 2021 the NPC determined that the proposed Modification was exempt from screening by the NIRB, as the Whale Tail and IVR Pushbacks did not change the general scope or previously amended activities. On June 11th, 2021, Agnico Eagle submitted a 60-day notice to the NWB for a Modification to Type A Water Licence 2AM-WTP1830. The NWB provided its approval of the modification for the Whale Tail and IVR Pushbacks on August 3rd, 2021 indicating the modification proposed is consistent with the scope of activities considered under Type A Water Licence 2AM-WTP1830. Parallel to this, Agnico Eagle issued notice to the NIRB on May 18th, 2021 to inform of monitoring activities associated with the proposed Modification.

All ore at the Meadowbank Complex is now sourced from the Amaruq satellite deposit at Meadowbank. Mining at the Amaruq satellite deposit is by open pit methods using excavators and trucks. The ore is extracted conventionally using drilling and blasting, then hauled by a long haul off-road truck fleet to the mill at the Meadowbank facilities for processing. Commercial production was achieved on September 30th, 2019 at the Whale Tail pit. The IVR pit began pre-stripping activities in the third quarter of 2020 and achieved commercial production on December 31st, 2020. Underground commercial production is expected in 2022.

These various components and activities associated with the project require a number of different authorizations, leases and permits from regulatory agencies including the Nunavut Water Board (NWB), Environment and Climate Changes Canada (ECCC) Metal and Diamond Mining Effluent Regulations (MDMER); Fisheries and Oceans Canada (DFO), Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC); the Kivalliq Inuit Association (KivIA) and the Nunavut Impact Review Board (NIRB).

This report is written to address all of the 2021 annual reporting requirements of the project under these authorizations:

Meadowbank

- NWB Type A Water License 2AM-MEA1530;
- NIRB Project Certificate No. 004;
- DFO HADD Authorization NU-03-190 AWAR;
- DFO HADD Authorization NU-03-191.3 and NU-03-191.4 Mine Site;
- DFO Authorization NU-14-1046 Phaser Lake;
- CIRNAC Land Leases 66A/8-71-2 (AWAR) and 66A/8-72-6 (AWAR Quarries);
- KivIA Production Lease KVPL08D280;
- KivIA Quarry Lease KVCA06Q11; and
- KivIA Right of Way KVRW06F04.

Whale Tail

- NWB Type A Water License 2AM-WTP1830;
- NIRB Project Certificate N0. 008;
- DFO HADD Authorization 16HCAA-00370;
- DFO HADD Authorization 20HCAA-00275;
- CIRNAC Land Leases 66H/8-02-1 (Whale Tail Haul Road) and 66H/8-01-4 (Whale Tail Haul Road Quarries);
- KivIA Production Lease KVPL17D01;
- KivIA Quarry Lease KVCA15Q01, KVCA15Q02, KVCA18Q01; and
- KivIA Right of Way KVRW15F01.

Reporting requirements for the MDMER have been submitted directly to Environment and Climate Changes Canada; results are presented herein to comply with the NWB Type A Water License.

Table 1-1 outlines each requirement by authorization and report section. Table 1-2 presents the status of each sampling stations stipulated in Part I, Schedule I of Water License 2AM-MEA15230 and 2AM-WTP1830. Appendix 1 provides a list of commitments completed by Agnico Eagle, following review by regulators of the 2020 Annual Report, to be incorporated in the 2021 Annual Report.

Table 1-1 Meadowbank and Whale Tail List of Reporting Requirements

MEADOWBANK GOLD PROJECT		
Authorization Reference	**Reporting Requirement**	**Report Section**
NIRB Project Certificate No.004 Condition 4	Take prompt and appropriate action to remedy any noncompliance with environmental laws and regulations and/or regulatory instruments, and shall report any non compliance as required by law immediately and report the same to NIRB annually.	11.6.1
NIRB Project	Continue to undertake semi-annual groundwater samples and re-evaluate the groundwater	8.7.1

Certificate No.004 Condition 8	quality after each sample collection; report the results of each re-evaluation to NIRB's Monitoring Officer, INAC and EC	
NIRB Project Certificate No.004 Condition 15	Within two (2) years of commencing operations re-evaluate the characterization of mine waste materials, including the Vault area, for acid generating potential, metal leaching and non-metal constituents to confirm FEIS predictions, and re-evaluate rock disposal practices by conducting systematic sampling of the waste rock and tailings in order to incorporate preventive and control measures into the Waste Management Plan to enhance tailing management during operations and closure; results of the re-evaluations shall be provided to the NWB and NIRB's Monitoring Officer	5.1.1
NIRB Project Certificate No.004, Condition 18	Commit to a pro-active tailings management strategy through active monitoring, inspection, and mitigation. The tailings management strategy will include the review and evaluation of any future changes to the rate of global warming, compliance with regulatory changes, and the ongoing review and evaluation of relevant technology developments, and will respond to studies conducted during the mine operation	5.3.1
NIRB Project Certificate No.004, Condition 19	Provide for a minimum of two (2) metres cover of tailings at closure, and shall install thermistor cables, temperature loggers, and core sampling technology as required to monitor tailing freezeback efficiency. Report to NIRB's Monitoring Officer for the annual reporting of freezeback effectiveness.	5.4.1
NIRB Project Certificate No.004, Condition 20	Prior to construction, Cumberland shall identify mitigation measures that can be taken if groundwater monitoring around the tailings facility demonstrates that contamination from tailings has occurred through the fault. Upon drawdown of the North arm of Second Portage Lake, Cumberland shall conduct further tests to assess the permeability of any faults and provide the results to regulators. If doubt remains Cumberland shall seal the fault and conduct further permeability testing and monitoring. Following completion of the permitting process for the In-Pit Tailings Modification Proposal, the Proponent shall provide an update to the NIRB on any fault identified related to either Portage Pit A, Portage Pit E, and Goose Pit, any plans to address groundwater movement considering any fault, and how potential monitoring of tailings and groundwater movement would be undertaken to inform management plans.	5.3.2
NIRB Project Certificate No.004 Condition 21	Shall fund and install a weather station at the mine site to collect atmospheric data, including air temperature and precipitation.	8.21.1
NIRB Project Certificate No.004 Condition 23	Ensure that water quality monitoring performed at locations within receiving waters that allow for an assimilative capacity assessment of concern to regulators, be carried out by an independent contractor and submitted to an independent accredited lab for analysis, on a type and frequency basis as determined by the NWB; results of analysis shall be provided to the NWB and NIRB's Monitoring Officer	8.5.7
NIRB Project Certificate No.004, Condition 28	Cumberland shall become a signatory to the International Cyanide Management Code, communicate this to shippers, and do so prior to Cumberland storing or handling cyanide for the Project.	11.4
NIRB Project Certificate No.004 Condition 29	Report to NIRB if and when [Cumberland] develops plans for an expansion of the Meadowbank Gold Mine, and in particular if those plans affect the selection of Second Portage Lake as the preferred alternative for tailings management	11.2
NIRB Project Certificate No.004 Condition 32e	Prior to opening of the road, and annually thereafter, advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is a private road with non-mine use of the road limited to approved, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities.	11.7.2.1
NIRB Project Certificate No.004 Condition 32f	Place notices at least quarterly on the radio and television to explain to the community that the road is a private road with non-mine use of road limited to authorized, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities.	11.7.2.1
NIRB Project Certificate No.004 Condition 32g	Record all authorized non-mine use of the road, and require all mine personnel using the road to monitor and report unauthorized non-mine use of the road, and collect and report this data to NIRB one (1) year after the road is opened and annually thereafter.	11.7.1.1
NIRB Project Certificate No.004 Condition 32h	Report all accidents or other safety incidents on the road, to the GN, KivIA [KIA], and the Hamlet immediately, and to NIRB annually.	11.7.2.1
NIRB Project Certificate No.004 Condition 33	Cumberland shall update the Access and Air Traffic Management Plan to:1. include an All-weather Private Access Road Management Plan, including aright-of-way policy developed in consultation with the KivIA, GN, INAC and theHamlet of Baker Lake, for the safe operation of the all-weather private accessroad; and2. to facilitate monitoring of the environmental and	11.7.1.1

	socio-economic impacts of theprivate road and undertake adaptive management practices as required,including responding to any concerns regarding the locked gates.	
NIRB Project Certificate No.004 Condition 36	Shall ensure the placement of local area marine mammal monitors onboard all vessels transporting fuel or materials for the Project through Chesterfield Inlet.	11.8.2
NIRB Project Certificate No.004 Condition 39	Annually advertise and hold a community information meeting in Chesterfield Inlet to report on the Project and to hear from Chesterfield Inlet residents and respond to concerns; a consultation report shall be submitted to NIRB's Monitoring Officer within one month of the meeting.	11.9.1
NIRB Project Certificate No.004 Condition 40	Report to KIA and NIRB's Monitoring Officer annually on the Traditional Knowledge gathered including any operational changes that resulted from concerns shared at the workshop.	11.9.1 11.9.2
NIRB Project Certificate No.004 Condition 41	Subject to vessel and human safety considerations, Cumberland shall require shippers carrying cargo to the Project through Chesterfield Inlet to follow the following mitigation procedures in the event that marine mammals are in the vicinity of the shipping activities: a. Wildlife will be given right of way; b. Ships will maintain a straight course, constant speed, and will avoid erratic behaviour; and c. When marine mammals appear to be trapped or disturbed by vessel movements, the vessel will stop until the mammals have moved away from the area.	11.8.1
NIRB Project Certificate No.004 Condition 45	[Cumberland] shall carry, and require contracted shippers to carry adequate insurance to fully compensate losses arising from a spill or accident, including but not limited to the loss of resources arising from the spill or accident; any claims are to be reported to proper officials with a copy to NIRB's Monitoring Officer	11.8.5
NIRB Project Certificate No.004 Condition 49	Develop, implement and report on the fish-out programs for the dewatering of Second Portage Lake, Third Portage Lake, Vault Lake, and Phaser Lake.	8.11.1
NIRB Project Certificate No.004 Condition 51	Engage the HTOs in the development, implementation and reporting of creel surveys within waterbodies affected by the Project to the GN, DFO and local HTO	8.16
NIRB Project Certificate No.004, Condition 52	Cumberland shall enforce a no-fishing policy for employees while working on the job site.	8.17
NIRB Project Certificate No 004 Condition 53	Agnico Eagle Mines Ltd. shall, in consultation with the HTOs and DFO, develop a Fish Habitat Monitoring Plan, including augmenting baseline fisheries data in the period prior to operation, with the clear objective of demonstrating the success of the No Net Loss Plan approved by the DFO. The Fish Habitat Monitoring Plan should include Phaser Lake. The updated plan should be provided to the NIRB for review at least 30 days prior to commencement of construction activities. Results from the fisheries baseline data to be provided in the annual report to the NIRB	8.8.1
NIRB Project Certificate No.004 Condition 54	a. Updated terrestrial ecosystem baseline data; e. Details of a comprehensive hunter harvest survey to determine the effect on ungulate populations resulting from increased human access caused by the all-weather private access road, including establishing preconstruction baseline harvesting data, to be developed in consultation with local HTOs, the GN-DOE and the Nunavut Wildlife Management Board; f. Details of annual aerial surveys to be conducted to assess waterfowl densities in the regional study area during the construction phase and for at least the first three (3) years of operation, with the data analyzed and compared to baseline data to determine if significant effects are occurring and require mitigation. g. Details of an annual breeding bird plot surveys and transects along the all-weather road to be conducted during the construction phase and for at least the first three (3) years of operation. h. Details of a monitoring program, including recording the locations and frequency of observing caribou and carnivores and any actions taken to avoid contact with or disturbance, and a specific mitigation plan for Shortearred owls and any other species of special concern pursuant to Schedule 3 of the Species at Risk Act located in the local study area or along the all-weather private access road,	8.18.1.2

NIRB Project Certificate No.004 Condition 55	Annual Wildlife Summary Monitoring Report	8.18.1.1
NIRB Project Certificate No.004 Condition 56	Maps of caribou migration corridors shall be developed in consultation with Elders and local HTOs, including Chesterfield Inlet and placed in site offices and upgraded as new information on corridors becomes available. Information on caribou migration corridors shall be reported to the GN, KIA and NIRB's Monitoring Officer annually.	8.18.1.3
NIRB Project Certificate No.004 Condition 57	Participate in a caribou collaring program as directed by the GN-DOE.	8.18.1.4
NIRB Project Certificate No.004 Condition 58	In consultation with Elders and the HTOs and subject to safety requirements, design the lighting and use of lights at the mine site to minimize the disturbance of lights on sensitive wildlife and birds	11.9.2
NIRB Project Certificate No.004 Condition 59	In consultation with Elders and the HTOs, design and implement means of deterring caribou from the tailing ponds, such as temporary ribbon placement or Inukshuks, with such designs not to include the use of fencing	11.9.2
NIRB Project Certificate No.004 Condition 60	Whenever practical, Cumberland shall implement a stop work policy when wildlife in the area may be endangered by the work being carried out.	8.18.1.9
NIRB Project Certificate No.004 Condition 62	Develop and implement a noise abatement plan to protect wildlife from significant mine activity noise, including blasting, drilling, equipment, vehicles and aircraft; sound meters are to be set up immediately upon issuance of the Project Certificate for the purpose of obtaining baseline data, and monitoring during and after operations	8.13.1
NIRB Project Certificate No.004 Condition 63	GN and INAC shall form a Meadowbank Gold Mine Socio-Economic Monitoring Committee ("Meadowbank SEMC") to monitor the socio-economic impacts of the Project and the effectiveness of the Project's mitigation strategies; the monitoring shall supplement, not duplicate, the monitoring required pursuant to the IIBA negotiated for the Project, and on the request of Government or NPC, could assist in the coordination of data collection and tracking data trends in a comparable form to facilitate the analysis of cumulative effects; the terms of reference shall focus on the Project, include a plan for ongoing consultation with KivIA and affected local governments and a funding formula jointly submitted by GN, INAC and [Cumberland]; the terms of reference shall be submitted to NIRB for review and subsequent direction within six (6) months of the issuance of a Project Certificate; [Cumberland] is entitled to be included in the Meadowbank SEMC	11.10.1
NIRB Project Certificate No.004 Condition 64	[Cumberland] shall work with the GN and INAC to develop the terms of reference for a socio-economic monitoring program for the Meadowbank Project, including the carrying out of monitoring and research activities in a manner which will provide project specific data which will be useful in cumulative effects monitoring (upon request of Government or NPC) and consulting and cooperating with agencies undertaking such programs; [Cumberland] shall submit draft terms of reference for the socio-economic monitoring program to the Meadowbank SEMC for review and comment within six (6) months of the issuance of a Project Certificate, with a copy to NIRB's Monitoring Officer	11.10.1
NIRB Project Certificate No.004 Condition 65	Cumberland shall include in its socio-economic monitoring program for the Meadowbank Project the collection and reporting of data of community of origin of hired Nunavummiut	11.10.3
NIRB Project Certificate No.004 Condition 67	Develop and implement a program to monitor contaminant levels in country foods in consultation with HC; a copy of the plan shall be submitted to NIRB's Monitoring Officer	8.19
NIRB Project Certificate No.004, Condition 68	Cumberland shall, in consultation with Elders, local HTOs and the Meadowbank Gold Mine SEMC, demonstrate that they are working toward incorporating Inuit societal values into mine operation policies."	11.9.2
NIRB Project Certificate No.004 Condition 69	Carry out the Project to minimize the impacts on archeological sites, including conducting proper archeological surveys of the Project area (including the all-weather road and all quarry sites); [Cumberland] shall provide to the GN an updated baseline report for archeological sites in the Project area"	8.20.1
NIRB Project Certificate No.004 Condition 70	Shall report any archeological site discovered during the course of construction, including a burial site, immediately and concurrently to the GN and KivIA. Upon discovering an archeological site, Cumberland shall take all reasonable precautions necessary to protect the site until further direction is received from the GN. In the event that it becomes necessary to	8.20.1

	disturb an archaeological site, Cumberland shall consult with Elders, GN and KivIA to establish a site specific mitigation plan, and obtain all necessary authorizations and comply with all applicable laws.	
NIRB Project Certificate No.004 Condition 71	In consultation with EC, install and fund an atmospheric monitoring station to focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported annually to NIRB.	8.14.1
NIRB Project Certificate No.004 Condition 72	Conduct annual stack testing to demonstrate that the on-site incinerators are operating in compliance with these standards. The results of stack testing shall be contained in an annual monitoring report submitted to GN, EC and NIRB's Monitoring Officer.	6.2.1
NIRB Project Certificate No.004 Condition 73	Cumberland shall undertake to conserve the Project's use of energy, monitor the Project's greenhouse gas emissions, and continuously review and, if possible, consider for adoption new technologies to ensure greenhouse gases meet the latest Canadian standards or criteria.	8.15.1
NIRB Project Certificate No.004 Condition 74	Shall employ environmentally protective method to suppress any surface road dust.	8.14.1
NIRB Project Certificate No.004 Condition 75	Provide a complete list of possible accidents and malfunctions for the Project; it must consider the all-weather road, shipping spills, cyanide and other hazardous material spills, and pitwall/dikes /dam failure, and include an assessment of the accident risk and mitigation developed in consultation with Elders and potentially affected communities	7.3
NIRB Project Certificate No.004 Condition 80	File annually with NIRB's Monitoring Officer an updated report on progressive reclamation and the amount of security posted, as required by KivIA, INAC, and/or the NWB.	9.2.1.1
NIRB Project Certificate No.004 Condition 82	Monitor the ingress/egress of ship cargo at Baker Lake and report any accidents or spills immediately to the regulatory agencies as required by law and to NIRB's Monitoring Officer annually.	11.8.4
NIRB Project Certificate No.004 Condition 85	Develop a detailed blasting program to minimize the effects of blasting on fish and fish habitat, water quality, and wildlife and terrestrial VECs	8.6.1
NIRB Project Certificate No.004 Condition 87	The Proponent shall, prior to the deposition of tailings into the Portage or Goose Pits, file with the Nunavut Water Board (NWB) a report containing updated hydrogeological modelling addressing information gaps as per the NIRB recommendation in the Reconsideration Report and Recommendations to the satisfaction of the NWB. The Proponent shall not deposit tailings into the Portage or Goose pits until the Water Board is satisfied that the modelling addresses the specific information gaps, and that the proponent can manage any identified risks with existing designs and feasible management strategies. The Proponent shall file a report with the Nunavut Water Board, containing updated hydrogeological modelling addressing information gaps, prior to the deposition of tailings into the Portage or Goose pits. Confirmation of the report's filing, conclusions of this report, and any further updates to reporting requirements as determined under the water licence, shall be provided to the NIRB in Agnico Eagle's Annual Report for the project.	5.3.2
NIRB Project Certificate No.004, Commitment 18	Observe, collect and maintain information on road-use to facilitate monitoring of the nonproject uses of the road	11.10.3
NIRB Project Certificate No.004, Commitment 21	Track the community of origin of hired Nunavimmiut to direct monitoring and followup activities	11.10.3
NIRB Project Certificate No.004 Commitment 74	Provide annual report of the quantity and type of waste generated at the mine site distinguishing landfilled, recycled and incinerated streams.	6.1.1
NIRB Project Certificate No.004, Commitment 95	Inuit observation and encounter reports for on-board vessels transporting goods and fuel through Chesterfield Inlet.	11.8.2
NIRB Project Certificate No.004, Commitment 104	Cumberland agrees with GN that labor force adjustments, any pressures on physical and social infrastructure (including by emergency response planning), socio-economic impacts of public use of the access road, and community physical and mental health are issues that should be included in socio-economic monitoring	11.10.3
NIRB Project Certificate No.004,	Information made available by or to Cumberland under the terms of the IIBA in the areas of support to businesses in accessing project opportunities will be forwarded to the GN	11.10.3

Commitment 108		
NWB 2AM-MEA1530 Schedule B-1	Construction Details for dikes and dams.	3.1.1.1
NWB 2AM-MEA1530 Schedule B-2	Monthly and annual volume of fresh Water obtained from Third Portage Lake.	4.1.1.1
NWB 2AM-MEA1530 Schedule B-3	Monthly and annual volume of fresh Water obtained from Wally Lake.	4.1.1.2
NWB 2AM-MEA1530 Schedule B-4	Results of lake level monitoring conducted under the protocol developed as per Part D Item 5.	4.2.1
NWB 2AM-MEA1530 Schedule B-5	Summary of reporting results for the Water Balance Water Quality model and any calibrations as required in Part E Items 7-9.	4.4.2.1
NWB 2AM-MEA1530 Schedule B-6	The bathymetric survey(s) conducted prior to each year of shipping at the Baker Lake Marshalling Facility.	4.3
NWB 2AM-MEA1530 Schedule B-7	Geochemical monitoring results.	5.1.1
NWB 2AM-MEA1530 Schedule B-8	Volumes of waste rock used in construction and placed in the Rock Storage Facilities.	5.2.1
NWB 2AM-MEA1530 Schedule B-9	An update on the remaining capacity of the Tailings Storage Facility.	5.3.1
NWB 2AM-MEA1530 Schedule B-10	Summary of quantities and analysis of seepage and runoff monitoring from the Landfills, Waste Rock Storage facility and Central Dike.	8.5.8.1
NWB 2AM-MEA1530 Schedule B-11	A summary report of all general waste disposal activities including monthly and annual quantities in cubic metres of waste generated and location of disposal.	6.1.1
NWB 2AM-MEA1530 Schedule B-12	Report of Incinerator test results including the materials burned and the efficiency of the Incinerator as they relate to water and the deposit of waste into water.	6.2.1
NWB 2AM-MEA1530 Schedule B-13	A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.	7.1.1
NWB 2AM-MEA1530 Schedule B-14	A summary of modifications and/or major maintenance work carried out on all water and waste related structures and facilities.	11.1.1
NWB 2AM-MEA1530 Schedule B-15	The results and interpretation of the Monitoring Program in accordance with Part I and Schedule I.	8.5
NWB 2AM-MEA1530 Schedule B-16	The results of monitoring under the AEMP including Core Receiving Monitoring Program (CREMP), Metal Mining Effluent Regulation (MMER) Monitoring, Mine Site Water Quality and Flow Monitoring (and evaluation of NP-2), visual AWAR water quality monitoring, Blast Monitoring and Groundwater Monitoring.	SECTION 8
NWB 2AM-MEA1530 Schedule B-17	A summary of any progressive closure and reclamation work undertaken including photographic records of site conditions before and after completion of operations, and an outline of any work anticipated for the next year, including any changes to implementation and scheduling.	9.1.1.1
NWB 2AM-MEA1530 Schedule B-18	A summary of on-going field trials to determine effective capping thickness for the Tailings Storage Facility and Waste Rock Storage Facilities for the purpose of long term environmental protection.	5.4.1
NWB 2AM-	An updated estimate of the current restoration liability based on project development	9.2.1.1

MEA1530 Schedule B-19	monitoring, results of restoration research and any changes or modifications to the Appurtenant Undertaking.	
NWB 2AM-MEA1530 Schedule B-20	A summary of any studies requested by the Board that relate to Water use, Waste disposal or Reclamation, and a brief description of any future studies planned.	10.1.1
NWB 2AM-MEA1530 Schedule B-21	Where applicable, revisions as Addendums, with an indication of where changes have been made, for Plans, Reports, and Manuals.	10.2.1
NWB 2AM-MEA1530 Schedule B-22	An executive summary in English, Inuktitut and French of all plans, reports, or studies conducted under this Licence.	10.3.1
NWB 2AM-MEA1530 Schedule B-23	A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.	11.5.1
NWB 2AM-MEA1530 Schedule B-24	A summary of public consultation and participation with local organizations and the residents of the nearby communities, including a schedule of upcoming community events and information sessions.	11.9
NWB 2AM-MEA1530 Schedule B-25	Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.	4.6.1/6.3.1
NWB 2AM-MEA1530 Part B, Item 16	The Licensee shall review the Plans or Manuals referred to in this Licence as required by changes in operation and/or technology and modify the Plans or Manuals accordingly. Revisions to the Plans or Manuals 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.	10.2.1
NWB 2AM-MEA1530 Part E, Item 8	The Licensee shall submit a Water Quality Model for pit re-flooding as part of the Water Management Plan which shall be re-calibrated as necessary and updated at a minimum of once every two (2) years following commencement of Operations. The results and implications of the predictive model shall be reported to the Board.	4.4.2.1
NWB 2AM-MEA1530 Part E Item 9	The Licensee shall, on an annual basis during Operations, compare the predicted water quantity and quality within the pits, to the measured water quantity and quality. Should the difference between the predicted and measured values be 20% or greater, then the cause(s) of the difference(s) shall be identified and the implications of the difference shall be assessed and reported to the Board	4.4.3.1
NWB 2AM-MEA1530 Part E, Item 10	The Licensee shall carry out weekly inspections of all water management structures during periods of flow and the records be kept for review upon request of an Inspector. More frequent inspections may be required at the request of an Inspector. This information is to be included in the annual Water Management Plan.	4.4.1.1
NWB 2AM-MEA1530 Part I, Item 11	The Licensee shall submit to the Board as part of the Annual Report, the Geotechnical Engineer's Inspection Report. The Report shall include a cover letter from the Licensee outlining an implementation plan to address the recommendations of the Geotechnical Engineer.	3.3.1
NWB 2AM-MEA1530 Part I Item 12	The Licensee shall submit to the Board as part of the Annual Report required under Part B Item 2, all reports and performance evaluations prepared by the Independent Geotechnical Expert Review Panel.	3.2.1
NWB 2AM-MEA1530 Part I Item 14	The Licensee shall submit the results and interpretation of the Seepage Monitoring program required in Part I, Item 13 in the Annual Report required under Part B, Item 2.	8.5.8.1
NWB 2AM-MEA1530 Part I, Item 17	The Licensee shall annually review the approved QA/QC Plan and modify the Plan as necessary. Proposed changes shall be submitted to an Accredited Laboratory for approval.	8.5.7
DFO Authorizations NU-03-0191.3 Condition 3.1, NU-03-0191.4 Condition 3.1; NU-03-0190 Condition 5, NU-14-1046 Condition 3	Submit written report summarizing monitoring results and photographic record of works and undertakings.	8.5
DFO Authorization	The Proponent shall undertake monitoring and report to DFO annually, by March 31st, whether	8.5.1.1

NU-03-0191.3 Condition 3.1	works, undertakings, activities or operations for the mitigation of potential impacts to fish and fish habitat were conducted according to the conditions of this Authorization.	
DFO Authorization NU-03-0191.4 Condition 3.1	The Proponent shall undertake monitoring and report to DFO annually, by December 31st, whether works, undertakings, activities or operations for the mitigation of potential impacts to fish and fish habitat were conducted according to the conditions of this Authorization.	8.5.1.1
DFO Authorization 14-HCAA-01046 Condition 3.1	The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization and report to DFO, by March 31 annually and indicate whether the measures and standards to avoid and mitigate serious harm to fish were conducted according to the conditions of this authorization.	8.5.1.1
DFO Authorizations NU-03-0190 Condition 5.3	A photographic record of before, during and after construction, during decommissioning and after restoration, showing that all works and undertakings have been completed according to the approved Plan and conditions of this authorization […]	8.5.6.1
DFO NU-03-0190 AWPAR Condition 5.2.4	Creel survey results.	8.16
DFO Authorizations NU-03-0191.3 Condition 3 and 6 (Second and Third Portage Lakes), NU-03-0191.4 (Vault Lake) Condition 3 and 6; NU-03-0190 Condition 5 (AWPAR), NU-14-1046 (Phaser Lake) Condition 3 and 5	Submit written report summarizing monitoring results and photographic record of works and undertakings.	8.8.1
CIRNAC Land Lease 66A/8-71-2 Condition 19	The lessee shall submit to the Minister every two years after the commencement date of this lease, a report describing any variations from the Abandonment and Restoration Plan and updated cost estimates.	9.2.1.2
CIRNAC Land Lease 66A/8-71-2 Condition 33	The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with the approved Abandonment and Restoration Plan, as well as any variations from the said Plan.	9.1.1.2
CIRNAC Land Lease 66A/8-72-6 Condition 8	The lessee shall file a report, annually ...	3.4.1.1
	i. Quantity of material removed and location of removal, for the immediately preceding calendar year	
	ii. Such other data as are reasonably required by the Minister from time to time.	
CIRNAC Land Lease 66A/8-72-6 Condition 25	The lessee shall file, annually, a report for the preceding year, outlining the ongoing borrow area operations completed in conformity with the approved Borrow Management Plan, as well as any variations from the Plan.	3.4.1.1
CIRNAC Quarry Lease 66A/8-72-6 Condition 33	The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with C&R Plan, as well as any variations from the said Plan.	9.1.1.3
CIRNAC Land Lease 66A/8-72-6 Condition 37	The lessee shall submit to the Minister every 2 years after the commencement date of this lease, a report describing cumulative variations from the C&R Plan with updated cost estimates.	9.2.1.2
KIA ROW KVRW06F04 Condition 14	Submit to KIA every two years on each anniversary of the commencement date, a report describing any variations from the Abandonment and Restoration Plan and updated cost estimates.	9.2.1.2
KIA ROW KVRW06F04 Condition 26	File annually a progress report for the preceding year, outlining any ongoing restoration completed, in conformity with the Abandonment and Restoration plan.	9.1.1.2
KIA ROW KVRW06F04 Schedule E - Condition 8	The lessee shall file annually a report for the preceding year, outlining the ongoing borrow area operations completed in conformity with the approved Borrow Management Plan, as well as any variations from the Plan.	3.4.1.1

KIA KVPL08D280 Condition 6.01 (9)	Plan detailing the activities taken in the last year and to be undertaken in the next year and planned for the balance of the Term, that includes, but is not limited to the proposed methods and procedures for progressive reclamation.	9.1.1.1
WHALE TAIL PROJECT		
Authorization Reference	**Reporting Requirement**	**Report Section**
NIRB Project Certificate No.008 Condition 1	The Proponent shall: a) Develop and implement an Air Quality Monitoring and Management Plan that includes clear objectives and that specifies air quality monitoring thresholds that will trigger adaptive management responses and actions; b) In the implementation of the Plan, the Proponent shall demonstrate through active and passive monitoring of dustfall, for criteria air contaminant concentrations, incinerator stack testing, and vegetation, soil and snow chemistry sampling that dustfall and emissions of carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), sulphur dioxide (SO2), suspended particulate matter, mercury, dioxins and furans, and other chemicals remain within predicted levels and, where applicable, within levels or limits established by all applicable guidelines and regulations; c) The Proponent shall ensure continuous NO2 monitoring is undertaken downwind of mining activities to allow for comparison to relevant standards including the Canadian Ambient Air Quality Standards; d)If exceedances occur, the Proponent shall provide an explanation for the exceedance, a description of planned mitigation, and shall conduct additional monitoring to evaluate the effectiveness of mitigative measures; and e) The Proponent shall also develop, implement, and report on the quality assurance and quality control protocols used to ensure data reliability and proper functioning of equipment.	8.14.2
NIRB Project Certificate No.008 Condition 2	Prior to commencing construction activities the Proponent shall update the existing Dust Management and Monitoring Plan for the Meadowbank Mine site to address and/or include the following additional items: Align plan requirements with commitments made in the Final Environmental Impact Statement and during the Final Hearing to monitor dust along the existing all-weather access road, the Amaruq haul road and any other roads and trails associated with the Project. · Verify commitments to the utilization of dust suppressants along the all-weather access road, the Amaruq haul road and any other roads and trails associated with the Project, including a description of the type of suppressant to be utilized and the frequency and timing of applications to be made throughout the various seasons of road use. · Outline the specific triggers, thresholds, and adaptive management measures that will apply if monitoring indicates that dust deposition is higher than predicted.	8.14.2
NIRB Project Certificate No.008 Condition 3	The Proponent shall maintain a Greenhouse Gas Emissions (GHG) Reduction Plan which includes: · An estimate of the Project's GHG baseline emissions; · A description of monitoring measures to be undertaken, including the methods, frequency, parameters, and a description the analysis that will be carried out on the monitoring data generated; and · A description of mitigative and adaptive strategies planned, and taken, to reduce project-related greenhouse gas emissions over the Project lifecycle.	8.15.2
NIRB Project Certificate No.008 Condition 5	Result of all noise monitoring undertaken by the Proponent shall be provided to the Nunavut Impact Review Board on an annual basis. The Proponent shall: a) Conduct noise monitoring at least once during each phase of the Project at four (4) locations in the vicinity of the Whale Tail Pit Project and at two (2) locations along the haul road to demonstrate that noise levels remain within predicted levels for all Project areas; and b) If monitoring identifies an exceedance, the Proponent shall provide an explanation for the exceedance, a description of planned mitigation, and shall conduct additional monitoring to evaluate the effectiveness of mitigative measures.	8.13.2
NIRB Project Certificate No.008 Condition 6	The Proponent shall provide a summary of activities undertaken to address the requirements of this term and condition in annual report(s) to the NIRB. The Proponent shall: a) Conduct detailed hydrodynamic modelling during operations and closure to evaluate the mixing of the Waste Rock Storage Facility seepage into Mammoth Lake post-closure; and b) Based on the results of the modelling implement monitoring programs and adaptive management strategies that minimize the need for active intervention, including long-term	4.4.4

	treatment of mine contact water.	
NIRB Project Certificate No.008 Condition 7	Prior to commencement of mining of the Whale Tail deposit, and in consultation with applicable regulatory agencies, including Natural Resources Canada, the Proponent shall as part of a Mine Waste Rock and Tailings Management Plan that reflects site-specific geological and geochemical conditions. The Plan should be submitted to the NIRB at least 60 days prior to the start of construction of the Waste Rock Storage Facility, with subsequent updates or revisions to the Plan submitted annually thereafter or as may otherwise be required by the NIRB for the life of the Project. a) Develop and implement monitoring programs for the Tailings Storage Facility and the Waste Rock Storage Facility at the Whale Tail Pit; b) Establish thresholds that will trigger the requirement for the Proponent to implement adaptive management strategies to minimize the potential for impacts from these Facilities; and c) Identify the adaptive management strategies that will be used by the Proponent to minimize the potential for impacts from these Facilities.	5.2.2.2
NIRB Project Certificate No.008, Condition 8	The Plan should be submitted to the NIRB at least 30 days prior to the start of construction, with subsequent updates or revisions to the Plan submitted annually thereafter or as may otherwise be required by the NIRB for the life of the Project. The Proponent shall submit a detailed Acid Rock Drainage and Metal Leaching Management Plan that includes the following items: · Waste rock segregation and testing; · Thermal monitoring of waste rock; · Seepage management and monitoring; · A schedule for reporting of results and periodic updating of predictions for the WRSF pond quality; · Planning for optimal cover conditions; · Contingency measures that may be implemented if required; · Plans for comparing monitoring results from receiving waters to model predictions; and · The identification of thresholds that will trigger management actions if trends analysis indicates water quality objectives may be exceeded.	5.1.2
NIRB Project Certificate No.008 Condition 9	The Proponent shall undertake the additional site-specific geotechnical investigations required to identify sensitive land features and to inform final engineering design prior to the construction of project components such as the waste rock storage facility and quarries. Results from these studies should be submitted to the NIRB at least 30 days prior to the start of construction of these facilities, with results or updates submitted annually thereafter as applicable.	5.2.2.3
NIRB Project Certificate No.008 Condition 10	Results of these studies should be submitted to the NIRB at least 30 days prior to the start of construction of these facilities, with subsequent updates submitted annually thereafter. In consultation with applicable regulatory agencies such as Indigenous and Northern Affairs Canada and Natural Resources Canada, the Proponent shall undertake additional site-specific permafrost monitoring, mapping and thermal analysis to: ▪ Document permafrost conditions, including seasonal thaw and amount of ground ice; ▪ Inform the detailed design of project infrastructure such as the Whale Tail pit, water management structures, mine site and haul roads, waste rock storage facility, tailings storage facility; and ▪ Ensure the integrity of such infrastructure is maintained after construction	5.4.2
NIRB Project Certificate No.008 Condition 11	The Proponent shall develop and implement an Erosion Management Plan to prevent or minimize erosion and its resulting effects from project-related land disturbance.	8.5.3.2.17
NIRB Project Certificate 008 Condition 12	The Proponent shall provide a summary of its progressive reclamation efforts and associated feedback received from communities with respect to aesthetic values solicited by the Proponent as part of its public engagement processes in its annual reporting to the NIRB. As part of the Closure and Reclamation Plan, the Proponent shall develop and implement a program to: a) Progressively reclaim disturbed areas within the project footprint, with an emphasis on restoring the natural aesthetics of the area through re-contouring to the extent practicable; and b) In a manner that demonstrates that the Proponent has considered the aesthetic values of local communities (e.g. information regarding the acceptability of the topography and landscape of the project areas following progressive reclamation efforts).	9.1.2.1

NIRB Project Certificate 008 Condition 13	The Proponent shall explore the feasibility of topsoil/organic matter salvage as part of project development and provide updates to the Closure and Reclamation Plan based on this investigation. The Proponent shall provide a summary of its management of topsoil in annual reports to the NIRB.	9.3
NIRB Project Certificate No.008 Condition 14	The Proponent shall develop and implement a Thermal Monitoring Plan to identify potential changes in talik distribution and flow paths that may result from the development of project infrastructure, including the Whale Tail pit, dikes, and water impoundments. The Plan should be submitted to the NIRB at least 60 days prior to the start of construction of these facilities, with subsequent updates submitted annually thereafter or as may otherwise be required by the NIRB	5.4.2
NIRB Project Certificate No.008 Condition 15	As required by NIRB Project Certificate No.008 Condition 15: The required Groundwater Monitoring Plan should be submitted to the NIRB at least 30 days prior to the start of construction, with subsequent plan revisions or updates submitted annually thereafter. Subject to the additional direction and requirements of the Nunavut Water Board, the Proponent shall prepare and implement a Groundwater Monitoring Plan that, at a minimum includes: ▪ The collection of additional site-specific hydraulic data (e.g., from new monitoring wells) in key areas during the pre-development, construction and operation phases; ▪ Definition of vertical and horizontal groundwater flows in the project development areas; ▪ Delineates monitoring plans for both vertical and horizontal ground water; and ▪ Thresholds that will trigger the implementation of adaptive management strategies that reflect site specific conditions encountered at the project site.	8.7.2
NIRB Project Certificate No.008 Condition 16	As required by NIRB Project Certificate No.008 Condition 16: An updated Groundwater Monitoring Plan that outlines the Proponent's plans to fulfill this term and condition should be submitted to the NIRB at least 30 days prior to the start of construction, with subsequent plan revisions or updates submitted annually thereafter. Within two years of commencing operations, the Proponent shall: a) Conduct additional analyses to determine the approximate fill time for the Whale Tail Pit at closure; b) Undertake a hydrogeological characterization study to assess the potential for arsenic and phosphorous diffusion from submerged Whale Tail pit walls; c) If the results of the characterization study indicate a moderate to high potential for arsenic and/or phosphorous diffusion, perform detailed hydrodynamic modelling of the flooded pit lake prior to closure to evaluate meromictic conditions and flooded pit water quality; and d) Add these required activities to the site Groundwater Monitoring Plan.	8.7.2
NIRB Project Certificate No.008 Condition 17	The plan should be submitted to the NIRB at least 30 days prior to the start of construction, with results submitted annually thereafter. The Proponent shall: a) Monitor the effects of project activities and infrastructure on surface water quality conditions; b) Ensure the monitoring data is sufficient to compare the impact predictions in the Environmental Impact Statement (EIS) for the Project with actual monitoring results; c) Ensure that the sampling locations and frequency of monitoring is consistent with and reflects the requirements of the Water Quality and Flow Plan and the Core Receiving Environmental Monitoring Program; and d) On an annual basis, the Proponent will compare monitoring results with the impact assessment predictions in the EIS and will identify any significant discrepancies between impact predictions and monitoring results	8.1.2
NIRB Project Certificate No 008 Condition 18	The Proponent shall, reflecting any direction from the Nunavut Water Board, maintain a Site Water Monitoring and Management Plan designed to: Minimize the amount of water that contacts mine ore and wastes; Appropriately manage all contact water and discharges to protect local aquatic resources; and Implement water conservation and recycling to maximize water reuse and minimize the use of natural waters. The Plan should include monitoring that demonstrates contact water (runoff and shallow groundwater) from the ore storage and waste rock storage areas is captured and managed, as per the Waste Rock Facility Management Plan. The plan should be submitted to the NIRB at least 60 days prior to the start of construction, with results submitted annually thereafter.	SECTION 8
NIRB Project Certificate No.008, Condition 19	The Proponent shall, reflecting any direction from responsible authorities such as the Nunavut Water Board, Fisheries and Oceans Canada and Environment and Climate Change Canada, maintain a Core Receiving Environment Monitoring Program (CREMP) designed to: Determine the short and long-term effects in the aquatic environment resulting from the	8.1.2

	Project;	
	Evaluate the accuracy of Project effect predictions;	
	Assess the effectiveness of mitigation and management measures on Project effects;	
	Identify additional mitigation measures to avert or reduce environmental effects due to Project activities;	
	Comply with Metal Mining Effluent Regulations requirements, should an Environmental Effects	
	Monitoring program be triggered;	
	Reflect site-specific water quality conditions;	
	Include details comparing the watershed features in the Whale Tail watershed to those watersheds used as reference lakes; and	
	Evaluate the mixing and non-mixing portion of the pit.	
NIRB Project Certificate No.008, Condition 20	Unless otherwise authorized, the Proponent shall maintain an appropriate setback distance between project quarries and borrow pits from fish-bearing or permanent waterbodies as required to prevent acid rock drainage or metal leaching into such waterbodies. Throughout quarry development and operation, the Proponent shall, on an annual basis, provide information regarding quarry setback distances maintained and/or mitigation measures implemented by the Proponent in fulfillment of this term and condition in the Proponent's annual report to the NIRB.	3.4.2.2
NIRB Project Certificate No.008 Condition 22	The Proponent shall engage with Fisheries and Oceans Canada to develop project specific thresholds, mitigation and monitoring for any blasting activities that would exceed the requirements of Fisheries and Oceans Canada's Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters. If project-specific thresholds, mitigation and monitoring requirements are developed, the Proponent shall identify these requirements in the annual report provided to the NIRB.	8.6.2
NIRB Project Certificate No.008 Condition 23	The Proponent shall, reflecting any direction from Environment and Climate Change Canada and Fisheries and Oceans Canada:	8.10
	a) Conduct additional analysis to support the conclusions that a change in trophic status in Mammoth Lake would not impact fish productivity;	
	b) Undertake additional site-specific studies to assess the predicted trophic change on lake ecosystem productivity to monitor potential changes to downstream environments; and	
	c) Monitor actual loadings/concentrations in the receiving environment, identify trends in downstream chemistry and productivity, and track trophic status of Mammoth Lake	
NIRB Project Certificate No.008 Condition 24	The Proponent shall engage Fisheries and Oceans Canada, and other interested parties to further assess: Whether the increased surface area of Whale Tail Lake is a viable offset to habitat losses resulting from development of the Project; and Whether Whale Tail end pit would support fish in the post closure scenario.	8.8.2.1
NIRB Project Certificate No.008 Condition 25	At least 30 days prior to first shipment of equipment and supplies to the site, the Proponent's mitigation plans, protocols, monitoring and inspection program required in fulfillment of this term and condition shall be provided to the NIRB for review. Subsequently, information regarding inspections, monitoring results, and any reports as referenced above shall be included in the Proponent's annual report to the NIRB. The Proponent shall:	8.18.7
	a) Ensure that equipment and supplies brought to the project sites are clean and free of soils that could contain plant seeds or organic matter not naturally occurring in the area	
	b) Ensure that vehicle tires and treads are inspected prior to initial use in project areas;	
	c) Incorporate protocols for monitoring for the potential introduction of invasive vegetation species (e.g. surveys of plant populations in previously disturbed areas) into relevant monitoring and management plans for the terrestrial environment; and	
	d) Ensure any introductions of non-indigenous plant species must be promptly reported to the Government of Nunavut Department of Environment.	
NIRB Project Certificate No.008 Condition 26	The Proponent shall include revegetation strategies within its Mine Closure and Reclamation Plan that support progressive reclamation, and promote natural revegetation and recovery of disturbed areas compatible with the surrounding natural environment. These strategies should include exploration of the feasibility and practicality of topsoil/organic matter salvage through Project development. Consideration for the results of similar reclamation efforts at other northern projects, including the Meadowbank Gold Mine Project, must be demonstrated. Within three (3) years from the commencement of construction, information regarding the revegetation strategies developed and implemented by the Proponent in fulfillment of this Term and Condition shall be included in the Proponent's annual report to the NIRB. Subsequently, information regarding the Proponent's progress in fulfillment of this Term and Condition shall	9.3

	be provided annually in the Proponent's annual report to the NIRB.	
NIRB Project Certificate No.008 Condition 27	The Proponent shall participate in a Terrestrial Advisory Group with the Government of Nunavut, the Baker Lake Hunters and Trappers Organization, the Kivalliq Inuit Association, and other parties as appropriate to continually review and refine mitigation and monitoring details within the Terrestrial Ecosystem Management Plan. Additional caribou collar data, results from associated studies, Inuit Qaujimajatuqangit shared by knowledge holders, and other monitoring data as available should be considered for incorporation as appropriate. Finalized Terms of Reference for the Terrestrial Advisory Group shall be provided to the NIRB within six (6) months of issuance of the Project Certificate. A summary of outcomes from Terrestrial Advisory Group meetings shall be provided to the NIRB on an annual basis in the Proponent's Annual Report.	8.18.2
NIRB Project Certificate No.008, Condition 28	The Proponent shall maintain a Terrestrial Ecosystem Management Plan (TEMP) throughout all phases of the Project. The Plan shall include detailed monitoring, mitigation, and adaptive management measures for wildlife, with consideration for each Project activity predicted to affect wildlife, and with inclusion of specific triggers for mitigation and adaptive management intervention. The TEMP shall demonstrate consideration for all relevant commitments made by the Proponent throughout the Nunavut Impact Review Board's review of the Project. Updates to the TEMP may be required when there are significant changes in project development plans, monitoring results indicating biologically-meaningful changes, significant updates to the scientific understanding of management methods relevant to wildlife at the project site, Inuit Qaujimajatuqangit, Traditional Knowledge, changes in climatic conditions that might subject wildlife to unexpected impacts, or as otherwise necessary. The Proponent shall submit a revised TEMP to the Nunavut Impact Review Board (NIRB) within one (1) year of issuance of the Project Certificate, with subsequent versions provided as appropriate. Results of the TEMP shall be reported to the NIRB annually, including details of how Inuit Qaujimajatuqangit contributed by knowledge holders has been considered and utilized in associated activities and updates.	8.18
NIRB Project Certificate No.008 Condition 29	The Proponent shall, in collaboration with the Government of Nunavut, collect additional caribou collar data and conduct analyses of this data to quantify the zone of influence and associated effects of project components on caribou movement for a study area that includes the Whale Tail mine site, the haul road, the Meadowbank Gold Mine and its All-Weather Access Road. A summary of the analyses and associated effects shall be provided annually in the Proponent's annual report to the Nunavut Impact Review Board.	8.18.1.4
NIRB Project Certificate No.008 Condition 30	The Proponent shall work with the Government of Nunavut, the Baker Lake Hunters and Trappers Organization and the Kivalliq Inuit Association through the Terrestrial Advisory Group to develop and update thresholds to trigger implementation of mitigation measures on both the AWAR and Whale Tail Haul road, up to and including temporary road closures. The Proponent shall consider how these thresholds and mitigation measures reflect caribou life cycle sensitivities as well as demonstrate how Inuit Qaujimajatuqangit was incorporated throughout the development of these criteria and procedures.	8.18.2
NIRB Project Certificate No.008, Condition 31	The Proponent shall develop and implement a Road Access Management Plan and maintain traffic monitoring logs along the haul road between the Whale Tail Pit project and the Meadowbank mine. Where traffic exceeds levels predicted within the Environmental Impact Statement, the Proponent shall develop and implement appropriate modifications to its wildlife protection measures. The Road Access Management Plan shall be provided to the Nunavut Impact Review Board (NIRB) 90 days prior to operations commencing. An annual summary of the monthly maximum, minimum and average traffic levels shall be provided to the NIRB in the Proponent's annual report.	11.7.1.2
NIRB Project Certificate No.008 Condition 32	The Proponent shall engage with the Baker Lake Hunters and Trappers Organization and other relevant parties to ensure that safety barriers, berms, and designed crossings associated with project infrastructure, including the haul road, are constructed and operated as necessary to allow for the safe passage of caribou and other terrestrial wildlife. Summaries of engagement with the Baker Lake Hunters and Trappers Organization regarding implementation of this condition shall be provided to the Nunavut Impact Review Board along with details of the selected crossings in the Proponent's annual report to the Nunavut Impact Review Board.	8.18.3
NIRB Project Certificate No.008 Condition 33	A summary regarding all wildlife incidents reported, including a reference to whether compensation was or will be provided by the Proponent for direct mortalities, as well as a description of any other steps taken in fulfillment of this term and condition shall be included in	8.18.4

	the Proponent's annual report to the Nunavut Impact Review Board. The Proponent shall provide wildlife incident reports to the appropriate authorities in a timely fashion. Wildlife incident reports should include the following information: a) Locations (i.e., latitude and longitude), species, number of animals, a description of the animal activity, and a description of the gender and age of animals if possible; b) Prior to conducting project activities, the Proponent should map the location of any sensitive wildlife sites such as denning sites, calving areas, caribou crossing sites, and raptor nests in the project area, and identify the timing of critical life history events (i.e., calving, mating, denning and nesting); and c) Additionally, the Proponent should indicate potential impacts from the project, and ensure that operational activities are managed and modified to avoid impacts on wildlife and sensitive sites	
NIRB Project Certificate No.008 Condition 34	The Proponent will maintain a Migratory Birds Protection Plan for the Project in consultation with Environment and Climate Change Canada and other interested parties. The plan should include and/or demonstrate that the Proponent give consideration to the following: · Information obtained from baseline characterization of migratory bird and vegetation communities within the predicted flood area; · Results of field tests and/or the thorough literature review of the effectiveness of preferred deterrence prior to actual flooding; and · Details regarding monitoring the effectiveness of mitigation measures during flooding.	8.18.5
NIRB Project Certificate No.008 Condition 35	The Proponent shall ensure that the mitigation and monitoring strategies developed for Species at Risk are updated as necessary to maintain consistency with any applicable status reports, recovery strategies, action plans, and management plans that may become available through the duration of the Project. Information regarding development, implementation and monitoring of the measures developed by the Proponent in fulfillment of this term and condition shall be included in the Proponent's annual report to the Nunavut Impact Review Board.	8.18.6
NIRB Project Certificate No.008 Condition 36	Prior to removal or deterrence of raptors, the Proponent will contact the Government of Nunavut – Department of Environment to discuss proposed mitigation options and, if required, will obtain the necessary permits. The Proponent shall include summaries of any mitigation measures implemented and permits obtained in fulfillment of this term and condition in the Proponent's annual report to the Nunavut Impact Review Board.	8.18.1.11
NIRB Project Certificate No.008, Condition 37	The Proponent shall maintain a Shipping Management Plan in coordination and consultation with applicable regulatory authorities and the Kivalliq Inuit Association, and the Hunters and Trappers Organizations of the Kivalliq communities. The updated plan should be submitted to the Nunavut Impact Review Board at least 90 days prior to the start to commencement of shipping activities, with subsequent updates submitted annually thereafter in the Proponent's annual report or as may otherwise be required by the NIRB.	11.8
NIRB Project Certificate No.008 Condition 38	The Proponent shall ensure that marine shipping activities avoid sensitive wildlife habitat and species along the shipping route and use a routing south of Coats Island as the primary shipping route, subject to vessel and human safety considerations. Confirmation that the requirements of this term and condition are being effectively implemented by shipping companies contracted by the Proponent should be submitted as part of annual reporting to the Nunavut Impact Review Board.	11.8.1
NIRB Project Certificate No.008 Condition 39	The Proponent shall ensure that, subject to vessel safety requirements, a setback distance of at least 500 metres is maintained from colonies and aggregations of seabirds and marine mammals during Project shipping transiting through Hudson Strait, Hudson Bay, and Chesterfield Inlet. Confirmation that the requirements of this term and condition are being effectively implemented by shipping companies contracted by the Proponent should be submitted as part of annual reporting to the Nunavut Impact Review Board.	11.8.1
NIRB Project Certificate No.008 Condition 40	The Proponent shall develop and implement a ship-based marine mammal monitoring program, as part of a Marine Mammal Management and Monitoring Plan, in consultation with Fisheries and Oceans Canada, communities, and other interested parties. The Proponent shall report any accidental contact by project vessels with marine mammals or seabird colonies to applicable responsible authorities including Fisheries and Oceans Canada and Environment and Climate Change Canada. The Plan should be submitted to the Nunavut Impact Review Board at least 90 days prior to commencement of shipping activities, with subsequent updates submitted annually thereafter. Confirmation that the requirements of the Plan are being effectively implemented by shipping companies contracted by the Proponent should be provided with annual reporting.	11.8.2

NIRB Project Certificate No.008 Condition 41	The Proponent shall provide notification to communities regarding scheduled ship transits throughout the regional study area, including Hudson Bay and Chesterfield Inlet. The Proponent shall provide a summary of public consultation undertaken to address this term and condition in its annual report to the Nunavut Impact Review Board.	11.8.3
NIRB Project Certificate No.008 Condition 42	The Proponent shall design monitoring programs to ensure that local users of the marine area along the shipping route have the opportunity to provide feedback and input in relation to monitoring and evaluating potential project-induced impacts and changes in marine mammal distributions. The Proponent shall demonstrate how feedback received from community consultations has been incorporated into the most appropriate mitigation or management plans. The Proponent shall provide a summary of public consultation undertaken to address this term and condition in its annual report to the Nunavut Impact Review Board.	11.9.1
NIRB Project Certificate No.008 Condition 43	The Proponent shall contract only certified vessels to carry cargo for the Project, and will ensure shippers are aware of the requirements of the Shipping Management Plan, the Risk Management and Emergency Response Plan, and the Oil Pollution Emergency Plan. Evidence of meeting the requirements of this term and condition should be submitted as part of annual reporting to the Nunavut Impact Review Board	11.8.4
NIRB Project Certificate No 008, Condition 44	The Proponent is strongly encouraged to continue to participate in the work of the Kivalliq Socio-Economic Monitoring Committee along with other agencies and the communities of the Kivalliq region, and to identify areas of mutual interest and priority for inclusion into a collaborative monitoring framework that includes socio-economic priorities related to the Project, communities, and the Kivalliq region as a whole.	11.10.1
NIRB Project Certificate No.008, Condition 45	The Proponent shall work in collaboration with other socio-economic stakeholders including, the Government of Nunavut, Indigenous and Northern Affairs Canada, the Kivalliq Inuit Association, and communities of the Kivalliq region, to establish a socio-economic working group for the Project to develop and oversee a Kivalliq Projects AEM Socio-Economic Monitoring Program. The working group will develop a Terms of Reference, which outlines each member's roles and responsibilities with regards to, where applicable, project specific socio-economic monitoring throughout the life of the projects. The Proponent shall work with the other parties to use the updated Kivalliq Projects Socio-Economic Monitoring Program to monitor the predicted impacts outlined in the projects' respective environmental impact statements as well as regional concerns identified by the Kivalliq Socio-Economic Monitoring Committee. The Proponent shall work in collaboration with all other socio-economic stakeholders such as the Government of Nunavut, Indigenous and Northern Affairs Canada, Kivalliq Inuit Association, and the communities of the Kivalliq region in developing this program, which should include a process for adaptive management and mitigation in the event unanticipated impacts are identified. The Terms of Reference for this multi-party, multi-project Working Group are to be provided to the Nunavut Impact Review Board (NIRB) upon completion, and within one (1) year of issuance of the Project Certificate. The Proponent shall produce annual joint "AEM Kivalliq Projects" Socio-Economic Monitoring reports throughout the life of the Projects that are submitted to the NIRB and discussed with the wider Kivalliq Socio-Economic Monitoring Committee. Details of the Kivalliq Projects Socio-Economic Monitoring Program are to be provided to the NIRB upon finalization, and within one (1) year of issuance of the Project Certificate. Information regarding the Proponent's efforts in fulfillment of this term and condition shall be included in the Proponent's annual report to the Nunavut Impact Review Board.	11.10.2
NIRB Project Certificate No 008, Condition 46	The Proponent should develop a Project-specific Whale Tail Pit Socio-Economic Monitoring Program designed to: · Monitor for project-induced effects, including the impacts predicted in the Environmental Impact Statement through indicators presented in the Whale Tail Pit Socio-Economic Monitoring Plan; · Reflect regional socio-economic concerns identified by the Kivalliq Socio-Economic Monitoring Committee (KivSEMC); · Work in collaboration with all other socio-economic stakeholders such as the Kivalliq Inuit Association, the Government of Nunavut, and Indigenous and Northern Affairs Canada, and the communities of the Kivalliq region to develop the program; and · Include a process for adaptive management and mitigation to respond if unanticipated impacts are identified. - Monitor the success of existing and newly implemented gender-specific initiatives to determine their success and why they were considered successful or to identify any challenges	11.10.2

	to their implementation.	
	Details of the Whale Tail Pit Socio-Economic Monitoring Program should be submitted to the Nunavut Impact Review Board (NIRB) within one (1) year of issuance of the Project Certificate. The Proponent should produce annual Whale Tail Pit socio-economic monitoring reports throughout the life of the Project that are submitted to the NIRB and shared with the wider KivSEMC.	
NIRB Project Certificate No.008 Condition 47	The Proponent should undertake an analysis of the risk of temporary mine closure, giving particular consideration to how communities in the Kivalliq region may be affected by temporary closure of the mine, including consideration of the measures that can be taken to mitigate the potential for adverse effects (e.g. development of programs that provide transferable skills, identification of employment options that can include transfers amongst Agnico Eagle operations, etc.) This analysis is required to be updated as necessary to reflect significant changes to the Project or the socio-economic conditions in the region that may increase the risks and potential effects of temporary mine closures. This initial results of the Proponent's analysis should be provided to the Nunavut Impact Review Board (NIRB) within six (6) months of the issuance of the Project Certificate. Any updates to the analyses should be provided to the NIRB within three (3) months following completion of updated analyses by the Proponent.	9.4
NIRB Project Certificate No.008, Condition 48	The Proponent is strongly encouraged to submit staff schedule forecasts that should, at a minimum, include the following:	11.10.3/11.11.1.1
	Title of positions required by department and division;	
	Quantity of positions available by project phase and year;	
	Transferable skills, both certified and uncertified which may be required for, or gained during, employment within each position;	
	The National Occupational Classification code for each individual position.	
	The Proponent should also identify and register all trades occupations, journeypersons, and apprentices working with the Project and make this information available to the Government of Nunavut to assist in delivery of training initiatives and programs. The Staff Schedule should be submitted to the Nunavut Impact Review Board six (6) months prior to each phase of the Project (construction, operations, closure).	
NIRB Project Certificate No.008, Condition 49	The Proponent shall make best efforts to collaborate with the Government of Nunavut's Career Development Officer, Regional Manager of Career Development, and Director of Career Development. Semi-annual calls, at a minimum, should be initiated by the Proponent to address:	11.11.1.2
	Hiring procedures and policies	
	Issues regarding employee recruitment and retention	
	AEM policies regarding career pathways and opportunities for advancement	
	Internal and/or partnered training and development of employees	
	Long-term labour market plans to facilitate training in communities	
NIRB Project Certificate No 008, Condition 50	The Terms of Reference for this multi-party, multi-project Working Group are to be provided to the Nunavut Impact Review Board (NIRB) upon completion, and within one (1) year of issuance of the Project Certificate. Details of the Kivalliq Projects Socio-Economic Monitoring Program are to be provided to the NIRB upon finalization, and within one (1) year of issuance of the Project Certificate. The Proponent shall produce annual joint "AEM Kivalliq Projects" Socio-Economic Monitoring reports throughout the life of the Projects that are to be submitted as part of the Proponent's annual report to the NIRB.	11.10.2
NIRB Project Certificate No.008, Condition 50	The Proponent will report the results of its Labour Market Analysis (LMA) and Inuit Work Barrier Study (WBS) to the Kivalliq Socio-Economic Monitoring Committee upon completion in 2018, which should integrate the findings into its ongoing work identifying gaps between the Kivalliq labour market and mining market needs, and how to activate latent labour pool in the Kivalliq region to maximize labour "capture" from mining for the region. The Proponent shall report the results and implications of the LMA and WBS within its first year's Annual Report to the Nunavut Impact Review Board (NIRB), and show how the results have been integrated into an updated Socio-Economic Monitoring Plan for the Whale Tail Pit Project.	11.11.1.4
NIRB Project Certificate 008 Condition 51	The Proponent shall develop a conceptual Socio-economic Closure Plan that:	9.5
	· Links the socio-economic closure plans for Meadowbank and Whale Tail;	
	· Identifies regular update and multi-party review requirements;	
	· Shows evidence of consideration of socio-economic lessons learned from other northern mine closure experiences;	

	· Includes evidence of consultation with Kivalliq communities and governance bodies on socio-economic objectives/goals related to closure planning; · Emphasizes plans, policies, and programs to increase transferable skills of Inuit workers, including into trades and other skilled positions; and · Includes all plans, policies and programs related to socioeconomic factors in a temporary closure situation. - Includes a Workforce Transition Plan between the Whale Tail Project and other production mines owned and operated by the Proponent in the Kivalliq region. The Proponent shall advance the recommendations of the Conceptual Socio-economic Closure Plan through the development of a Final Socio-economic Closure Plan that will be part of the Whale Tail Pit Project Final Closure and Reclamation Plan.	
NIRB Project Certificate No.008, Condition 52	The Proponent should develop and maintain an easily referenced listing of formal certificates and licences that may be acquired via on-site training or training during project employment. The listing shall indicate which of these certifications and licences would be transferable to a similar job site within Nunavut. The initial listing should be provided to the Nunavut Impact Review Board within six (6) months of the Project Certificate being issued. Updates to the list should be included in the Proponent's annual reports submitted to the Nunavut Impact Review Board and shared with the wider Kivalliq Socio-Economic Monitoring Committee throughout the life of the Project.	11.11.1.3
NIRB Project Certificate No.008, Condition 53	Provided the collection and sharing of such information is consistent with and not limited by any Inuit Impact and Benefit Agreement with the Kivalliq Inuit Association and that employees are willing to voluntarily provide this information, the Proponent should collect and provide project-specific data concerning employee community of residence and number of employees that relocated from the year prior (where available, to and from, for Arviat, Baker Lake, Chesterfield Inlet, Coral Harbour, Naujaat, Rankin Inlet and Whale Cove). The details of this process will be captured in the terms of reference for the project specific Whale Tail Pit Socio-Economic Monitoring Committee. Summaries of this information should be included in the annual Whale Tail Pit socio-economic monitoring reports submitted to the Nunavut Impact Review Board and shared with the wider Kivalliq Socio-Economic Monitoring Committee throughout the life of the Project.	11.10.3
NIRB Project Certificate No.008, Condition 54	Proponent should ensure that the development of all project monitoring plans and associated reporting and updates are undertaken with active engagement of Kivalliq communities, land users, and harvesters. The Proponent should work with the Kivalliq Inuit Association, the local Hunters and Trappers Organizations and the Kivalliq Socio-Economic Monitoring Committee to report on the collection and integration of Inuit Qaujimaningit through its monitoring programs for the Project. To the extent that the sharing of such information is consistent with, and not limited by, any confidentiality or other agreements, summaries addressing the Proponent's fulfillment of this term and condition should be included in the Proponent's annual report to the Nunavut Impact Review Board.	11.10.1
NIRB Project Certificate No.008 Condition 55	The Proponent shall conduct archaeological surveys prior to land disturbance related to the Project and report survey results to applicable parties, including the Government of Nunavut – Department of Culture and Heritage. Evidence of meeting the requirements of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board.	8.20.1
NIRB Project Certificate No.008 Condition 56	The Proponent shall report any archaeological site discovered during the construction, operation, and closure phases to the Government of Nunavut – Department of Culture and Heritage and the Kivalliq Inuit Association. Upon discovering an archeological site, the Proponent shall: a) Take all reasonable precautions necessary to protect the site until further direction is received from the Government of Nunavut – Department of Culture and Heritage; and b) If it becomes necessary to disturb an archaeological site, the Proponent shall consult with the Government of Nunavut – Department of Culture and Heritage, the Kivalliq Inuit Association, and potential impacted communities to establish a site specific mitigation plan, and obtain all necessary authorizations and comply with all applicable laws.	8.20.1
NIRB Project Certificate 008 Condition 57	The Proponent shall update its Occupational Health and Safety Plan to include sexual health and well-being information in its employee orientation programming. In addition, the Proponent shall undertake an education program to inform workers of the range of health services available onsite. The updated plan shall be provided to the Nunavut Impact Review Board	10.2.2.1

	(NIRB), once completed within six (6) months of issuance of the Project Certificate. Summaries of the education programs undertaken and any future updates or modifications to the Occupational Health and Safety Plan and the education program shall be included in the Proponent's annual report to the NIRB.	
NIRB Project Certificate No.008, Condition 58	The Proponent is encouraged to form a subcommittee which includes Government of Nunavut representatives to reach consensus decisions on health related issues that the Proponent or the Government of Nunavut bring forward (e.g. programs and services to address sexually transmitted infections, a process for the treatment and transport of workers that may require medical services beyond that which the mine provides, monitoring and reporting on the impacts of the Project on health services within the potentially impacted communities and particularly, Baker Lake. etc.). Information regarding the Proponent's fulfillment of this term and condition shall be included in the Proponent's annual report to the Nunavut Impact Review Board.	11.11.1.5
NIRB Project Certificate No.008, Condition 59	The Proponent is encouraged to work with the Kivalliq Inuit Association to establish cross-cultural training initiatives, which promote respect and consideration for the importance of Inuit Qaujimajatuqangit to the Inuit identity and to make this training available to Project employees and on-site sub-contractors. The Proponent should actively monitor the implementation of these initiatives, including the following items: · Descriptions of the goals of each program offered; · Language of instruction; · Schedules and location(s) of when each program was offered; · Uptake by employees and/or family members where relevant, noting Inuit and non-Inuit participation rates; and · Completion rates for enrolled participants, noting Inuit and non-Inuit participation rates. Summaries of the cross-cultural training initiatives implemented by the Proponent in fulfilment of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board.	11.10.3
NIRB Project Certificate No.008, Condition 60	The Proponent shall engage with the Government of Nunavut to develop a process to ensure that any conditions first treated at the mine site and requiring ongoing care is appropriately accommodated in a timely manner at community health centres as required. Evidence of meeting the requirements of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board.	11.11.1.5
NIRB Project Certificate No.008, Condition 61	The Proponent, in collaboration with the Government of Nunavut and the Nunavut Housing Corporation, is encouraged to investigate measures and programs designed to assist Project employees with pursuing home ownership or accessing affordable housing options in the Kivalliq region. The Proponent should provide access to financial literacy, financial planning, and personal budgeting as part of the regular Life Skills Training and/or Career Path Program. Evidence of meeting the requirements of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board.	11.10.3/0
NIRB Project Certificate No.008, Condition 62	The Proponent should work with the Government of Nunavut to develop an effects monitoring program that identifies Project-related pressures to community infrastructure such as airport and transportation infrastructure, policing, health and social services, in Baker Lake and all the point-of-hire communities of the Kivalliq Region. Evidence of meeting the requirements of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board	11.10.3
NIRB Project Certificate No.008, Condition 63	The Proponent shall conduct additional studies as part of its freshwater aquatic effects analyses to ensure that methylmercury concentrations anticipated to increase during operations in the aquatic environment (including in fish tissue) do not exceed regulatory requirements. In addition, the Proponent shall consider assessing potential risks from consumption of fish containing methylmercury by using Health Canada's hazard quotients as a descriptive tool. A summary of the results of these additional studies, including the assessment of the potential risk to people from consumption of fish, shall be included in the Proponent's annual report to the Nunavut Impact Review Board.	8.2
NIRB Project Certificate No.008, Condition 64	Within its annual reporting, the Proponent is encouraged to include detailed updates on the status of ongoing exploration programs associated with the Project and associated implications for future phase developments of the Amaruq property. Status updates in fulfillment of this Term and Condition shall be included in the Proponent's annual report to the Nunavut Impact Review Board.	11.3.1
NIRB Project	The Proponent shall, in consultation with the Terrestrial Advisory Group, develop a	3.5.2.3

Certificate No.008, Condition 65	construction plan for the widening of the Whale Tail haul road which includes	
	- Design features of the Whale Tail haul road intended to facilitate caribou movement across the road;	
	▪ Identified sections of the roadside that will be constructed with slopes and top-dressing material appropriate for caribou crossing.	
	The plan must incorporate available Inuit Qaujimajatuqangit in the selection of caribou crossing locations. The final construction plan shall be provided to the Nunavut Impact Review Board (NIRB) prior to widening the Whale Tail haul road. Within three months of completion of construction to widen the Whale Tail haul road, the Proponent shall file an 'as-built report' with the NIRB, which includes the backfill height, slope and top-dressing material specifications of designed wildlife crossing sections.	
NIRB Project Certificate No.008, Condition 66	The Proponent shall operate the Whale Tail haul road as a private access road, implement any reasonable measures to limit public access to the road, and develop strategies that account for unauthorized use. These measures must include, but are not limited to, the following:	11.7.2.2
	a) The posting of signs in English and Inuktitut at the gate, each major bridge crossing, and each 10 kilometres of road, stating that public use of the road is prohibited;	
	b) Annually advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is restricted to mine use only;	
	c) Place local notices (e.g., radio, television, social media) at least quarterly to explain to the community that the road is restricted to mine use only;	
	d) Record all unauthorized non-mine use of the road, and require all mine personnel using the road to	
	e) Develop management strategies to ensure public and operator safety in the event of unauthorized public use.	
	Report unauthorized Whale Tail haul road use and accidents or other safety incidents on the road to the Government of Nunavut, the Kivalliq Inuit Association, Crown-Indigenous Relations and Northern Affairs Canada, the Baker Lake Hunters and Trappers Organization and the Hamlet of Baker Lake immediately, and to the Nunavut Impact Review Board annually.	
NIRB Project Certificate No.008, Condition 67	Subject to the additional direction and requirements of the Nunavut Water Board (NWB), the Proponent shall:	4.4.4
	a) Conduct an evaluation of the potential aquatic effects to Lakes D1 and D5 and downstream that may result from the discharge of treated effluent. The evaluation will include: ▪ Additional water quality and phytoplankton baseline data in Lakes D1 and D5 ▪ Updated water balance and water quality forecast ▪ Updated near field and far field effluent discharge modelling ▪ Updated Water Management Plan, Water Quality and Flow Monitoring Plan,	
	b) Provide adequate rationale for the need to use the alternative discharge contingency, based on the thresholds established as per the Whale Tail Pit Expansion Project water management decision tree.	
	c) In the event that discharge to Lakes D1 and/or D5 is not approved to proceed by the NWB, the Proponent will develop alternative effluent management plans as part of the Water Management Plan.	
	At least 90 days prior to any decision to use the effluent discharge alternatives, the Proponent shall submit the requested evaluation, and rationale for use of the effluent discharge alternatives to the Nunavut Water Board, the Nunavut Impact Review Board (NIRB) and relevant regulatory authorities, for approval to proceed with discharge to one or both of Lakes D1 and D5. If the alternative discharge contingency is approved to proceed, the Proponent will submit the results of its monitoring annually to the NIRB.	
NIRB Project Certificate No.008, Condition 68	The Proponent shall maintain an up-to-date listing of the status of implementation for its commitments made during the Nunavut Impact Review Board's (NIRB) assessment of the Whale Tail Pit Project Proposal and the Whale Tail Pit Expansion Project Proposal through engagement of parties and active monitoring of associated implementation. The Proponent shall provide a status report on the implementation of all its commitments within three (3) months of issuance of the Project Certificate for the Whale Tail Pit Expansion	11.12

	Proposal and annually thereafter within its annual report to the NIRB.	
NIRB Project Certificate No.008 Item 6	The Proponent shall take prompt and appropriate action to remedy any occasion of non-compliance with environmental laws and regulations and/or regulatory instruments, and shall report any non-compliance as required by law immediately. A description of all instances of non-compliance and associated follow up is to be reported annually to the NIRB.	11.6.2
NIRB Project Certificate No.008 Item 8	All monitoring information collected pursuant to the Project Certificate and various regulatory requirements for the Project shall, if appropriate, given the type of monitoring conducted, contain the following information:	SECTION 8
	a) The name of the person(s) who performed the sampling or took the measurements including any relevant accreditations;	
	b) The date, time and place of sampling or measurement, and weather conditions;	
	c) The date of analysis;	
	d) The name of the person(s) who performed the analysis including any relevant accreditations;	
	e) A description of the analytical methods or techniques used; and	
	f) A discussion of the results of any analysis.	
NIRB Project Certificate No.008, Item 9	The Proponent shall make significant monitoring results and/or summaries of significant results available in English, Inuinnaqtun, and Inuktitut, to the extent feasible.	10.3.2
NIRB Project Certificate No.008, Item 12	The Proponent shall establish a publically-accessible Project-specific web portal or web page to make available in a central location all significant non-confidential monitoring and reporting information submitted to regulatory authorities pursuant to the Project Certificate and other territorial or federal permits issued for the Project. For clarity, posting on the Project-specific site does not replace any reporting obligation of the Proponent pursuant to the Project Certificate or any territorial or federal permit.	11.9.7
NIRB Project Certificate No.008, Item 13	The Proponent is encouraged to provide on-going opportunities for consultation and comment on any substantive revisions to the Project-specific monitoring program, modelling, studies, management plans, management measures, and reporting under the Project Certificate.	10.2.2
NWB 2AM-WTP18230, Schedule B, Item 1	a. An overview of methods and frequency used to monitor deformations, Seepage and geothermal responses;	3.1.2.1
	b. A comparison of measured versus predicted performance;	
	c. A discussion of any unanticipated observations including changes in risk and mitigation measures implemented to reduce risk;	
	d. As-built drawings of all mitigation works undertaken;	
	e. Any changes in the design and/or as-built condition and respective consequences of any changes to safety, water balance and water quality;	
	f. Data collected from instrumentation used to monitor earthworks and an interpretation of that data;	
	g. A summary of maintenance work undertaken as a result of settlement or deformation of dikes and dams; and	
	h. The monthly and annual quantities of Seepage from dikes and dams in cubic metres.	
NWB 2AM-WTP1830 Schedule B, Item 2	Monthly and annual volume of fresh Water obtained from Nemo Lake.	4.1.2.1
NWB 2AM-WTP1830 Schedule B, Item 3	Monthly and annual volume of fresh Water obtained from Mammoth Lake.	4.1.2.4
NWB 2AM-WTP1830 Schedule B, Item 4	Monthly and annual volume of fresh Water obtained from Whale Tail Lake.	4.1.2.2
NWB 2AM-WTP1830 Schedule B, Item 5	Monthly and annual volume of fresh Water obtained from Lakes A-P38, A46, A47, A49, A50, A51, A52, A53, A-P21, A-P10, A-P67, and A-P68.	4.1.2.5
NWB 2AM-WTP1830 Schedule B, Item 6	Monthly and annual volume of fresh Water obtained for drilling from sources proximal to drilling sites.	4.1.2.6
NWB 2AM-	Monthly and annual volume of fresh Water obtained from unnamed water bodies for Whale Tail	4.1.2.3

WTP1830 Schedule B, Item 7	Haul Road dust suppressant and for the Emulsion plant.	
NWB 2AM-WTP1830 Schedule B, Item 8	Monthly and annual volume of fresh Water obtained from Lake D1.	4.1.2.7
NWB 2AM-WTP1830 Schedule B, Item 9	Summary of reporting results for the Water Balance and Water Quality model and any calibrations as required in Part E Items 5, 6, and 8.	4.1.2.2
NWB 2AM-WTP1830 Schedule B, Item 10	Geochemical monitoring results	5.1.2
NWB 2AM-WTP1830 Schedule B, Item 11	Volumes of Waste Rock used in construction and placed in the Waste Rock Storage Facility.	5.2.2.1
NWB 2AM-WTP1830 Schedule B, Item 12	Volumes of ore stockpiled and overburden stored at Whale Tail Pit site.	5.2.2.1
NWB 2AM-WTP1830 Schedule B, Item 13	Summary of quantities and analysis of Seepage and runoff monitoring from the Landfill, Waste Rock Storage Facility and associated dikes/berms	8.5.8.2
NWB 2AM-WTP1830 Schedule B, Item 14	A summary report of all general waste disposal activities including monthly and annual quantities in cubic metres of waste generated and location of disposal	6.1.2
NWB 2AM-WTP1830 Schedule B, Item 15	Reporting of Incinerator test results including the materials burned and the efficiency of the Incinerator in relation to effects on Water and the potential Deposit of Waste into Water	6.2.2
NWB 2AM-WTP1830 Schedule B, Item 16	A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.	7.1.2
NWB 2AM-WTP1830 Schedule B, Item 17	A summary of Modifications and/or major maintenance work carried out on all Water and Waste-related structures and facilities.	11.1.2
NWB 2AM-WTP1830 Schedule B, Item 18	The results and interpretation of the Monitoring Program in accordance with Part I and Schedule I.	8.5
NWB 2AM-WTP1830 Schedule B, Item 19	The results of monitoring related to the Aquatic Effects Monitoring Program (AEMP) including: Core Receiving Environment Monitoring Program (CREMP); Metal Mining Effluent Regulation (MMER) Monitoring; Water Quality and Flow Monitoring; Visual Whale Tail Haul Road water quality monitoring; Blast Monitoring; and Groundwater Monitoring.	SECTION 8
NWB 2AM-WTP1830 Schedule B, Item 20	A summary of any progressive Closure and Reclamation work undertaken, including photographic records of site conditions before and after completion of operations, and an outline of any work anticipated for the next year, including any changes to implementation and scheduling.	9.1.2.1
NWB 2AM-WTP1830 Schedule B, Item 21	A summary of on-going field trials to determine effective capping thickness for the Waste Rock Storage Facility for the purpose of long term environmental protection.	5.4.2
NWB 2AM-WTP1830 Schedule B, Item 22	An updated estimate of the current restoration liability based on Project development monitoring, results of restoration research and any changes or modifications to the Appurtenant Undertaking.	9.2.2.1
NWB 2AM-WTP1830 Schedule B, Item 23	A summary of any studies requested by the Board that relate to Water use, Waste disposal or Reclamation, and a brief description of any future studies planned.	10.1.2
NWB 2AM-WTP1830 Schedule B, Item 24	Where applicable, revisions as Addenda, with an indication of where changes have been made, for Plans, Reports, and Manuals.	10.2.2
NWB 2AM-WTP1830 Schedule B, Item 25	An executive summary in English, French and Inuktitut of all plans, reports, or studies conducted under this Licence.	10.3.2
NWB 2AM-	A summary of actions taken to address concerns or deficiencies listed in the inspection reports	11.5.1

WTP1830 Schedule B, Item 26	and/or compliance reports filed by an Inspector.	
NWB 2AM-WTP1830 Schedule B, Item 28	Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.	4.6.2/6.3.2
NWB 2AM-WTP1830 Part B, Item 17	The Licensee shall review the Plans or Manuals referred to in this Licence as required by changes in operation and/or technology and modify the Plans or Manuals accordingly. Revisions to the Plans or Manuals 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.	10.2.2
NWB 2AM-WTP1830 Part C, Item 7	The Licensee shall, within twelve (12) months following the commencement of Operations and when the Licensee files a Final Reclamation and Closure Plan as required under the Licence, submit to the Board for review an updated reclamation cost estimate, using the INAC RECLAIM Reclamation Cost Estimating Model (Version 7.0 or the most current version in use at the time the updated reclamation cost estimate is submitted to the Board).	9.2.2.1
NWB 2AM-WTP1830 Part D, Item 1	The Licensee shall submit to the Board for review, at least sixty (60) days prior to Construction, final design and Construction drawings accompanied, with a detailed report, for the following: a. Water works, including: Water Intake and causeway, Water control structures (dikes, berms, jetties, channels) and Water crossings (culverts, bridges); b. Waste disposal facilities including: Wastewater Treatment Plant, Sewage Treatment Plant, Discharge Diffuser, Waste Rock Storage Facility, Overburden stockpiles, and Landfill; and c. Whale Tail Bulk Fuel Storage Facility	3.5.2.1
NWB 2AM-WTP1830 Part D, Item 16	The Licensee shall submit to the Board for review, within ninety (90) days of completion of each facility designed to contain, withhold, divert or retain Waters or Wastes during the construction phase, a Construction Summary Report prepared by a qualified Engineer(s) in accordance with Schedule D, Item 1.	3.5.2.2
NWB 2AM-WTP1830 Part E, Item 5	The Licensee shall submit an updated Water Management Plan on an annual basis to the Board for review following the commencement of Operations. The Plan must include an updated Water Balance. The Water Management Plan shall include an action plan to be implemented if predicted re-flooded pit water quality indicates that treatment is necessary	4.4.2.2
NWB 2AM-WTP1830 Part E, Item 6	The Licensee shall submit a Water Quality Model for pit re-flooding and for WRSF contact water mixing into Mammoth Lake post-Closure as part of the Water Management Plan which shall be re-calibrated as necessary and updated annually following commencement of Operations. The results and implications of the predictive model shall be reported to the Board.	4.4.2.2
NWB 2AM-WTP1830 Part E, Item 8	The Licensee shall, on an annual basis during Closure, compare the predicted water quantity and quality within the pit and lake, to the measured water quantity and quality. Should the difference between the predicted base case values and measured values be 20% or greater, then the cause(s) of the difference(s) shall be identified and the implications of the difference shall be assessed and reported to the Board.	4.4.3.2
NWB 2AM-WTP1830 Part E, Item 10	The Licensee shall carry out weekly inspections of all water management structures during periods of flow and the records of inspections shall be kept for review upon request of an Inspector. More frequent inspections may be required at the request of an Inspector. This information is to be included in the annual updated Water Management Plan.	4.4.1.2
NWB 2AM-WTP1830 Part I, Item 11	The Licensee shall submit to the Board as part of the Annual Report, the Geotechnical Engineer's Inspection Report. The Report shall include a cover letter from the Licensee outlining an implementation plan to address the recommendations of the Geotechnical Engineer.	3.3.2
NWB 2AM-WTP1830 Part I, Item 12	The Licensee shall submit to the Board as part of the Annual Report required under Part B, Item 2, all reports and performance evaluations prepared by the Independent Geotechnical Expert Review Panel.	3.2.2
NWB 2AM-WTP1830 Part I, Item 14	The Licensee shall submit the results and interpretation of the Seepage monitoring required in Part I Item 15 in the Annual Report required under Part B, Item 2	3.1.2.1
NWB 2AM-WTP1830 Part I, Item 20	The Licensee shall annually review the approved QA/QC Plan and modify the Plan as necessary. Proposed changes shall be submitted to an Accredited Laboratory for approval.	8.5.7.2
NWB 2AM-WTP1830 Part J, Item 2	The Licensee shall submit to the Board for approval within twelve (12) months of Operations, an updated Interim Whale Tail Pit Closure and Reclamation Plan prepared in accordance with the "Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine	9.1.2.1

	Sites in the Northwest Territories", issued by the Mackenzie Valley Land and Water Board (MVLWB) and Aboriginal Affairs and Northern Development Canada (AANDC) in 2013 (MVLWB/AANDC 2013) and consistent with the INAC Mine Site Reclamation Policy for Nunavut, 2002. The Plan shall include all mine related facilities and Whale Tail Pit Haul Road.	
DFO Authorization 16HCAA-00370 Condition 2.3.5	As per the NIRB Project Certificate No. 008 Condition 21, the Proponent shall ensure that all project infrastructure in watercourses is designed and constructed in such a manner that it does not unduly prevent or limit the movement of water or fish species in fish streams and rivers, unless otherwise authorized by Fisheries and Oceans Canada.	3.5.2.1
DFO Authorization 16HCAA-00370 Condition 2.3.3 20HCAA-00275 Condition 2.3.8	The proponent shall develop a blasting mitigation plan in consultation with DFO to ensure effects on fish and fish habitat are minimized, as per Nunavut Impact Review Board Project Certificate No. 008 Condition 22. The Blasting mitigations plan shall be submitted to DFO prior to construction for approval, and shall adhere to the guidance provided in the Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies, NWT 2000-2002	8.6.2
DFO Authorization 16HCAA-00370 Condition 2.4 20HCAA-00275 Clause 2.3.7	The proponent shall provided a final fish-out plan to DFO at least three weeks prior to commencing the fish-out program to allow for review and approval	8.11.2
DFO Authorization 16HCAA-00370, Condition 2.4.1	The Proponent shall provide detailed engineering plans to DFO for review and approval, for construction works that have potential to impact fish and fish habitat, at least 3 months prior to commencement of the works. This includes dikes (e.g., Northeast dike), diversion/realignment channels, and freshwater jetty.	3.5.2.1
DFO Authorization 16HCAA-00370 and 20HCAA-00275 Condition 3.1	The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization, and provide a stand-alone report to DFO, by March 31, annually and indicate whether the measures and standards to avoid and mitigate serious harm to fish were conducted according to the conditions of this authorization	8.5.1.2
DFO Authorization 16HCAA-00370 Condition 3.1.1	The report in addition to the above shall summarizes the monitoring results related to fish and fish habitat contained in the documents listed in section 2.3. The report shall include a description of the implementation as well as an evaluation of the effectiveness of those monitoring programs in validating the changes to fish and fish habitat predicted in the Proponent's Environmental Impact Statement	8.5.1.2
DFO Authorization 20HCAA-00275 Condition 3.1.1	Demonstration of effective implementation and functioning: Providing dated photographs and inspection reports to demonstrate effective implementation and functioning of mitigation measures and standards described above to limit the impacts to fish and fish habitat to what is covered by this authorization.	8.5.1.2
DFO Authorization 20HCAA-00275 Condition 3.1.2	Contingency measures: Providing details of any contingency measures that were followed, to prevent impacts greater than those covered by this authorization in the event that mitigation measures did not function as described.	8.5.1.2
DFO Authorization 16HCAA-00370 Condition 3.1.2 20HCAA-00275 Condition 3.2.1	Each year, following the submission of the annual monitoring report to DFO, the Proponent shall arrange to meet with DFO and interested parties (e.g. Kivalliq Inuit Association) to review the results of the previous year's monitoring programs. The results of the meetings and any mutually agreed upon modifications aimed at improving the effectiveness of the monitoring programs shall be incorporated into the upcoming year of the monitoring programs. The Proponent shall update the monitoring programs/plans to reflect the changes, and the programs/plans shall be approved in writing by DFO prior to implementation.	8.5.1.2
DFO Authorization 16HCAA-00370 Condition 3.1.3	The annual monitoring report shall provide dated photographs with GPS coordinates and description of locations and inspection reports to demonstrate effective implementation and functioning of mitigation measures and standards described above to limit the serious harm to fish to what is covered by this authorization	8.5.1.2
DFO Authorization 16HCAA-00370 Condition 3.1.4	The annual monitoring report shall also provided details of any contingency measures that were followed to prevent impacts greater than those covered by this authorization in the event that mitigation measures did not function as described.	8.5.1.2
DFO Authorization 16HCAA-00370 Condition 3.2.1	All fish-out results shall be provided to DFO in a fish-out monitoring report within 2 months of the completion of a fish-out program. In addition, the Proponent shall provide DFO with photocopies of all field data/notes, copies of photographs with GPS coordinates and an electronic database of data collected and result of all sample analyses. This condition shall be followed in accordance with the General Fish-out Protocol for Lakes and Impoundments in the Northwest Territories and Nunavut	8.11.2

DFO Authorization 16HCAA-00370 Condition 4.2.1.2	The Proponent shall provide updated research plans with detailed methodologies for projects listed under conditions 4.2.2.1a, b, c and d. Each updated plan shall be provided to DFO for approval on or before December 31, 2018 and at least 60 days prior to commencement of research.	8.8.2.4
DFO Authorization 16HCAA-00370 Condition 4.2.1.3 and 20HCAA-00275 Condition 5.3.3.5	The proponent shall initiate a literature review no later than November 2018, and provide the results of this review to DFO no later that February 28, 2019. This shall include an outline of the proposed studies by February 28, 2019, and a complete detailed research plans by December 31, 2019	8.8.2.4
DFO Authorization 16HCAA-00370 Condition 4.2.1.4	To serve as an advisory group for the complementary measures that shall be undertaken as listed under condition 4.2.2.1, the Proponent shall establish a Meadowbank Fisheries research Advisory Group (MFRAG). The MFRAG membership shall include DFO and the Proponent, an independent third party research advisor, any interested Inuit organizations within the Kivalliq Region, and other agencies or interested parties s considered appropriate by MFRAG members. The proponent shall develop a draft terms or reference and participant list for this advisory group which shall be provided to DFO by September 1, 2018.	8.9
DFO Authorization 16HCAA-00370 Condition 4.2.1.6	The proponent shall make all effort to ensure that the results from the research projects conducted for the complementary measures are published in peer-reviewed scientific journals	8.8.2.4
DFO Authorization 16HCAA-00370 Condition 5.1.1.2	The proponent shall provided an updated Whale Tail Pit Fish Habitat Offset Monitoring Plan, prepared by Agnico Eagle Mines Ltd. To DFO for review and approval on or before December 31, 2018. This update shall include, but is not limited to, details on the monitoring methods, frequency of monitoring, sampling location and criteria for success.	8.8.2.2
DFO Authorization 16HCAA-00370 Condition 5.1.1.3	The proponent shall develop a schedule for the implementation of the offsetting measures, and shall provide this schedule to DFO no later than December 31, 2019	8.8.2.2
DFO Authorization 16HCAA-00370 Condition 5.1.1.4:	The Proponent shall provide an annual Whale Tail Pit Fish Habitat Offset monitoring Report to DFO (and interested parties) following the construction of the offsetting habitat by March 31. The Proponent is required to provide the Whale Tail Pit Fish Habitat Monitoring Report until DFO indicates this requirement has been met	8.8.2.2
DFO Authorization 16HCAA-00370 Condition 5.1.1.5 and 20HCAA-00275 Condition 5.2.2	As part of the annual Whale Tail fish Habitat Offset Monitoring Report, the Proponent shall include, but not limited to:	8.8.2.2
	- a digital photographic record with GPS coordinates of pre-construction, during construction and post construction conditions shall be compiled using the same vantage points and direction to show that the approved works have been completed in accordance with the offsetting plan	
	-a summary of field observations for each respective year as well as as-built survey	
	-a detailed analysis report summarizing the effectiveness of the offsetting measures	
DFO Authorization 16HCAA-00370 Condition 5.1.1.6	Each year, following the submission of the annual Whale Tail Pit Fish Habitat Offset Monitoring Report to DFO, the Proponent shall arrange to meet with DFO and interested parties (e.g., KIA) to review the results of the previous year of the monitoring program. The results of the meetings and any mutually agreed upon modifications aimed at improving the effectiveness of the offsetting monitoring program shall be incorporated into the upcoming year of the monitoring programs. The Proponent shall update the Whale Tail Pit Fish Habitat Offset Monitoring Plan, to reflect the changes, and the plans shall be approved in writing by DFO prior to implementation	8.8.2.3
DFO Authorization 16HCAA-00370 Condition 5.2.1	As required by DFO Authorization 16HCAA-00370 Condition 5.2.1: The Proponent shall monitor to validate Agnico Eagle Mines Ltd.'s Habitat Suitability Index (HSI). The monitoring shall be conducted to the satisfaction of DFO. Where appropriate, the HSI will incorporate additional knowledge generated by the complementary measures research projects under section 4.2.2, in particular research project 4.2.2.1c, and adjust the Habitat Evaluation Procedure (HEP) model according to the results generated. The HSI will be use to refine, as necessary, the performance end-points in habitat units for offsetting	8.8.2.1
DFO Authorization 20HCAA-00275 Condition 5.2.1	The Proponent shall provide a Whale Tail Expansion Fish Habitat Offset Monitoring Report to DFO including geotechnical and biological and ecological monitoring as per section 5.1.1. The Proponent is required to provide the Report by March 31 of 2027 and update annually for 10 years or until DFO indicates requirements of this Authorization have been met	8.8.2.2
DFO Authorization	The Proponent shall provide a summary report of all Whale Tail Expansion Fish Habitat Offset	8.8.2.2

20HCAA-00275 Condition 5.2.3	Monitoring Reports described in section 5.2.1 before March 31, 2036 to DFO (and interested parties) which shall analyse results from the offsetting measures of the Whale Tail Expansion Project following the construction of the offsetting habitat. DFO reserves the right to request additional Summary Report if annual reporting were to continue until requirement has been met.	
DFO Authorization 20HCAA-00275 Condition 5.3.2	The Proponent shall monitor to validate Agnico Eagle Mines Ltd.'s Habitat Suitability Index (HSI). The monitoring shall be conducted to the satisfaction of DFO. Where appropriate, the HSI will incorporate additional knowledge generated by the monitoring plans and complementary measures research projects of the Approved Project (PATH No.: 16-HCAA-00370) and adjust the Habitat Evaluation Procedure (HEP) model according to the results generated. The HSI will be used to refine, as necessary, the performance end-points in habitat units for offsetting	8.8.2.1
CIRNAC Land Lease 66H/8-1-4, Condition 9	The lessee shall file, annually, with the Minister in the manner and format stipulated, no later than sixty (60) days following the anniversary date of the effective date of this lease. The report shall include: i. Quantity of material removed and location of removal, for the immediately preceding calendar year; and ii. Such other data as are reasonably required by the Minister from time to time.	3.4.2.1
CIRNAC Land Lease 66H/8-1-4, Condition 27	The lessee shall file, annually, a report for the preceding year, outlining the ongoing borrow area operations completed in conformity with the approved Borrow Management Plan, as well as any variations from the Plan.	3.4.2.1
CIRNAC Land Lease 66H/8-1-4 Condition 66	If an archaeological site is discovered with the Land, the lessee shall immediately advise the Minister and the Territorial Archaeologist in writing.	8.20.1
CIRNAC Land Lease 66H/8-1-4, Condition 35	The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with the approved Abandonment and Restoration Plan, as well as any variations from the said Plan.	9.1.2.3
CIRNAC Land Lease 66H/8-2-1, Condition 25	The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with the approved Abandonment and Restoration Plan, as well as any variations from the said Plan.	9.1.2.2
CIRNAC Road lease 66H/8-2-1 Condition 60	The lease shall before the first (1st) day of September in each and every year during the term of the lease, provide to the Minister, a report of that years road activities. The report shall include, but not limited to: (a) total number of loads hauled in that year (b) total road operating cost for that year	11.7.1.2
CIRNAC Road lease 66H/8-2-1 Condition 63	The lessee agrees to monitor and report unauthorized non-mine use of the road, and collect and report this data to the Minister, who shall make this report accessible to the Nunavut Impact Review board, one (1) year after the road is opened and annually thereafter.	11.7.1.2
CIRNAC Road lease 66H/8-2-1 Condition 64	The lessee agrees to report any information received, including accidents or others safety incidents on the road, including the locked gates, to the minister, who shall make this information accessible to the GN, KIA a, the Hamlet of Baker Lake immediately.	11.7.2.2
CIRNAC Road lease 66H/8-2-1 Condition 65	The lessee shall give notice of any closure of the road to the Minister and the reasons thereof, and post any notice of closure at the access point and along the road.	11.7.2.2.1
KIA Production Lease KVPL17D01 Condition 6.01 (10)	Deliver to KIA, not later than March 31, 2022 and not later than March 31st every three (3) years thereafter, a Conceptual Reclamation and Closure Plan and Reclamation Estimate, detailing the reclamation and remediation activities taken in the last three (3) years and to be undertaken in the next three (3) years and planned for the balance of the Term. That includes, but not is not limited to the proposed methods and procedure for the progressive […]	9.1.2.1
KIA Quarry Lease KVCA15Q02, Condition 14	AEM shall conduct reclamation activities until November 22, 2018, in accordance with the Reclamation Plan attached Schedule 3. AEM shall annually thereafter submit to KIA a Reclamation Plan detailing the proposed reclamation activities for the upcoming year.	9.1.2.3
KIA Quarry Lease KVCA18Q01, Condition 20	The permittee shall conduct reclamation activities during the first twelve months of the term of this Permit in accordance with the Reclamation Plan attached as Schedule 3. The permittee shall annually thereafter submit to the Association an Reclamation Plan detailing the proposed reclamation activities for the upcoming year.	9.1.2.3
KIA Quarry Lease	The permittee shall conduct reclamation activities during the first twelve months of the term of	9.1.2.3

KVCA15Q01, Condition 13	this Permit in accordance with the Reclamation Plan attached as Schedule 3. The permittee shall annually thereafter submit to the Association an Reclamation Plan detailing the proposed reclamation activities for the upcoming year.	

Table 1-2 Meadowbank and Whale Tail Summary of Samples Stations

MEADOWBANK GOLD PROJECT			
NWB Station	**Description**	**Phase**	**2021 Reporting Status**
ST-DC-1 to TBD	Monitoring stations during Dike Construction as defined in Part D Item 5	Construction	Not applicable in 2021
ST-DD-1 to TBD	Monitoring stations during Dike Dewatering as defined in Part D Item 5	Construction	Not applicable in 2021
ST-1	Water Intake for camp, mill and re-flooding	Water Intake for camp, mill and re-flooding	Section 4.1.1
ST-1W	Water Intake for re-flooding	Water Intake for camp, mill and re-flooding	Not applicable in 2021
ST-3	Water Intake for Emulsion Plant	Late operation, closure	Section 4.1.1.3
ST-4	Water reclaimed from Tailings Storage Facility	Late operation, closure	Not applicable in 2021
ST-5	Portage Area (east) diversion ditch	Late operation, closure	Section **Error! Reference source not found.**
ST-6	Portage Area (west) diversion ditch	Late operation, closure	Section **Error! Reference source not found.**
ST-8	East Dike Seepage Discharge	Late operation, closure	Section 8.5.3.1.3
ST-9	Portage Attenuation Pond prior to discharge through Third Portage Lake Outfall Diffuser	Early operation	Not applicable in 2021
ST-10	Vault Attenuation Pond prior to discharge through Wally Lake Outfall Diffuser	Late operation	Not applicable in 2021
ST-11	Tailings Storage Facility	Post closure	Not applicable in 2021
ST-12	Portage/ Goose Pit Lake	Post closure	Not applicable in 2021
ST-13	Vault Pit Lake	Post closure	Not applicable in 2021
ST-14	Discharge to the land from Landfarm sump at mine site	Late operation, closure	Section 8.5.3.1.22
ST-16	Portage Rock Storage Facility	Late operation, closure	Section 8.5.3.1.7
ST-17	North Portage Pit Sump	Operations	Section 8.5.3.1.8
	Portage Pit Lake	Late operation, closure	Not applicable in 2021
ST-19	South Portage Pit Sump	Early operations	Section 8.5.3.1.9
	Portage Pit Lake	Late operations	Not applicable in 2021
ST-20	Goose Island Pit Sump	Early operations	Section 8.5.3.1.10
	Goose Island Pit Lake	Late operations, closure	Not applicable in 2021
ST-21	Tailings Reclaim Pond	Late operations	Section 8.5.3.1.11
ST-22	Tailings Storage Facility	Closure (drainage run-off)	Not Applicable in 2021
ST-23	Vault Pit Sump	Late operations	Not Applicable in 2021
ST-24	Vault Rock Storage Facility	Late operation, closure	Section 8.5.3.1.13
ST-25	Vault Attenuation Pond	Late operation	Section 8.5.3.1.14

ST-26	Vault Pit Lake	Closure	Section 8.5.3.1.12
ST-30	WEP 1	Late operations, closure	Section 8.5.3.1.15
ST-31	WEP 2	Late operations, closure	Section 8.5.3.1.15
ST-32	Saddle Dam 3	Late operations, closure	Section 8.5.3.1.16
ST-S-1 to TBD	Seeps (to be determined)	Late operations, closure	Sections 0/8.5.3.1.18
ST-GW-1 to TBD	Groundwater wells (to be determined)	Late operations, closure	Section 8.7.1
ST-AEMP-1 to TBD	Receiving AEMP	Late operations, closure	Section 8.12
ST-MMER-1 to TBD	Vault, East dike and Portage effluent outfall	Late operations	Section 8.3.1
ST-37	Secondary containment sump at the Bulk Fuel Storage Facility at Meadowbank	Late operation, closure	Sections 8.5.5.1
ST-38	Secondary containment at the Bulk Fuel Storage Facility in Baker Lake - Jet-A containment	Late operation, closure	Sections 8.5.5.2
ST-40.1	Secondary containment sump at the Bulk Fuel Diesel Storage Facility in Baker Lake (Fuel tanks 5&6)	Late operation, closure	Sections 8.5.5.2
ST-40.2	Secondary containment sump at the Bulk Fuel Diesel Storage Facility in Baker Lake (Fuel tanks 1-4)	Late operation, closure	Sections 8.5.5.2
ST-40.3	Secondary containment sump at the Bulk Fuel Diesel Storage Facility in Baker Lake (Fuel tanks 7-8)	Late operation, closure	Sections 8.5.5.2
ST-41	Phaser Pit Sump	Late operations	Section 8.5.3.1.19
ST-42	BB Phaser Pit Sump	Late operations	Section 8.5.3.1.20
ST-43	Phaser Attenuation Pond	Late operations	Section 8.5.3.1.21
WHALE TAIL PROJECT			
NWB Station	**Description**	**Phase**	**2021 Reporting Status**
ST-WT-DC-1 to TBD	Monitoring stations during Dike Construction as defined in Part D Item 5	Construction	Not Applicable in 2021
ST-WT-DD-1 to TBD	Monitoring stations during Dike Dewatering as defined in Part D Item 5	Construction	Not Applicable in 2021
ST-WT-S-1 to TBD	Seeps (to be determined)	Operations	Section 8.5.3.2.10
		Closure	Not applicable in 2021
ST-WT-GW-1 to TBD	Groundwater wells (to be determined) as required under Groundwater Monitoring Plan	Operations	Section 8.7.2
		Closure	Not applicable in 2021
ST-WT-1	Attenuation Pond, pre-treatment	Operations	Section 8.5.3.2.1
ST-WT-2	Attenuation Pond, post-treatment; last point of control before discharge to Mammoth Lake via the West Diffuser	Operations	Section 8.5.3.2.15.1
ST-WT-2a	Attenuation Pond, post-treatment; last point of control before discharge to Mammoth Lake via the East Diffuser	Operations	Section 8.5.3.2.15.1
ST-WT-2b	Attenuation Pond, post-treatment; last point of control before discharge to Mammoth Lake via the Winter Diffuser	Operations	Not applicable in 2021
ST-WT-3	Waste Rock Storage Facility (WRSF) Pond prior to pumping to Attenuation Pond	Operations Closure	Section 8.5.3.2.3
	Waste Rock Storage Facility (WRSF) Pond prior to discharge to Mammoth Lake	Post-Closure	Not applicable in 2021
ST-WT-4	Whale Tail Pit or pit sump	Operations	Section 8.5.3.2.4

ST-WT-5	Water Intake from Nemo Lake	Construction Operations	Sections 4.1.2.1
ST-WT-6	Lake A47	Construction Operations Closure	Section 8.5.3.2.6
ST-WT-7	East diversion channel	Operations	Not applicable in 2021
ST-WT-8	Water Intake from Whale Tail Lake	Closure	Not applicable in 2021
ST-WT-9	North Whale Tail Lake (as the basin fills and when it is connected to the south basin and prior to or when connected to the downstream environment)	Closure Post-Closure	Not applicable in 2021
ST-WT-10	Pit Lake (as the Pit fills)	Closure Post-Closure	Not applicable in 2021
ST-WT-11	Sewage Treatment Plant	Operations Closure	Section 8.5.4.2
ST-WT-12	Secondary containment at Whale Tail Bulk Fuel Storage Facility	Operations Closure	Section 8.5.5.3
ST-WT-13	Lake A45	Operations Closure	Section 8.5.3.2.7
ST-WT-14	Lake A16 outlet	Construction Operations Closure	Section 8.5.3.2.8
ST-WT-15	Lake A15	Construction Operations Closure	Section 8.5.3.2.9
ST-WT-16	Secondary containment at Whale Tail Bulk Fuel Storage Facility Power Plant	Operations Closure	Section 8.5.5.3
ST-WT-17	Whale Tail Dike Seepage	Operations Closure	Section 8.5.3.2.10
ST-WT-18	IVR Pit or IVR Pit sump	Operations	Section 8.5.3.2.5
ST-WT-19	IVR Pit Lake (as the pit fills)	Closure and post-closure	Not applicable in 2021
ST-WT-20	Groundwater Storage Pond 1 (GSP-1)	Operations	Section 8.5.3.2.16
ST-WT-21	Groundwater Storage Pond 2 (GSP-2)	Operations	Not applicable in 2021
ST-WT-22	Groundwater Storage Pond 3 (GSP-3)	Operations	Not applicable in 2021
ST-WT-23	IVR Attenuation Pond, pre-treatment	Operations Closure	Section 8.5.3.2.2
ST-WT-24	IVR Attenuation Pond, post-treatment; last point of control before discharge to Whale Tail South Basin via the Permanent Diffuser	Operations	Section 8.5.3.2.15.2
ST-WT-24a	Whale Tail Attenuation Pond, post-treatment; last point of control before discharge to Whale Tail South Basin via the Temporary Diffuser	Operations	Section 8.5.3.2.15.2
ST-WT-25	Whale Tail Pit Lake (North Wall)	Closure	Not applicable in 2021
ST-WT-26	Whale Tail South Water Transfer to Mammoth Lake Permanent Diffuser	Construction	Not applicable in 2021
ST-WT-26a	Whale Tail South Water Transfer to Mammoth Lake Temporary Diffuser	Construction	Not applicable in 2021
ST-WT-27	Discharge from Landfarm	Operations Closure	Not applicable in 2021
ST-WT-28	IVR WRSF Pond prior to pumping to Attenuation Pond	Operations Closure	Not applicable in 2021
ST-WT-29	Water intake from Lake D1	Closure	Not applicable in 2021
ST-WT-30	Water Ponding Around Whale Tail WRSF	Operations Closure Post-closure	Section 8.5.3.2.12
ST-WT-31	Water Ponding Around Whale Tail WRSF	Operations Closure Post-closure	Section 8.5.3.2.12

ST-WT-32	Water Ponding Around Whale Tail WRSF	Operations Closure Post-closure	Section 8.5.3.2.12
ST-WT-33	Water Ponding Around Whale Tail WRSF	Operations Closure Post-closure	Section 8.5.3.2.12
ST-WT-34	Water Ponding Around IVR WRSF	Operations Closure Post-closure	Section 8.5.3.2.13
ST-WT-35	Water Ponding Around IVR WRSF	Operations Closure Post-closure	Section 8.5.3.2.13
ST-WT-36	Water Ponding Around IVR WRSF	Operations Closure Post-closure	Section 8.5.3.2.13
ST-WT-37	IVR Diversion Channel	Operations	Section 8.5.3.2.14

SECTION 2. SUMMARY OF ACTIVITIES

2.1 2021 ACTIVITIES

Agnico Eagle's ability to consistently execute its business strategy has provided a solid foundation for growth. These three pillars – performance, pipeline and people – form the basis of Agnico Eagle's success and competitive advantage. By delivering on them, the Company strives to continue to build its production base and generate increased value for shareholders, while making meaningful contributions to its employees and communities.

In the full year 2021, gold production increased when compared to the prior year primarily due to higher throughput resulting from improved operational performance, optimization of the processing facility and higher gold grades with deepening of the pit and the contribution from the IVR open pit. In the prior year, production activities were reduced and the mill was put on care and maintenance from March 19th, 2020 to May 28th, 2020 related to the implementation of measures to reduce the spread of COVID-19.

Production costs per tonne in the full year 2021 decreased when compared to the prior year primarily due to higher throughput levels and continuous improvement initiatives at the mine and mill, partially offset by a lower deferred stripping adjustment. Production costs per ounce in the full year 2021 decreased when compared to the prior year due to higher gold production and lower production costs per tonne, partially offset by the strengthening of the Canadian dollar against the U.S. dollar.

Minesite costs per tonne in the full year 2021 decreased when compared to the prior year primarily due to the reasons for the decrease in production costs per tonne described above. Total cash costs per ounce in the full year 2021 decreased when compared to the prior year due to higher gold grades and lower minesite costs per tonne, partially offset by the strengthening of the Canadian dollar against the U.S. dollar.

The delineation of higher-grade mineralization at depth below the proposed open pits at Amaruq led to the decision to construct an exploration ramp into the Whale Tail deposit in 2017. Ramp development commenced in 2018 using a phased approach in order to manage capital costs. In February 2021, the Board approved the construction of the Amaruq underground project and first gold production is expected in early 2022. The objective is to mine higher-grade underground portions of the deposit in conjunction with the open pits In 2021, the construction of the underground mine infrastructure, although affected by the COVID-19 related reduction of activities in December 2021 and January 2022, remains on budget and on schedule. In the fourth quarter of 2021, the underground development was above target with 942 metres completed. Amaruq underground is forecast to contribute approximately 30,000 ounces of gold in 2022 and 100,000 ounces of gold in 2023 and in 2024.

At the Meadowbank Complex, the production guidance is lower than Previous Guidance for 2022 and 2023. The lower production guidance in 2022 incorporates the COVID-19 related suspension of mining and milling activities that commenced in December 2021 and gradual ramp-up into February 2022. In addition, the Company has revised the open pit mining sequence and mining rate in 2022 and 2023 to 35 million tonnes per year, in line with current performance. As a result, the ore processed and gold grades in 2022 and 2023 are slightly lower than previously anticipated. The Company now forecasts gold production above 400,000 ounces per year starting in 2024.

At the Meadowbank Complex, the Company expects to spend approximately $10.4 million for 42,800 metres of drilling comprised of 20,200 metres of conversion drilling and 22,700 metres of exploration drilling focused on testing open-pit extensions of mineralization and the potential for further underground deposits at the Amaruq satellite operation. The Company expects to spend $9.1 million for 19,000 metres of drilling to investigate for new, near-surface satellite deposits close to the road and infrastructure around the Meadowbank/Amaruq area. Any new open-pittable discoveries have the potential to extend the life of mine at Amaruq in conjunction with the extensions of higher-grade underground mineralization at Amaruq.

The 2021 highlights for the Meadowbank Gold Project and Whale Tail Project include:

- In 2021, the Amaruq open pit continued to show consistent improvement and set a yearly record of tonnes mined of approximately 38.5 million tonnes. In addition, the consistent performance of the long haul truck fleet drove a record 3.8 million ore tonnes hauled between Amaruq and Meadowbank.

- The Company is currently evaluating potential opportunities to further optimize the integration of the open pit and underground operations.

- In the fourth quarter of 2021, the Company completed a seven-day mill shutdown which included preparation work to tie-in the High Pressure Grinding Rolls (HPGR). The HPGR commissioning is expected to be completed in the second quarter of 2022.

Every year, the caribou migration is factored into the Company's production plan. This migration can impact the ability to move materials on the road between Amaruq and Meadowbank and between Meadowbank and Baker Lake. Wildlife management is an important priority and the Company is working with Nunavut stakeholders to find the best solutions to safeguard wildlife and minimize production disruptions.

Quarterly progress reports, providing further details of activities throughout the 2021 year, were prepared for the Kivalliq Inuit Association as required by Production Lease KVPL08D280 and KVPL17D01.

Agnico Eagle infrastructure locations can be found in Figure 1, 2, 3, 4, 5 and 6

Figure 1 Meadowbank Site 2021 Sampling Locations



Figure 2 EEM Receiving Environment 2021 Sampling Locations

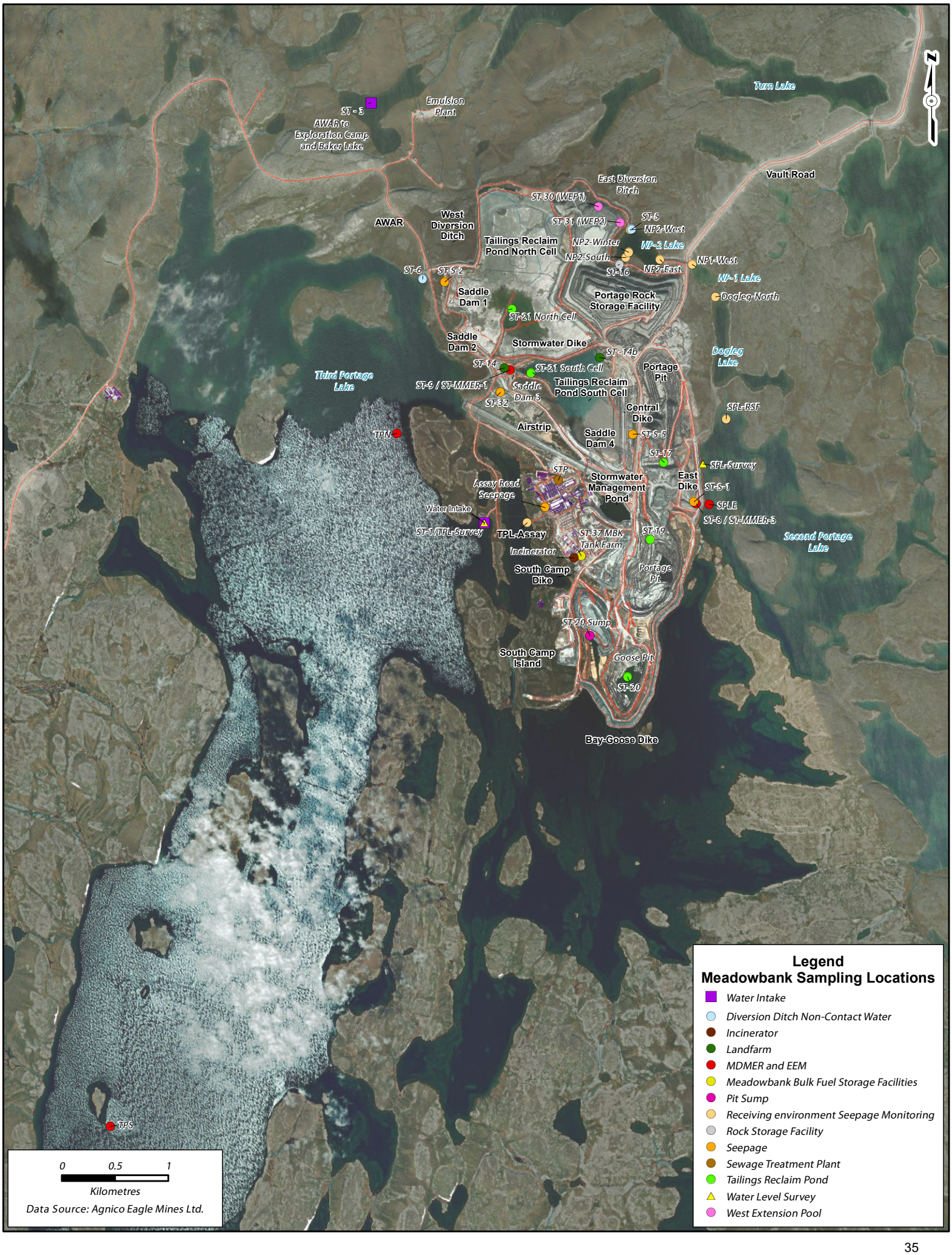


Figure 3 Vault Area 2021 Sampling Locations



Figure 4 Whale Tail Area 2021 Sampling locations

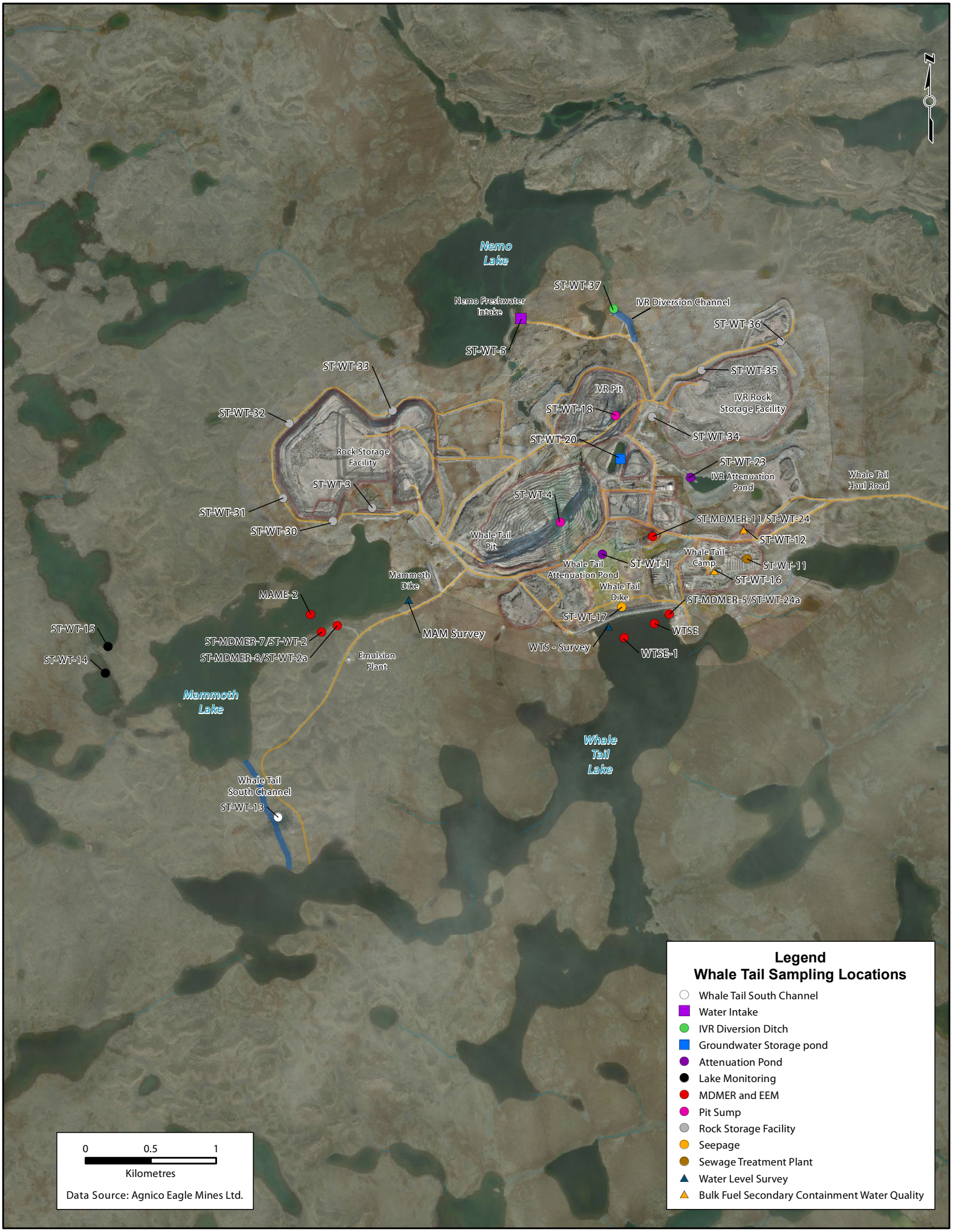


Figure 5 General View from Baker Lake to Whale Tail Project

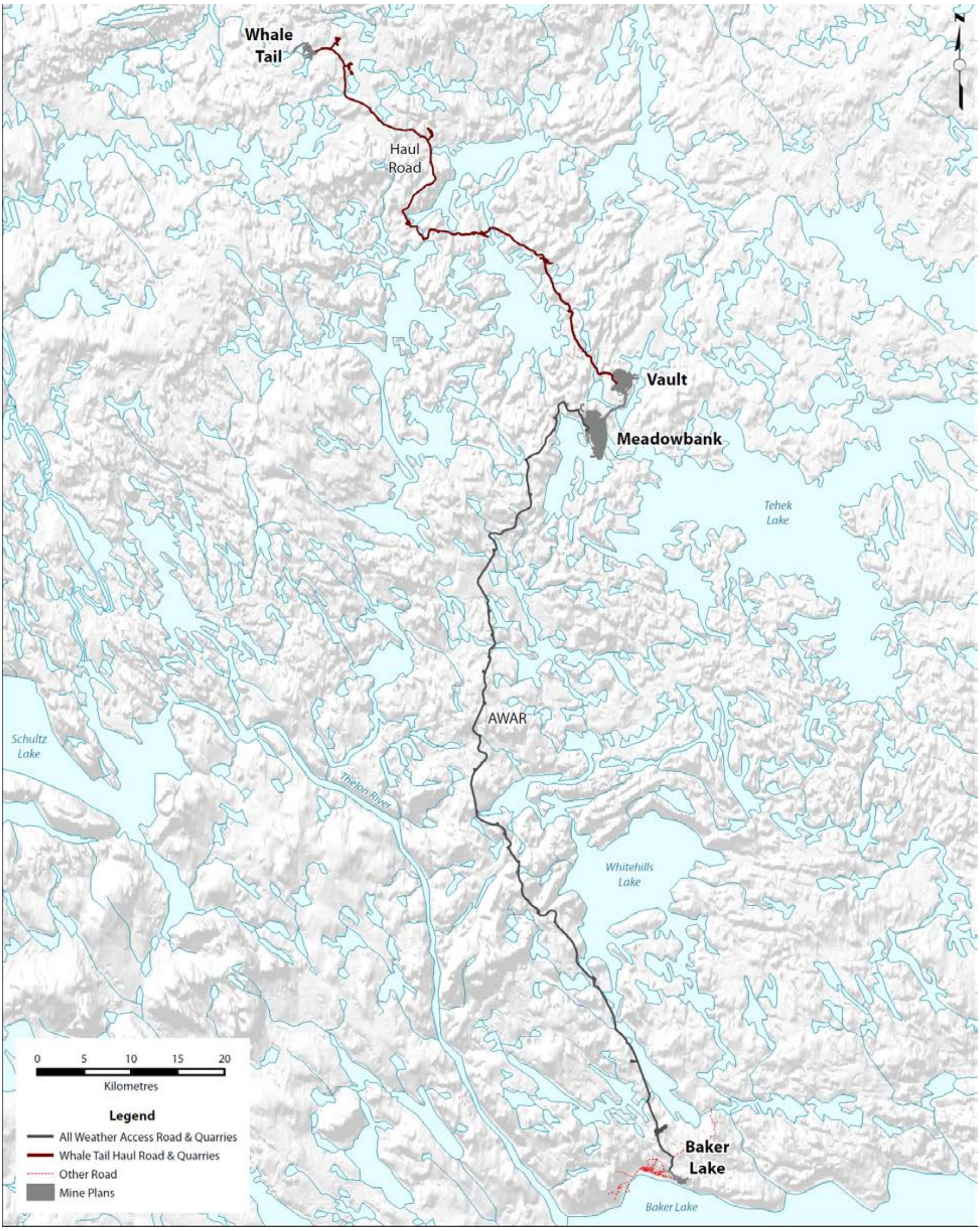


Figure 6 Baker Lake Marshalling Area 2021 Sampling Locations



2.2 2022 MINE PLAN / WORK PLAN

2.2.1 2022 Mine Plan Meadowbank Site

The 2022 Mine Plan for the Meadowbank Gold Project, prepared for the Kivalliq Inuit Association as required by Production Lease KVPL08D280, is attached in Appendix 2. This report was submitted to the KivIA on January 5th, 2022, and outlines the activities planned for the project throughout the 2022 year.

The Meadowbank gold mine began the operation phase of the project in February 2010, and thus, is entering its twelfth year of operations. In addition to routine activities throughout the 2021 season, a number of secondary construction/modification projects will be undertaken near the main mine site area. Tailings will be mainly deposited in the Portage Pit E. If necessary, tailings deposition may occur in Portage Pit A, Goose Pit and in the Tailings Storage Facility North and South Cell to optimize the landform.

In 2022, under the current Life of Mine, no mining activity is planned to occur at Meadowbank as all the pit resources were exhausted in 2019. As no mining is planned, there is no waste rock planned to be managed.

Environmental monitoring (wildlife, aquatic effects, groundwater, noise and air) will continue through 2022 in support of all operational undertakings at the Meadowbank site as required by the NWB Type A Water License 2AM-MEA1530, NIRB Project Certificate No.004, DFO authorizations and MDMER regulation.

On December 29th, 2021, Agnico Eagle submitted to KivIA the 2022 Work Plan for Quarry Permit KVCA06Q11 (Appendix 8). This Work Plan detail planned activities for the quarries along the AWAR throughout the 2022 year. As per the Work Plan, Agnico Eagle is currently not planning to remove quarry material in 2022. Should planning change, Agnico Eagle will ensure that the material to be removed stay within the allowable volume prescribed in the authorized permit and will pay the associated material removal fees. Environmental monitoring will continue through 2022.

2.2.2 2022 Work Plan Whale Tail Site

The 2022 Mine Plan for the Whale Tail Pit Project, prepared for the Kivalliq Inuit Association as required by Production Lease KVPL17D01, is attached in Appendix 3. This report was submitted to the KivIA on December 10th, 2022, and outlines the activities planned for the project throughout the 2022 year.

The Whale Tail Project mine began the commercial production on September 2019, and thus, will be completing its third year of production in 2022. In addition to routine activities throughout the 2022 year, a number of secondary construction/modification projects will be undertaken near the main mine site. Ore will continued to be hauled to Meadowbank Mine for milling process.

The Whale Tail Haul Road 2022 Work Plan, prepared for the KivIA as required by Lease KVRW15F01, is attached in Appendix 4. This report was submitted to the KivIA on December 29th, 2022, and detailed planned road maintenance and operation activities along the Whale Tail Haul Road throughout the 2022 year. Environmental monitoring (wildlife, dust suppression, waste management, air and water quality) will continue through 2022.

On December 29th, 2021, Agnico Eagle submitted to KivIA the 2022 Work Plans for Quarry/Esker Permits KVCA15Q01, KVCA15Q02 and KVCA18Q01 (Appendix 5, 6 and 7 respectively). These Work Plans detail planned activities for the quarry/esker along the Whale Tail Haul Road throughout the 2022 year. As per the Work Plans, Agnico Eagle is currently not planning to remove esker and quarry material in 2022. Should this planning change, Agnico Eagle will ensure that the material to be removed stay within the allowable volume prescribed in the authorized permit and will pay the associated material removal fees. Environmental monitoring will continue through 2022.

2.2.3 NIRB Screening Decision No. 11EN010

As requested by NIRB in the screening decision File No.11EN010, Agnico Eagle included within this annual report (Appendix 69), a comprehensive annual report of the activities associated with the project.

SECTION 3. CONSTRUCTION / EARTHWORKS

The following section discusses reporting requirements related to site construction and earthworks activities associated with dikes, dams and quarries.

3.1 DIKES AND DAMS

3.1.1 Meadowbank Site

3.1.1.1 *Performance Evaluation*

As required by NWB Water License 2AM-MEA1530, Schedule B, Item 1:

a. An overview of methods and frequency used to monitor deformations, seepage and geothermal responses;

The surveillance program for the dewatering dikes and the tailings storage facility structures include site observation, inspection and instrument monitoring. Details of these surveillance programs and their frequencies are presented in the surveillance section of the Tailings Storage Facility (TSF) Operation Maintenance and Surveillance (OMS) Manual (Appendix 67) and in the Dewatering Dike OMS Manual (Appendix 66).

The main surveillance activities are:

- Site observation – conducted by personnel working near or on the structure and occur as part of their daily activities
- Routine visual inspection – conducted on a pre-defined schedule and targeting specific activities
- Instruments monitoring – includes the review of instrumentation data including thermistors, piezometers, inclinometers, blast monitoring, seepage flow monitoring, and settlement monitoring. Instruments data are checked on a pre-determined frequency and reported on a pre-determined frequency based on the structure performance
- Annual geotechnical inspection – comprehensive technical inspection integrating inspections and results of monitoring instruments. Done by an external geotechnical engineer on a yearly basis. Results are presented to the Independent reviewer (Meadowbank Dike Review Board)
- Independent Review Board Meeting (MDRB) - An annual MDRB meeting is held every year. The following topics are part of the annual MDRB scope of work:
    - Site visit (during period of flow) of all infrastructure covered by the scope of the MDRB
    - Review of mine waste management strategy (including tailings and waste rock storage facilities)
    - Review water management infrastructure designs and performance (including water retaining infrastructures)

- Review of on-going construction works and monitoring data
- Provide opinions and guidance to the operation on the physical integrity, safety, behavior, and performance of the confinement systems for mine waste and water retaining infrastructures

b. A comparison of measured versus predicted performance;

A detailed comparison and analysis of the measured versus predicted performance can be found in the 2021 Annual Geotechnical Inspection Report presented in Appendix 9. This assessment is based on visual inspection and analysis of instrumentation monitoring.

Error! Not a valid bookmark self-reference. presents the updated Trigger Action Response Plan (TARP) level of each dike at Meadowbank which is an indicator of measured versus predicted performance. A green level means that the performance of the structure is per normal operating condition while yellow means that performance has started to deviate from the normal operating condition. Surveillance will continue to assess the performance of the structures as per OMS practice and the surveillance data are used to evaluate the TARP level of each structure and the required action.

Table 3-1 Operating Condition of Dikes at Meadowbank

Structure	Type	TARP Level	Comments
East Dike	Dewatering Dike	Green (normal operating condition)	Presence of seepage but still within normal operating condition
Bay-Goose Dike	Dewatering Dike	Green (normal operating condition)	Presence of seepage but still within normal operating condition
South Camp Dike	Dewatering Dike	Green (normal operating condition)	
Vault Dike	Dewatering Dike	Green (normal operating condition)	
Saddle Dam 1	Tailings Dike North Cell Periphery	Green (normal operating condition)	
Saddle Dam 2	Tailings Dike North Cell Periphery	Green (normal operating condition)	
RF1	Tailings Dike North Cell Periphery	Green (normal operating condition)	
RF2	Tailings Dike North Cell Periphery	Green (normal operating condition)	
North Cell Internal Structure	Tailings Dike North Cell Internal Structure	Green (normal operating condition)	
Stormwater Dike	Tailings Dike Internal Structure	Green (normal operating condition)	Presence of healed tension crack. Situation is stable
Saddle Dam 3	Tailings Dike South Cell Periphery	Green (normal operating condition)	
Saddle Dam 4	Tailings Dike South Cell Periphery	Green (normal operating condition)	
Saddle Dam 5	Tailings Dike South Cell Periphery	Green (normal operating condition)	
Central Dike	Tailings Dike South Cell Periphery	Yellow (deviation from normal operating condition)	Due to historically high seepage rate through bedrock foundation

At Central Dike, the performance of the structure is deviating from normal operating condition due to the presence of a high amount of seepage through the bedrock foundation. This condition started in 2014 but as stabilised in the past year to something predictable and manageable. Discussion are ongoing with the MDRB and the Engineer of Record (EoR) to decrease the TARP level of Central Dike to Green.

More details are available in the 2021 Annual Geotechnical Inspection available in Appendix 9 and in the 2021 Meadowbank Water Management Report and Plan Version 10 (Appendix 12).

North Cell Internal Structure

During the freshet of 2020 some local signs of instability (sloughing & tension cracks) were observed in the fine filter layer of the NCIS structure on the Eastern side of the North Cell and were reported on in the 2020 Annual Report. A remediation plan was successfully implemented in 2021 to repair the damage observed and ensure that water stops channeling at the toe of the structure.

c. A discussion of any unanticipated observations including changes in risk and mitigation measures implemented to reduce risk;

Central Dike

Seepage into the basin at the downstream toe of Central Dike was observed when tailings deposition was transferred from the North Cell of the TSF to the South Cell in 2014. The rate of seepage started to increase proportionally to the rise of the pond level of the South Cell and reached a peak of 946 m^3/hr in 2015. Desktop studies were undertaken by Golder in 2015 to estimate the seepage flows and pore water pressures, verify the dike stability, and attempt to predict the eventual flow volume that would report to the downstream toe for higher pond elevation. The main recommendation from this desktop study was to maintain beaches adjacent to Central Dike and to maintain a ‘back pressure’ on the downstream side of Central Dike in order to reduce the hydraulic gradient by holding the downstream pond at El. 115 m.

Willowstick was also hired to carry out geophysical soundings (electromagnetic survey) to detect seepage paths. The geophysical campaign led to additional recommendations and identified possible seepage path locations. Following the geophysical investigation, an investigation was conducted by SNC-Lavalin (SNC) and Agnico Eagle in December 2015 at station CD-595, and between CD-810 and CD-850. Highly altered and fractured bedrock was encountered and high hydraulic conductivity was measured from Packer testing. Instrumentation of the four boreholes with piezometers and thermistors was done at the same time. In 2016, the MDRB recommended that the seepage model and stability analyses be updated.

A study has been completed in 2017 to update the seepage modelling and stability assessment with a seepage flow through the bedrock. In the summer of 2017 an investigation and instrumentation campaign was performed by Golder to confirm the results of the seepage modelling. The results from this investigation support the hypothesis that the seepage pathway occur in the bedrock.

Historically the Central Dike seepage was pumped back into the South Cell. From September to October 2017 the seepage was transferred to Goose Pit as a mitigation measure. This measure, combined with an adapted tailings deposition plan was effective in reducing the seepage flow rate. As a result the average seepage rate at Central Dike decreased from 540 m^3/h in 2017 to 263 m^3/hr at the end of 2018.

In July 2019 tailings deposition was switched to Goose Pit and the Central Dike seepage was directed in Pit A. This had the impact of further decreasing the Central Dike seepage rate which reached 50 m^3/hr at the end of 2019. The yearly seepage rate trend has remained somewhat stable since then. The average seepage rate in 2021 at Central Dike is following similar trend than in 2020 and is manageable by pumping.

In the summer of 2017 the water in the downstream pond became orange and this was associated with rapid temperature variation. This event was investigated by chemical analysis and was found to be caused by the precipitation of iron oxide from bacterial process. As predicted this event re-occurred in the summer of 2018 through 2021.

Recommendation from the 2021 Annual Geotechnical Inspection and MDRB 29 on Central Dike Situation:

- No new recommendations.

Recommendation from the 2021 Annual Geotechnical Inspection and MDRB 29 on the North Cell Internal Structure Situation:

- No new recommendations.

d. As-built drawings of all mitigation works undertaken;

No mitigation work was performed on any dikes in 2021.

e. Any changes in the design and/or as-built condition and respective consequences of any changes to safety, water balance and water quality;

No change in design or as-built condition was done on any dikes in 2021.

f. Data collected from instrumentation used to monitor earthworks and an interpretation of that data;

Sections 3.0 and 5.0 of the 2021 Annual Geotechnical Inspection by Golder, provided in Appendix 9, present the instrumentation data collected in 2021 and their interpretation.

g. A summary of maintenance work undertaken as a result of settlement or deformation of dikes and dams; and

No maintenance work was undertaken on dikes as a result of settlement or deformation on the structures in 2021.

h. The monthly and annual quantities of seepage from dikes and dams in cubic metres;

Section 8.5.8.1 below presents the monthly quantities of seepage from dikes. More information can be found in the 2021 Meadowbank Water Management Report and Plan Version 10 (Appendix 12).

3.1.2 Whale Tail Site

3.1.2.1 *Performance Evaluation*

As required by NWB Water License 2AM-WTP1830 Part I, Item 14: ***The Licensee shall submit the results and interpretation of the Seepage monitoring required in Part I Item 13 in the Annual Report required under Part B, Item 2***

And

As required by Water License 2AM-WTP1830, Schedule B, Item 1*:*

a. An overview of methods and frequency used to monitor deformations, Seepage and geothermal responses;

The surveillance program for the water management infrastructure includes site observation, inspection and instrument monitoring. Details of these surveillance programs and their frequencies are presented in the surveillance section of the Whale Tail Water Management Infrastructures Operation, Maintenance, and Surveillance (OMS) Manual (Appendix 68).

The main surveillance activities are:

- Site observation – conducted by personnel working near or on the structure and occur as part of their daily activities
- Routine visual inspection – conducted on a pre-defined schedule and targeting specific activities
- Instruments monitoring – includes the review of instrumentation data including thermistors, piezometers, inclinometers, blast monitoring, seepage flow monitoring, and settlement monitoring. Instruments data are checked on a pre-determined frequency and reported on a pre-determined frequency based on the structure performance
- Annual geotechnical inspection – comprehensive technical inspection integrating inspections and results of monitoring instruments. Done by an external geotechnical engineer on a yearly basis.
- Independent Review Board Meeting (MDRB) - An annual MDRB meeting will be held every year. The following topics are part of the annual MDRB scope of work:
    - Site visit (during period of flow) of all infrastructure covered by the scope of the MDRB
    - Review of mine waste management strategy (including tailings and waste rock storage facilities)
    - Review water management infrastructure designs and performance (including water retaining infrastructures)
    - Review of on-going construction works and monitoring data
    - Provide opinions and guidance to the operation on the physical integrity, safety, behavior, and performance of the confinement systems for mine waste and water retaining infrastructures.

b. A comparison of measured versus predicted performance;

A detailed comparison and analysis of the measured versus predicted performance can be found in the 2021 Annual Geotechnical Inspection report presented in Appendix 9. This assessment is based on visual inspection and analysis of instrumentation monitoring.

Table 3-2 presents the updated Trigger Action Response Plan (TARP) level of each dike at the Whale Tail Site which is an indicator of measured versus predicted performance. A green level means that the performance of the structure is per normal operating condition while yellow means that performance has started to deviate from the normal operating condition. Surveillance will continue to assess the performance of the structures as per OMS practice and the surveillance data are used to evaluate the TARP level of each structure and the required action.

Table 3-2 Operating Condition of Dikes at Whale Tail

Structure	Type	TARP Level	Comments
Mammoth Dike	Dewatering Dike	Green (normal operating condition)	Level was increased to Yellow due to Mammoth Lake water level and decreased to Green in July 2020
North East Dike	Dewatering Dike	Green (normal operating condition)	Dismantled in summer of 2020
Whale Tail Dike	Dewatering Dike	Yellow (deviation from normal operating condition)	Due to high seepage rate underneath the embankments in the foundation
WRSF Dike	Dewatering Dike	Green (normal operating condition)	TARP level was decreased from yellow to green in May 2020 following remediation work completion
IVR Dike D1	Dewatering Dike	Green (normal operating condition)	

At Mammoth Dike, the performance of the structure was deviating from normal operating in the first half of 2020 due to the water level in Mammoth Lake being over the normal dike operating level. This condition started in December 2019. The TARP level was decreased to Green in July 2020 after the water level decreased below the normal dike operating level and Mammoth Lake outlet was observed to be fully thawed.

At Whale Tail Dike, the performance of the structure is deviating from normal operating condition due to a high seepage rate underneath the embankments in the foundation. This condition started in May 2019. Further discussion on the risk and mitigation measures is included in Section c) below.

At WRSF Dike, the performance of the structure was deviating from normal operating condition due to seepage observed in August 2019. The TARP level was decreased to Green in May 2020 after the mitigation works were completed. Further discussion on the risk and mitigation measures is included in Section c) below.

More details are available in the 2021 Annual Geotechnical Inspection available in Appendix 9 and in the 2021 Whale Tail Water Management Report Version 7 (Appendix 13).

c. A discussion of any unanticipated observations including changes in risk and mitigation measures implemented to reduce risk;

Mammoth Dike

In December 2019 the TARP level of Mammoth Dike was increased to yellow due to the water level in Mammoth Lake being over the normal dike operating level. The water level increase was due to pumping of water from Whale Tail Lake South to Mammoth Lake while Mammoth Lake outlet was frozen preventing water from flowing to the nearby lakes. The risk associated with this event is overtopping of the dike liner, possibly causing damage to the dike and allowing water to flow to the Whale Tail Pit area.

Following the decrease of the Mammoth Lake level and the thawing of the outlet, the TARP level was decreased to Green in July 2020. No issue with water level of Mammoth Lake were observed in 2021.

Whale Tail Dike

In May 2019 the TARP level of Whale Tail Dike was increased to yellow due to indications of a high seepage rate underneath the embankments in the foundation.

As a result of the seepage the TARP level was increased and a remediation grouting campaign was conducted between November 2019 and March 2020 under the direction of the grout committee. The remediation works were successful in reducing the seepage rate to manageable levels (more than 50 %), thus preventing risks of flooding the Whale Tail Pit area.

WRSF Dike

In August 2019 the TARP level of the WRSF Dike was increased to yellow due to seepage observed toward Mammoth Lake. Review of the thermistor data indicated that the most likely cause for the seepage observed was thawing of the foundation keytrench caused by water ponding over it for an extended period of time. The seepage at the downstream toe was estimated to be around 100 m^3/h. Tension cracks along the downstream crest of the dike were also observed. This event was disclosed to the relevant authorities and measures were taken to lower the WRSF pond level. Once the WRSF pond level was lowered the seepage was no longer observed.

Following the completion of mitigation measure (review operating level and construction of upstream thermal berm) the TARP level was decreased to Green. These mitigation measures were successful and no seepage was observed at WRSF Dike since 2019.

d. As-built drawings of all mitigation works undertaken;

No mitigation work was initiated in 2021 on the dewatering dikes.

e. Any changes in the design and/or as-built condition and respective consequences of any changes to safety, water balance and water quality;

Please refer to Section 3.5.2 for as-built construction report.

f. Data collected from instrumentation used to monitor earthworks and an interpretation of that data;

Section 4.0 of the 2021 Annual Geotechnical Inspection by Golder provided in Appendix 9, presents the instrumentation data collected in 2021 and their interpretation.

g. A summary of maintenance work undertaken as a result of settlement or deformation of dikes and dams; and

No remediation work as a results of settlement or deformation was undertaken in 2021.

h. The monthly and annual quantities of Seepage from dikes and dams in cubic metres.

This information can be found in the Whale Tail Water Management Plan Version 7 (Appendix 13) and in Section 8.5.8.2 of this report.

3.2 MEADOWBANK DIKE REVIEW BOARD

3.2.1 Meadowbank Site

As required by NWB Water License 2AM-MEA1530 Part I, Item 12: ***The Licensee shall submit to the Board as part of the Annual Report required under Part B Item 2, all reports and performance evaluations prepared by the Independent Geotechnical Expert Review Panel.***

The annual meeting of the Meadowbank Dike Review Board (MDRB) was held in November 2021 (MDRB 29). The MDRB No.29 report, along with Agnico Eagle's response to the recommendations are included in Appendix 14. This Appendix includes a summary table of all recommendations and the Agnico Eagle implementation plan.

3.2.2 Whale Tail Site

As required by NWB Water License 2AM-WTP1830 Part I, Item 12: ***The Licensee shall submit to the Board as part of the Annual Report required under Part B, Item 2, all reports and performance evaluations prepared by the Independent Geotechnical Expert Review Panel.***

The annual meeting of the Meadowbank Dike Review Board (MDRB) was held in November 2021 (MDRB 29). The MDRB No.29 report, along with Agnico Eagle's response to the recommendations are included in Appendix 14. This Appendix includes a summary table of all recommendations and the Agnico Eagle implementation plan.

3.3 GEOTECHNICAL ENGINEER'S INSPECTION REPORT

3.3.1 Meadowbank Site

As required by NWB Water License 2AM-MEA1530 Part I, Item 11: ***The Licensee shall submit to the Board as part of the Annual Report, the Geotechnical Engineer's Inspection Report. The Report shall include a cover letter from the Licensee outlining an implementation plan to address the recommendations of the Geotechnical Engineer.***

The Meadowbank 2021 annual geotechnical inspection was performed by Golder in July 2021. The report, along with Agnico Eagle's implementation plan are included in Appendices 9 and 15. In order to keep the whole interpretation and understanding of the recommendations and responses, Agnico Eagle will refer the reader to the Appendix which contains a summary table of all recommendations and the implementation strategy.

3.3.2 Whale Tail Site

As required by NWB Water License 2AM-WTP1830 Part I, Item 11: ***The Licensee shall submit to the Board as part of the Annual Report, the Geotechnical Engineer's Inspection Report. The Report shall include a cover letter from the Licensee outlining an implementation plan to address the recommendations of the Geotechnical Engineer.***

The Whale Tail 2021 annual geotechnical inspection was performed by Golder in July 2021. The report, along with Agnico Eagle's implementation plan are included in Appendices 9 and 15. In order to keep the whole interpretation and understanding of the recommendations and responses, Agnico Eagle will refer the reader to the Appendix which contains a summary table of all recommendations and the implementation strategy.

3.4 QUARRIES

3.4.1 Meadowbank Site

3.4.1.1 *Material Usage*

The annual reporting requirements listed in the following sections apply only to quarries located along the All Weather Access Road (AWAR).

As required by CIRNAC Land Lease 66A/8 72-6, Condition 8: ***The lessee shall file a report, annually, with the Minister in the manner and format stipulated by the Minister. The report shall include:***

i. Quantity of material removed and location of removal, for the immediately preceding calendar year; and

ii. Such other data as are reasonably required by the Minister from time to time.

And

As required by CIRNAC Land Lease 66A/8 72-6, Condition 25: ***The lessee shall file, annually, a report for the preceding year, outlining the ongoing borrow area operations completed in conformity with the approved Borrow Management Plan, as well as any variations from the Plan.***

And

As required by KIA Right of Way Authorization KVRW06F04, Schedule E, Condition 8: ***The lessee shall file annually a report for the preceding year, outlining the ongoing borrow area operations completed in conformity with the approved Borrow Management Plan, as well as any variations from the Plan.***

In 2021, Agnico Eagle blasted 15,000 m^3 of NPAG material from Quarry 20 along the Meadowbank All Weather Access Road situated on KivIA leased. No new material was taken from the AWAR quarries on Crown Land. The 2021 Annual Quarry Report was sent to CIRNAC on February 25th, 2022.

Regular inspections of the quarries were also performed during the year to ensure that runoff, if any, would be free of any visible sheen and would not impact the environment. No issues with runoff water inside the quarries were noted in 2021.

3.4.1.2 *Quarry 22*

Quarry 22 was historically used as a temporary storage area for contaminated materials generated as a result of petroleum hydrocarbon (PHC) spill clean-up activities.

Following the AANDC inspection report in 2012, the Quarry 22 report has been prepared to provide information regarding the remediation method program of petroleum hydrocarbon, including but not limited to the contamination cause, the quantity of contaminated material transferred to the Meadowbank landfarm, results from soil sampling campaign and the decontamination further actions.

Since 2012, Agnico Eagle have submitted yearly updates by the Agnico Eagle Annual Report. Agnico Eagle intended to scarify and sampled on a year basic program. Some sampling campaign were however postponed due to peregrine falcon nesting activities in order to minimize mining disturbance on wildlife.

A bird deterrent cannon was deployed on May 25th, 2021 to prevent falcon activities in the quarry before scarification occurred. The bird cannon was set in the interval Random 10, meaning a shot series is randomly chosen by the control-unit between 1 and 10 minutes, blasting at 120dB. The bird cannon was removed once peregrine falcon activity was observed in the quarry on June 1st. All activity within the area, including scarification, were postponed minimizing the impact of potential nesting for this species and therefore ensure proper conditions of nesting activity.

A sampling campaign was however completed late September to track the degradation of PHC with time. Scarification work was performed on September 25th, 2021 and the samples were collected on September 30th, 2021.

The 2021 sampling results indicate the presence of contamination remnants in the Quarry 22. Results were compared to the Canadian Council of Ministers of the Environment (CCME) remediation criteria for Industrial use of Coarse material, which is determined to be aligned with the definition of industrial land detailed in the Government of Nunavut Environmental Guidelines for the Management of Contaminated Sites Remediation, and indicated that the concentration of contamination were exceeding the PHC Fraction 3 limits (1,700 mg/kg) in two sections of the Quarry, respectively 4,000 mg/kg for Q22-1 and 2,100 mg/kg for Q22-2.

For the third consecutive sampling campaign, analysis results were below the CCME Remediation criteria for the PHC Fraction 1, 2 and 4 in all sections and for PHC Fraction 3 in sections Q22-3 to Q22-8 since at least 2018.

Based on the degradation history of PHC's in the Meadowbank Landfarm and upon analysing results from the Quarry 22 soil sampling campaign (2014, 2016, 2018, 2020 & 2021), Agnico Eagle is confident

that the natural degradation of Petroleum Hydrocarbon (PHC) related products is an effective remediation method for the Quarry 22.

Another round of sampling is planned in 2022. Agnico Eagle is proposing to sample two (2) parcels (Q22-1 and Q22-2) and to stop the annual monitoring for parcel Q22-3 to Q22-8 as the results are below the contamination guideline since the last three sampling campaigns. This new practice will be implemented in 2022.

Similar to 2021, falcon deterrence activities will take place in 2022 to prevent peregrine falcon to establish their nest in the quarry to accelerate the remediation process. If recurrent peregrine falcon activities are not observed, Agnico Eagle proposes to continue scarifying the surface areas in Q22 during the summer of 2022. However, if any falcon activities are observed during the weekly quarry inspections, deterrence device will be removed. Agnico Eagle will evaluate and if needed, the area could be limited to any activity to ensure adequate bird protection management. Agnico Eagle will then postpone the scarification until late September before the freeze up season in order to minimize mining disturbance on wildlife. Following the 2022 soil sampling results, Agnico Eagle will review the next steps to be taken. More details are provided in the Quarry 22 Report in Appendix 18.

3.4.2 Whale Tail Site

3.4.2.1 *Material Usage*

The annual reporting requirements listed in the following sections apply only to quarries located along the Whale Tail Haul Road.

As required by CIRNAC Land Lease 66H/8-1-4, Condition 9: ***The lessee shall file, annually, with the Minister in the manner and format stipulated, no later than sixty (60) days following the anniversary date of the effective date of this lease. The report shall include:***

i. Quantity of material removed and location of removal, for the immediately preceding calendar year; and

ii. Such other data as are reasonably required by the Minister from time to time.

And

As required by CIRNAC Land Lease 66H/8-1-4, Condition 27: ***The lessee shall file, annually, a report for the preceding year, outlining the ongoing borrow area operations completed in conformity with the approved Borrow Management Plan, as well as any variations from the Plan.***

In 2021, no new material was taken from the Whale Tail Haul Road eskers/quarries on Crown Land. The 2021 Annual Quarry Report was sent to CIRNAC on February 25th, 2022. No material was also removed from eskers/quarries on KivIA leased land. All material required for construction / maintenance activities in 2021 were from previous material already paid for in previous year.

Pre-freshet and freshet inspections were conducted at crossings along the Whale Tail Haul Road, eskers and quarries in 2021. These inspections are performed to document the presence/absence of flow, erosional concerns, and turbidity plumes and to ensure that runoff, if any, would be free of any contaminant and would not impact the environment. If needed, mitigation measures, as straw boom or

turbidity barrier, were put in place as prevention measures. No issues with runoff water inside the eskers/quarries to any waterbodies were noted in 2021.

3.4.2.2 *Setback Distance*

As required by NIRB Project Certificate 008, Condition 20: ***Unless otherwise authorized, the Proponent shall maintain an appropriate setback distance between project quarries and borrow pits from fish-bearing or permanent waterbodies as required to prevent acid rock drainage or metal leaching into such waterbodies. Throughout quarry development and operation, the Proponent shall, on an annual basis, provide information regarding quarry setback distances maintained and/or mitigation measures implemented by the Proponent in fulfillment of this term and condition in the Proponent's annual report to the NIRB.***

The setback distance chosen was 31 metres from any waterbody high water mark. All quarries along the Whale Tail Haul Road were designed and excavated respecting this 31 metre setback distance.

3.5 2021 CONSTRUCTION

3.5.1 Meadowbank Site

In 2021, the main construction activities at the Meadowbank site consisted of the continuation of the construction of the In-Pit Tailings Deposition Project (tailings deposition and reclaim water infrastructures in Pit E). More details regarding the In-Pit Deposition Project can be found in the Meadowbank 2021 Water Management Plan Version 10 (Appendix 12).

In October 2021 construction was completed on an eighth 10 million litre diesel fuel tank that was added to the Baker Lake Fuel Storage Facility.

3.5.2 Whale Tail Site

In 2021, the construction activities of the water management infrastructure at the Whale Tail Project included construction of the IVR D1 Dike, various infrastructure for the IVR Pit and attenuation pond area, construction of the ore stockpile saline ditch, adding a water management culvert on Road 22, construction of the IVR WRSF water management system, and the WT-WRSF Phase 2 instrumentation campaign.

Construction was done in accordance with the requirements of the Design and Technical Specifications developed for each structure. The data collected from the quality assurance (QA) and quality control (QC) program during the various construction activities were used to confirm that the construction of each structure was completed in compliance with the Drawings and Technical Specifications. This includes earthwork construction such as foundation preparation and fill placement as well as the installation of geosynthetics.

The IVR D1 Dike is a permanent structure that provides necessary storage capacity in the IVR attenuation pond to manage the maximum operating level and contain the environmental design flood (EDF), which is the 1:100-year spring flood. The dike has a spillway to safely convey the probable maximum flood (PMF). The work was completed in May 2021. In the summer of 2021 the downstream area was regraded to improve drainage including the addition of a drainage trench.

The engineered section of the IVR WRSF ring road was built to minimize water seeping through the road from the IVR attenuation pond (triggered only above the maximum operational level) to the IVR WRSF peripheral sump. A sufficient amount of material was put in place to ensure the foundation remains frozen year-round and does not extend past the ring road. The construction was completed in October 2021.

Construction of the ore stockpile saline ditch occurred in September and October 2021. The objective of this system is to direct the contact saline water runoff from the underground ore stockpile toward the Groundwater Storage Pond (GSP-1). The ore stockpile saline ditch consists of a rip-rap channel with a low permeability element (bituminous geomembrane protected by fine and coarse filter material) that surrounds the underground ore stockpile.

The construction of the IVR WRSF water management system was carried out from March to November 2021. The infrastructures constructed for this project comprise of five sumps, four pumps installed in the sumps and their associated piping and four sets of culverts in Road 35. The objective of these infrastructures is to convey the runoff volumes that will be generated within the drainage area of the IVR WRSF towards the IVR Attenuation Pond.

The Phase 2 WT-WRSF instrumentation campaign consisted of 2 instrument sections installed in the WRSF, during August 2021. These instruments were installed to monitor the performance of the WRSF compared to the closure concept for the structure. This campaign is a continuation of the Phase 1 WT-WRSF work done in 2019. Phase 3 is scheduled to occur in summer 2022.

3.5.2.1 *Design Report and Construction Drawings*

As required by NWB Water License 2AM-WTP1830 Part D, Item 1: ***The Licensee shall submit to the Board for review, at least sixty (60) days prior to Construction, final design and Construction drawings accompanied, with a detailed report, for the following:***

- ***Water works, including: Water Intake and causeway, Water control structures (dikes, berms, jetties, channels) and Water crossings (culverts, bridges);***
- ***Waste disposal facilities including: Wastewater Treatment Plant, Sewage Treatment Plant, Discharge Diffuser, Waste Rock Storage Facility, Overburden stockpiles, and Landfill; and***
- ***Whale Tail Bulk Fuel Storage Facility***

And

As required by NWB Water License 2AM-WTP1830 Part D, Item 2: ***The Licensee shall submit to the Board for review, at least thirty (30) days prior to Construction, final design and for-Construction drawings accompanied by a detailed report as described in Part D, Item 3 and stamped and signed by an Engineer for infrastructure (such as access roads, jetties, and conveyance systems) used for dewatering the following lakes, as authorized under the Licence: Lakes A47; A49; A-50; A-51; A-52; A53; and A-P21***

And

As required by DFO Authorization 16HCAA-00370 Condition 2.3.5 and 20HCAA-00275 Condition 2.3.9: ***As per the NIRB Project Certificate No. 008 Condition 21, the Proponent shall ensure that all project infrastructure***

in watercourses is designed and constructed in such a manner that it does not unduly prevent or limit the movement of water or fish species in fish streams and rivers, unless otherwise authorized by Fisheries and Oceans Canada.

And

As required by DFO Authorization 16HCAA-00370, Condition 2.4.1 and 20HCAA-00275 Condition 2.3.5: ***The Proponent shall provide detailed engineering plans to DFO for review and approval, for construction works that have potential to impact fish and fish habitat, at least 3 months prior to commencement of the works. This includes dikes (e.g., Northeast dike), diversion/realignment channels, and freshwater jetty.***

Table 3-3 below provides a list of Design Reports submitted to NWB for approval before the construction began. All of the Design Reports along with regulator's comment and Agnico Eagle's response can be found on the NWB FTP site (ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1830%20Agnico/3%20TECH/D%20CONSTRUCTION/D1,%20D2/).

To address DFO Authorization 16HCAA-00370 Condition 2.3.5 and 2.4.1 and 20HCAA-00275 Condition 2.3.5 and 2.3.9, in 2021, the designs were submitted to NWB and were available for DFO review. No comments from DFO were received and the construction started once NWB approved the design report. It should be noted that none of the design are identified as having potential to impact waters frequented by fish. Based on discussions with DFO in October 2021, the reports with potential impact to fish and fish habitat are now also provided directly to DFO, with 90 days notice. Construction summary report, including photographs, continue to be provided to NWB 90 days after the construction completion, as required according to the Project's Type A Water License (2AM-WTP1830) Part D Item 16. Agnico Eagle will continue to construct infrastructures in such a manner that it does not unduly prevent or limit the movement of water or fish species in fish streams and rivers.

Table 3-3 Whale Tail 2021 List of Design Report Submitted

Design Report	60-day notice Submission to NWB	NWB Design Report Approval
IVR WRSF Water Collection System	January 28, 2021	April 1, 2021
Whale Tail Landfarm	August 31, 2021	October 27, 2021
Whale Tail Emulsion Plant	December 14, 2021	February 4, 2022

3.5.2.2 *Construction Summary Report*

As required by NWB Water License 2AM-WTP1830 Part D, Item 16: ***The Licensee shall submit to the Board for review, within ninety (90) days of completion of each facility designed to contain, withhold, divert or retain Waters or Wastes during the construction phase, a Construction Summary Report prepared by a qualified Engineer(s) in accordance with Schedule D, Item 1.***

Table 3-4 below provided a list of the 2021 Construction Summary Report submitted to NWB following the completion of the facilities/infrastructures construction. All of the reports can be found on the NWB FTP site:(ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1826%20Agnico/3%20TECH/D%20CONSTRUCTION/D15/).

Table 3-4 Whale Tail 2021 List of Construction Summary Report Submitted

Design Report	Submission Date to NWB
Whale Tail South Diffusers	January 25, 2021
Whale Tail Dewatering Phase 2	February 4, 2021
IVR Diversion Channel	February 10, 2021
IVR Dike D1	September 1, 2021
Whale Tail Road 22 Culvert 22-2	December 17, 2021

3.5.2.3 *Whale Tail Haul Road Construction Plan*

As required by Project Certificate No. 008 Condition 65: ***The Proponent shall, in consultation with the Terrestrial Advisory Group, develop a construction plan for the widening of the Whale Tail Haul Road which includes:***

- ***Design Features of the Whale Tail haul road intended to facilitate caribou movement across the road;***
- ***Identified sections of the roadside that will be constructed with slopes and top-dressing material appropriate for caribou crossing.***

The plan must incorporate available Inuit Quajimajatuqangit in the selection of caribou crossing locations.

There was no widening of the Whale Tail Haul Road in 2021.

SECTION 4. WATER MANAGEMENT ACTIVITIES

The following section addresses reporting requirements related to water management activities.

4.1 FRESH WATER USAGE

4.1.1 Meadowbank Site

As per Type A Water License 2AM-MEA1530 Part E Item 4: "*The total volume of fresh water for all uses and from all sources, shall not exceed 2,350,000 m³ per year from the Licence approval data to December 21, 2017 followed by 9,120,000 m³ per year in 2018 through to the expiry of the Licence.*"

Section 4.1.1.1 to 4.1.1.3 and Table 4-1 below detailed the freshwater consumption per sources. The total volume of freshwater pumped from the surrounding lakes and used for the Meadowbank Project in 2021 was 1,115,268 m³.

The volume of reclaim water used in the mill in 2021 was 2,793,242 m³. The volume of freshwater that is contained in the ore to the mill in 2021 was 43,022 m³.

Table 4-1 Meadowbank 2021 Freshwater Usage

Water Location	Source Lake	Jan	Feb	March	April	May	June
Camp	Third Portage Lake	2,639	2,334	2,376	2,297	2,536	2,408
Mill (freshwater tank)	Third Portage Lake	125,901	87,438	87,445	78,643	98,397	81,913
Emulsion plant	Unnamed Lake	104	90	127	118	133	64
Total Freshwater Usage (m³)		**128,644**	**89,862**	**89,948**	**81,058**	**101,066**	**84,385**
Ore Water (m³)	Ore	4,408	3,310	3,684	2,416	3,310	3,561
Reclaim Water Usage (m³)	Tailings Pond	237,647	205,445	277,684	171,821	209,538	237,348

Water Location	Source Lake	July	Aug	Sept	Oct	Nov	Dec	Total
Camp	Third Portage Lake	2,665	2,721	2,845	2,989	2,942	2,648	31,400
Mill (freshwater tank)	Third Portage Lake	120,687	104,144	93,228	110,522	54,692	39,487	1,082,497
Emulsion plant	Unnamed Lake	115	124	165	130	106	93.5	1,371
Total Freshwater Usage (m³)		**123,467**	**106,989**	**96,239**	**113,641**	**57,740**	**42,228**	**1,115,268**
Ore Water (m³)	Ore	3,310	4,064	4,530	3,424	3,695	3,310	**43,022**
Reclaim Water Usage (m³)	Tailings Pond	194,844	246,887	255,378	196,739	291,247	268,664	**2,793,242**

The freshwater consumption at the process plant in 2021 is significantly lower compared to 2020 due to improvements to the reclaim system. The monthly average fresh water consumption rate for 2021 varied between 57-169 m³/hr. The mill reclaim volumes are optimized to ensure minimal water cover over tailings, while using as little freshwater as possible to maximize in-pit space for tailings deposition. Work will continue on optimizing the reclaim system and implementing methods at the mill to reduce water consumption. Table 4-2 presents the 2022 monthly water consumption forecast.

Table 4-2 Meadowbank 2022 targeted water hourly consumption per month – for Mill and Camp usage

Month	Fresh Water Flow (m^3/h)	Reclaim Water Flow (m^3/h)	Total Water Flow (m^3/h)
January	86	393	479
February	100	435	535
March	90	393	483
April	93	406	499
May	90	393	483
June	93	406	499
July	90	393	483
August	90	393	483
September	93	406	499
October	90	393	483
November	93	406	499
December	90	393	483
Average	**92**	**398**	**490**

4.1.1.1 *Third Portage Lake*

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 2: ***Monthly and annual volume of fresh Water obtained from Third Portage Lake.***

A total volume of 1,113 897 m^3 of freshwater was used from Third Portage Lake for the project in 2021, which was in compliance with the Water License Freshwater maximum usage volume of 4,935,000 m^3 (Water License 2AM-MEA1530 Part E, Item1). The monthly breakdown usage is provided in Table 4-1 above.

4.1.1.2 *Wally Lake*

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 3: ***Monthly and annual volume of fresh Water obtained from Wally Lake.***

As per Type A Water License 2AM-MEA1530 Part E Item 2, Agnico Eagle was authorized to withdraw from Wally Lake a total of 4,185,000 m^3 per year starting in 2018.

There was no freshwater obtained from Wally Lake for re-flooding activities in 2021.

4.1.1.3 *Unnamed Lake*

Water used from unnamed lake was for the explosive mixing. In 2021, the total of freshwater obtained from unnamed lake was 1,371 m^3. This was compliant with the Water License 2AM-MEA1530 Part E Item 3 which allows for a maximum usage of 2,400 m^3. The monthly breakdown usage is provided in Table 4-1 above.

4.1.2 Whale Tail Site

Section 4.1.2.1 to 4.1.2.8 and Table 4-3 below details the freshwater consumption per source. The total volume of freshwater pumped from the surrounding lakes and used for the Whale Tail Project in 2021, under Water License 2AM-WTP1830, was 78,996 m^3.

Table 4-3 Whale Tail 2021 Freshwater Usage

Water Location	Source Lake	Jan	Feb	March	April	May	June
Camp	Nemo	2,713	2,428	2,823	2,827	2,759	2,642
Construction/Operation	Nemo	2,074	2,184	2,287	2,319	2,273	1,534
Dust Suppression	WTHR Pond	0	0	0	0	0	4,830
Explosive	Mammoth Lake	0	0	0	0	0	0
Drilling	Proximal Sources	0	0	0	0	0	0
Total Freshwater Usage (m^3)		**4,787**	**4,612**	**5,109**	**5,146**	**5,032**	**9,006**

Water Location	Source Lake	July	Aug	Sept	Oct	Nov	Dec	Total
Camp	Nemo	2,836	2,913	2,818	2,908	2,682	2,732	33,081
Construction/Operation	Nemo	1,823	1,443	2,314	2,247	3,962	10,275	34,735
Dust Suppression	WTHR Pond	6,000	350	0	0	0	0	11,180
Explosive	Mammoth Lake	0	0	0	0	0	0	0
Drilling	Proximal Sources	0	0	0	0	0	0	0
Total Freshwater Usage (m^3)		**10,659**	**4,706**	**5,132**	**5,155**	**6,644**	**13,007**	**78,996**

4.1.2.1 *Nemo Lake*

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 2: ***Monthly and annual volume of fresh Water obtained from Nemo Lake.***

Agnico Eagle is authorized as per Part E Item 1 of the Water License 2AM-WTP1830 to take 209,544 m^3 of water per year from Nemo Lake during operations. Total freshwater consumption in 2021 from Nemo Lake was 67,816 m^3. The monthly breakdown usage is provided in Table 4-3 above.

4.1.2.2 *Whale Tail Lake*

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 4: ***Monthly and annual volume of fresh Water obtained from Whale Tail Lake.***

No freshwater obtained from Whale Tail Lake in 2021.

4.1.2.3 *Unnamed Lake*

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 7: ***Monthly and annual volume of fresh Water obtained from unnamed water bodies for Whale Tail Haul Road dust suppressant..***

Agnico Eagle is authorized as per Part E Item 1 of the Water License 2AM-WTP1830 to take 109,135 m^3 of water per year from sources proximal to the Whale Tail Haul Road for dust suppression.

In 2021,11,180 m^3 of water was taken from the pond along the Whale Tail Haul Road for dust suppression. The monthly breakdown usage is provided in Table 4-3 above.

4.1.2.4 *Mammoth Lake*

As required by NWB Water License 2AM-WTP1830 Schedule, B Item 3: Monthly and annual volume of fresh Water obtained from Mammoth Lake.

Agnico Eagle is authorized as per Part E Item 1 of the Water License 2AM-WTP1830 Item 1 to take 2,500 m^3 from Mammoth Lake for explosives mixing and associated uses. In 2021 no water was taken from Mammoth Lake.

4.1.2.5 *Lakes in the IVR Footprint*

As required by NWB Water License 2AM-WTP1830 Schedule, B Item 5: ***Monthly and annual volume of fresh Water obtained from Lakes A-P38, A46, A47, A49, A50, A51, A52, A53, A-P21, A-P10, A-P67, and A-P68.***

Dewatering of the IVR area waterbodies was completed in September 2020. Please refer to the Meadowbank Complex 2020 Annual Report Section 8.5.2.2.2 for more information.

4.1.2.6 *Fresh Water For Drilling*

As required by NWB Water License 2AM-WTP1830 Schedule, B Item 6: ***Monthly and annual volume of fresh Water obtained for drilling from sources proximal to drilling sites.***

Agnico Eagle is authorized as per Part E Item 1 of the Water License 2AM-WTP1830 to use 109,135 m^3 from proximal sources for drilling activities. No water was taken from proximal sources in 2021 for drilling activities.

4.1.2.7 *Lake D1*

As required by NWB Water License 2AM-WTP1830 Schedule, B Item 8: ***Monthly and annual volume of fresh Water obtained from Lake D1.***

In 2021, no water was withdrawn from Lake D1.

4.1.2.8 *Underground Activities*

In 2021, a total volume of 935 m^3 was discharged from the underground to the GSP-1 Pond. Refer to Section 8.5.3.2.16 for more information.

4.2 LAKE LEVEL MONITORING

4.2.1 Meadowbank Site

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 4: ***Results of lake level monitoring conducted under the protocol developed as per Part D Item 5 (Water Quality Monitoring and Management Plan for Dike Construction and Dewatering).***

In 2021, as in previous year (2015 to 2020), the lake level for Third Portage, Second Portage and Wally lakes remained within the range of naturally occurring levels. Refer to PEAMP Section 12.4.1.1 and Table 12-3 for a complete discussion of the impacts of discharge on water level in the receiving environment. Figure 45 - 47 in Section 12 presents historical trending up to 2021. Overall, modeling predicted the natural range of water levels in Third Portage Lake to be 133.82 – 134.19 masl. (2021 measured value range from 133.68 – 133.84 masl.), and the impact assessment indicated that this range would not be exceeded (Physical Environment Impact Assessment Report, 2005). Although these values accounted for 1-in-100 year precipitation or drought events, prior to operation, water levels were already below this range when monitoring began (prior to any significant freshwater consumption) in 2009 and continue to be as of now. Although rates of dewatering (i.e. pumping rates) were underestimated during the FEIS, water levels have not significantly changed at monitoring stations since monitoring began.

No water was discharged in Third Portage Lake in 2021. The elevation, in metres above sea level (masl), of Third Portage Lake continued to be monitored in 2021. The location of the lake level survey monitoring is identified as TPL-survey on Figure 1. The lake level monitoring results are presented in Table 4-4 and Figure 7. The average water level for TPL in 2021 is 133.74 masl which is between the natural variation of the lake.

Water from the East Dike Seepage was discharged into Second Portage Lake in 2021. The elevation, in metres above sea level, of Second Portage Lake continued to be monitored in 2021. The location of the lake level survey monitoring is identified as SPL-survey on Figure 1. The lake level monitoring results are presented in Table 4-4 and Figure 7; the lake level remained within the range of naturally occurring levels. The average for 2021 is 133.12 masl (values range from 133.00 – 133.35), similar to the baseline of 133.1 masl.

No water was discharged from the Vault Attenuation Pond in 2021. The elevation measurement, in metres above sea level, of Wally Lake was ongoing in 2021. The location of the lake level survey monitoring station is identified as WL-survey on Figure 3. The lake level monitoring results are presented in Table 4-4 and Figure 7; the lake level remained within the range of naturally occurring levels, 139.32 – 139.78 masl. with an average of 139.55 masl.

Following recommendation from CIRNAC regarding the 2018 Annual Report, starting 2019, Turn Lake water level monitoring during open water season was completed. The lake level monitoring results are presented in Table 4-4 and Figure 7. For Turn Lake, no baseline water levels were provided in the 2005 FEIS or 2015 FEIS Addendum for Turn Lake so 2019 was the first year for which measurements are available. Similar water levels were observed in 2020 and 2021.

Following this analysis, Agnico Eagle concluded the water level in Third Portage, Second Portage and Wally Lakes still remain within the range of naturally occurring levels. Natural seasonal variation comparison is not completed, as water elevation surveys are only taken during open water periods Table 4-5 below provide the 2013 -2021 water level monitoring average.

Table 4-4 Meadowbank 2021 Lake Water Level Monitoring

Date	Third Portage Lake (masl)	Second Portage Lake (masl)	Turn Lake (masl)	Wally Lake (masl)
Code Identification	**TPL-Survey**	**SPL-Survey**	**TL-Survey**	**WL-Survey**
May 17, 2021	133.84	133.35	NA	NA
June 11, 2021	NA	133.00	NA	NA
June 19, 2021	133.73	133.28	139.64	139.78
June 27, 2021	133.73	133.15	NA	NA
July 10, 2021	133.74	133.07	NA	NA
September 5, 2021	133.73	133.02	NA	NA
October 19, 2021	133.68	133.00	139.54	139.32

Figure 7 Meadowbank 2021 Lake Water Level Monitoring

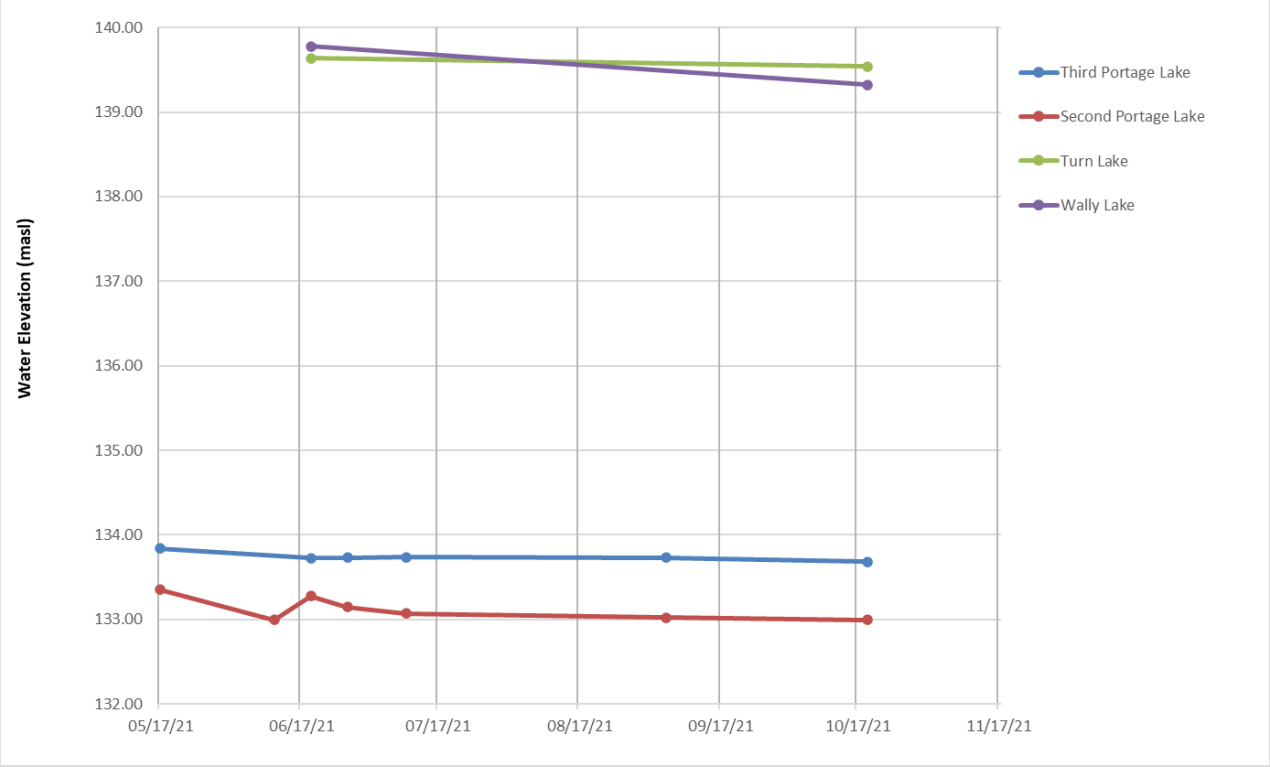


Table 4-5 Meadowbank 2013-2021 Lake Water Level Monitoring Average

Date	Third Portage Lake (masl)	Second Portage Lake (masl)	Turn Lake (masl)	Wally Lake (masl)
Code Identification	TPL-Survey	SPL-Survey	Turn Lake-Survey	WL-Survey
2013	133.57	132.94	NA	139.38
2014	133.53	133.26	NA	139.42
2015	133.65	133.12	NA	139.47
2016	133.64	132.95	NA	139.47
2017	133.58	132.92	NA	139.52
2018	133.67	132.96	NA	139.41
2019	133.61	132.94	139.17	139.50
2020	133.68	132.97	139.13	139.48
2021	133.74	133.12	139.59	139.55

4.2.2 Whale Tail Site

The elevation, in metres above sea level, of Whale Tail Lake South Basin (range from 155.00 – 155.61), Mammoth Lake (range from 152.18 – 152.74) and Nemo Lake (range from 155.95 – 156.16) were monitored minimally on a weekly basis, during open water season and, weather permitting. Results are presented in Table 4-6 and Figure 8. The location of the lake level survey monitoring are provided on Figure 4. The lake level average results 2018-2021 are presented in Table 4-7. For a complete discussion and comparison to FEIS, please refer to Section 12.5.1.1.

.

Table 4-6 Whale Tail 2021 Lake Water Level Monitoring

Date	Whale Tail South (masl)	Mammoth Lake (masl)	Nemo Lake (masl)	Date	Whale Tail South (masl)	Mammoth Lake (masl)	Nemo Lake (masl)	Date	Whale Tail South (masl)	Mammoth Lake (masl)	Nemo Lake (masl)	Date	Whale Tail South (masl)	Mammoth Lake (masl)	Nemo Lake (masl)
Code Identification	WTS-Survey	MAM-Survey	NEMO-Survey	Code Identification	WTS-Survey	MAM-Survey	NEMO-Survey	Code Identification	WTS-Survey	MAM-Survey	NEMO-Survey	Code Identification	WTS-Survey	MAM-Survey	NEMO-Survey
1/1/2021	155.18	152.18		4/2/2021	155.12	152.21		7/2/2021	155.34	152.60		10/1/2021	155.24	152.40	
1/2/2021	155.19	152.18		4/3/2021	155.13	152.22		7/3/2021	155.33	152.58		10/2/2021	155.23	152.39	
1/3/2021	155.19	152.18		4/4/2021	155.15	152.23		7/4/2021	155.32	152.58		10/3/2021	155.23	152.38	
1/4/2021	155.19	152.18		4/5/2021	155.14	152.23		7/5/2021	155.31	152.56		10/4/2021	155.23	152.37	
1/5/2021				4/6/2021	155.14	152.23		7/6/2021	155.31	152.55		10/5/2021	155.23	152.37	
1/6/2021	155.19	152.18		4/7/2021	155.14	152.23		7/7/2021	155.30	152.53		10/6/2021	155.24	152.37	
1/7/2021				4/8/2021	155.13	152.23		7/8/2021	155.29	152.51		10/7/2021	155.24	152.36	
1/8/2021				4/9/2021	155.14	152.25		7/9/2021	155.29	152.49		10/8/2021	155.27	152.38	
1/9/2021				4/10/2021	155.14	152.24		7/10/2021	155.28	152.47		10/9/2021	155.26	152.38	
1/10/2021				4/11/2021	155.14	152.24		7/11/2021	155.28	152.46		10/10/2021	155.26	152.38	
1/11/2021				4/12/2021	155.14	152.23		7/12/2021	155.28	152.45		10/11/2021	155.26	152.39	
1/12/2021	155.20	152.19		4/13/2021	155.14	152.23		7/13/2021	155.29	152.48		10/12/2021	155.26	152.39	
1/13/2021	155.20	152.19		4/14/2021	155.14	152.24		7/14/2021	155.30	152.47		10/13/2021	155.27	152.39	
1/14/2021	155.20	152.19		4/15/2021	155.13	152.24		7/15/2021	155.30	152.46		10/14/2021	155.27	152.39	
1/15/2021	155.19	152.19		4/16/2021	155.13	152.24		7/16/2021	155.30	152.45	156.09	10/15/2021	155.27	152.39	
1/16/2021	155.18	152.19		4/17/2021	155.14	152.25		7/17/2021	155.29	152.44		10/16/2021	155.26	152.39	155.95
1/17/2021	155.18	152.19		4/18/2021	155.13	152.24		7/18/2021	155.29	152.43		10/17/2021	155.27	152.40	
1/18/2021	155.18	152.19		4/19/2021	155.13	152.24		7/19/2021	155.28	152.42		10/18/2021	155.28	152.41	
1/19/2021	155.18	152.19		4/20/2021	155.14	152.24		7/20/2021	155.27	152.42		10/19/2021	155.28	152.41	
1/20/2021	155.18	152.19		4/21/2021	155.14	152.25		7/21/2021	155.27	152.41		10/20/2021	155.27	152.41	
1/21/2021	155.18	152.19		4/22/2021	155.14	152.24		7/22/2021	155.27	152.40		10/21/2021	155.27	152.41	
1/22/2021	155.18	152.19		4/23/2021	155.14	152.24		7/23/2021	155.26	152.39		10/22/2021	155.27	152.41	
1/23/2021	155.18	152.19		4/24/2021	155.14	152.24		7/24/2021	155.27	152.41		10/23/2021	155.26	152.39	
1/24/2021	155.18	152.19		4/25/2021	155.13	152.24		7/25/2021	155.28	152.45		10/24/2021	155.26	152.37	
1/25/2021	155.19	152.19		4/26/2021	155.13	152.25		7/26/2021	155.30	152.47		10/25/2021	155.26	152.36	
1/26/2021	155.20	152.19		4/27/2021	155.13	152.24		7/27/2021	155.30	152.47		10/26/2021	155.26	152.35	
1/27/2021	155.19	152.19		4/28/2021	155.15	152.26		7/28/2021	155.30	152.47		10/27/2021	155.25	152.35	
1/28/2021	155.20	152.19		4/29/2021	155.14	152.25		7/29/2021	155.29	152.46	156.05	10/28/2021	155.25	152.35	
1/29/2021	155.19	152.19		4/30/2021	155.15	152.26		7/30/2021	155.28	152.45		10/29/2021	155.24	152.35	
1/30/2021	155.19	152.19		5/1/2021	155.15	152.26		7/31/2021	155.29	152.45		10/30/2021	155.23	152.35	
1/31/2021	155.17	152.19		5/2/2021	155.16	152.26		8/1/2021	155.28	152.44		10/31/2021	155.22	152.34	
2/1/2021	155.17	152.19		5/3/2021	155.16	152.26		8/2/2021	155.27	152.44		11/1/2021	155.21	152.33	
2/2/2021	155.18	152.19		5/4/2021	155.15	152.26		8/3/2021	155.27	152.44		11/2/2021	155.21	152.32	
2/3/2021	155.17	152.19		5/5/2021	155.15	152.26		8/4/2021	155.27	152.44		11/3/2021	155.20	152.32	
2/4/2021	155.18	152.19		5/6/2021	155.14	152.26		8/5/2021	155.26	152.44		11/4/2021	155.20	152.31	
2/5/2021	155.19	152.19		5/7/2021	155.14	152.26		8/6/2021	155.25	152.43		11/5/2021	155.19	152.31	
2/6/2021	155.17	152.19		5/8/2021				8/7/2021	155.25	152.42		11/6/2021	155.18	152.30	
2/7/2021	155.18	152.20		5/9/2021	155.13	152.26		8/8/2021	155.26	152.42		11/7/2021	155.18	152.29	
2/8/2021	155.18	152.20		5/10/2021	155.12	152.26		8/9/2021	155.29	152.45		11/8/2021	155.17	152.28	
2/9/2021	155.18	152.20		5/11/2021	155.13	152.27		8/10/2021	155.30	152.45		11/9/2021	155.17	152.28	
2/10/2021	155.18	152.20		5/12/2021	155.13	152.27		8/11/2021	155.31	152.47	156.12	11/10/2021	155.16	152.27	
2/11/2021	155.18	152.20		5/13/2021	155.13	152.27		8/12/2021	155.35	152.51		11/11/2021	155.15	152.26	
2/12/2021	155.19	152.20		5/14/2021	155.13	152.27		8/13/2021	155.36	152.53		11/12/2021	155.14	152.25	156.03
2/13/2021	155.18	152.20		5/15/2021	155.12	152.27		8/14/2021	155.37	152.54		11/13/2021	155.14	152.25	
2/14/2021	155.18	152.20		5/16/2021	155.13	152.26		8/15/2021	155.36	152.53		11/14/2021	155.14	152.25	
2/15/2021	155.18	152.20		5/17/2021	155.13	152.27		8/16/2021	155.36	152.53		11/15/2021	155.14	152.25	
2/16/2021	155.17	152.20		5/18/2021	155.14	152.27		8/17/2021	155.34	152.51		11/16/2021	155.13	152.24	
2/17/2021	155.16	152.20		5/19/2021	155.14	152.27		8/18/2021	155.34	152.50		11/17/2021	155.13	152.24	
2/18/2021	155.16	152.20		5/20/2021	155.14	152.27		8/19/2021	155.33	152.49		11/18/2021	155.12	152.23	
2/19/2021	155.15	152.19		5/21/2021	155.14	152.27		8/20/2021	155.32	152.48		11/19/2021	155.12	152.23	
2/20/2021	155.15	152.20		5/22/2021	155.14	152.26		8/21/2021	155.31	152.46		11/20/2021	155.12	152.23	
2/21/2021	155.14	152.20		5/23/2021	155.14	152.26		8/22/2021	155.30	152.46		11/21/2021	155.13	152.23	
2/22/2021	155.14	152.20		5/24/2021	155.14	152.27		8/23/2021	155.29	152.46		11/22/2021	155.13	152.23	
2/23/2021	155.13	152.20		5/25/2021	155.13	152.26		8/24/2021	155.29	152.45		11/23/2021	155.13	152.23	
2/24/2021	155.13	152.20		5/26/2021	155.13	152.27		8/25/2021	155.28	152.44		11/24/2021	155.14	152.24	
2/25/2021	155.12	152.19		5/27/2021	155.12	152.26		8/26/2021	155.27	152.43		11/25/2021	155.14	152.24	
2/26/2021	155.12	152.19		5/28/2021	155.14	152.27		8/27/2021	155.26	152.41		11/26/2021	155.13	152.23	
2/27/2021	155.11	152.19		5/29/2021	155.17	152.27		8/28/2021	155.26	152.40		11/27/2021	155.12	152.23	
2/28/2021	155.11	152.20		5/30/2021	155.21	152.28		8/29/2021	155.25	152.38		11/28/2021	155.13	152.24	
3/1/2021	155.11	152.20		5/31/2021	155.24	152.29		8/30/2021	155.25	152.38		11/29/2021	155.12	152.24	
3/2/2021	155.10	152.20		6/1/2021	155.25	152.29		8/31/2021	155.29	152.41		11/30/2021	155.12	152.24	
3/3/2021	155.11	152.20		6/2/2021	155.27	152.30		9/1/2021	155.30	152.42		12/1/2021	155.11	152.24	
3/4/2021	155.12	152.20		6/3/2021	155.30	152.31		9/2/2021	155.31	152.43		12/2/2021	155.11	152.24	
3/5/2021	155.12	152.20		6/4/2021	155.36	152.32		9/3/2021	155.31	152.43		12/3/2021	155.10	152.25	
3/6/2021	155.14	152.21		6/5/2021	155.40	152.34		9/4/2021	155.31	152.44		12/4/2021	155.10	152.24	
3/7/2021	155.16	152.20		6/6/2021	155.47	152.36		9/5/2021	155.31	152.44		12/5/2021	155.09	152.24	
3/8/2021	155.16	152.21		6/7/2021	155.51	152.39		9/6/2021	155.31	152.43		12/6/2021	155.09	152.24	
3/9/2021	155.15	152.20		6/8/2021	155.54	152.41		9/7/2021	155.30	152.43		12/7/2021	155.09	152.24	
3/10/2021	155.15	152.20		6/9/2021	155.56	152.43		9/8/2021	155.29	152.43		12/8/2021	155.08	152.24	
3/11/2021	155.13	152.21		6/10/2021	155.58	152.46		9/9/2021	155.29	152.42		12/9/2021	155.08	152.24	
3/12/2021	155.14	152.20		6/11/2021	155.61	152.52	152.61	9/10/2021	155.28	152.42		12/10/2021	155.08	152.25	
3/13/2021	155.15	152.20		6/12/2021	155.61	152.61		9/11/2021	155.28	152.42		12/11/2021			
3/14/2021	155.16	152.21		6/13/2021	155.59	152.68		9/12/2021	155.28	152.41		12/12/2021			156.00
3/15/2021	155.16	152.20		6/14/2021	155.59	152.72		9/13/2021	155.27	152.41		12/13/2021			
3/16/2021	155.16	152.21		6/15/2021	155.56	152.74		9/14/2021	155.28	152.41		12/15/2021	155.06	152.25	
3/17/2021	155.15	152.21		6/16/2021	155.55	152.74	156.16	9/15/2021	155.28	152.41		12/16/2021	155.06	152.25	
3/18/2021	155.15	152.20		6/17/2021	155.56	152.74		9/16/2021	155.27	152.41		12/17/2021	155.05	152.25	
3/19/2021	155.15	152.20		6/18/2021	155.51	152.72		9/17/2021	155.27	152.41	156.05	12/18/2021	155.05	152.25	
3/20/2021	155.14	152.21		6/19/2021	155.51	152.71		9/18/2021	155.26	152.42		12/19/2021	155.04	152.25	
3/21/2021	155.14	152.21		6/20/2021	155.44	152.70		9/19/2021	155.26	152.42		12/20/2021	155.04	152.25	
3/22/2021	155.15	152.21		6/21/2021	155.43	152.69		9/20/2021	155.26	152.42		12/21/2021	155.04	152.25	
3/23/2021	155.14	152.21		6/22/2021	155.41	152.68		9/21/2021	155.25	152.42		12/22/2021	155.03	152.24	
3/24/2021	155.15	152.21		6/23/2021	155.41	152.67		9/22/2021	155.25	152.42		12/23/2021	155.03	152.24	
3/25/2021	155.14	152.21		6/24/2021	155.40	152.67		9/23/2021	155.24	152.42		12/24/2021	155.02	152.25	
3/26/2021	155.13	152.21		6/25/2021	155.40	152.66	156.13	9/24/2021	155.24	152.42		12/25/2021	155.02	152.25	
3/27/2021	155.13	152.21		6/26/2021	155.38	152.65		9/25/2021	155.23	152.42		12/26/2021	155.02	152.25	
3/28/2021	155.12	152.21		6/27/2021	155.37	152.64		9/26/2021	155.23	152.42	155.97	12/27/2021	155.02	152.25	
3/29/2021	155.12	152.21		6/28/2021	155.36	152.62		9/27/2021	155.23	152.42		12/28/2021	155.01	152.25	
3/30/2021	155.11	152.21		6/29/2021	155.35	152.61		9/28/2021	155.23	152.42		12/29/2021	155.01	152.25	
3/31/2021	155.11	152.21		6/30/2021	155.34	152.60		9/29/2021	155.23	152.41		12/30/2021	155.00	152.25	
4/1/2021	155.12	152.21		7/1/2021	155.34	152.60		9/30/2021	155.23	152.40		12/31/2021	155.00	152.25	

Figure 8 Whale Tail 2021 Lake Water Level Monitoring

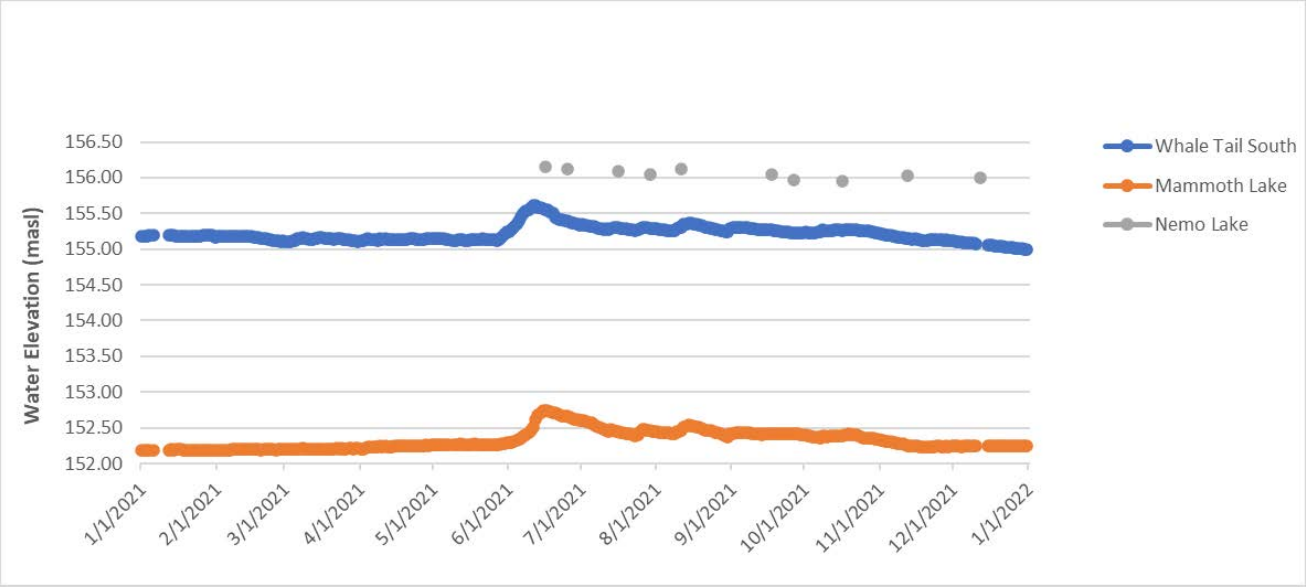


Table 4-7 Whale Tail 2018-2021 Lake Water Level Average

Date	Whale Tail Lake South Basin (masl)	Mammoth Lake (masl)	Nemo Lake (masl)
Code Identification	WTS-Survey	MAM-Survey	NEMO-Survey
2018	152.71	152.53	-
2019	154.85	152.49	156.16
2020	155.26	152.57	156.04
2021	155.21	152.33	155.74

4.3 BATHYMETRIC SURVEYS BAKER LAKE MARSHALLING FACILITY

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 6: ***The bathymetric survey(s) conducted prior to each year of shipping at the Baker Lake Marshalling Facility.***

The bathymetric survey in Baker Lake was completed on July 14th, 2021 and is included in Appendix 19. The survey was done before the shipping season.

4.4 WATER MANAGEMENT PLAN

4.4.1 Water Management Structure Inspection

4.4.1.1 *Meadowbank Site*

As required by NWB Water License 2AM-MEA1530 Part E, Item 10: ***The Licensee shall carry out weekly inspections of all water management structures during periods of flow and the records be kept for review upon request of an Inspector. More frequent inspections may be required at the request of an Inspector. This information is to be included in the annual Water Management Plan.***

Agnico Eagle has an inspection program in place to inspect the water management infrastructures. Site inspections on the dewatering dikes and tailings facility are performed every week and are documented during period of flow or if changing conditions are observed as detailed in the Freshet Action Plan (Appendix D of the Meadowbank 2021 Water Management Report and Plan Version 10 (Appendix 12). Detailed visual inspections are performed and documented as per the OMS frequency (Appendix 66). This inspection program has been reviewed and approved by the structure designer and the Engineer of Record.

More information is presented in the Water Management Report and Plan and in the dewatering dike and tailings facility OMS manuals.

4.4.1.2 *Whale Tail Site*

As required by NWB Water License 2AM-WTP1830 Part E, Item 10: ***The Licensee shall carry out weekly inspections of all water management structures during periods of flow and the records of inspections shall be kept for review upon request of an Inspector. More frequent inspections may be required at the request of an Inspector. This information is to be included in the annual updated Water Management Plan.***

Agnico Eagle has an inspection program in place to inspect the water management infrastructures. Site inspections on the dewatering dikes are performed every week and are documented during period of flow or if changing conditions are observed as detailed in the Freshet Action Plan (Appendix E of the Whale Tail 2021 Water Management Plan Version 7 (Appendix 13). Detailed visual inspections are performed and documented as per the OMS frequency (Appendix 68). This inspection program has been reviewed and approved by the structure designer and Engineer of Record.

More information is presented in the Water Management Report and Plan and in the Water Management Infrastructures OMS manual.

4.4.2 Water Balance Water Quality Model Reporting Summary

4.4.2.1 *Meadowbank Site*

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 5: ***Summary of reporting results for the Water Balance Water Quality model and any calibrations as required in Part E Items 7-9.***

And

As required by NWB Water License 2AM-MEA1530 Part E, Item 7: ***The Licensee shall submit a Water Management Plan on an annual basis to the Board for review following the commencement of Operations. The Plan must include an updated Water Balance. The Water Management Plan shall include an action plan to be implemented if predicted re-flooded pit water quality indicates that treatment is necessary. The Licensee shall not breach dikes until the water quality in the re-flooded area meets CCME Water Quality Guidelines for the Protection of Aquatic Life, baseline concentrations, or appropriate site specific water quality objectives. Subject to the Board approval, if water quality parameters are above CCME Guidelines, a site specific risk assessment must be conducted to identify water quality objectives that are protective of the aquatic environment.***

And

As required by NWB Water License 2AM-MEA1530 Part E, Item 8: ***The Licensee shall submit a Water Quality Model for pit re-flooding as part of the Water Management Plan which shall be re-calibrated as necessary and updated at a minimum of once every two (2) years following commencement of Operations. The results and implications of the predictive model shall be reported to the Board.***

A water balance, water quality forecast and water management report and plan update for 2021 was completed. The technical report 2021 Water Management Report and Plan is included in Appendix 12.

The water management objectives for the Meadowbank Site are:

- Keep the different water types (i.e. contact, non-contact, and freshwater) separated to the extent practical
- Control and minimize contact water through diversion and containment
- Minimize freshwater usage by reclaiming the contact water to the extent practical
- Meet discharge criteria before any site contact water is released to the downstream environment
- Reduction in freshwater intake per tonne mined
- No events of non-compliance
    - Regulatory/Water License water quality criteria (effluent loading limits)
    - Regulatory/Water License freshwater withdrawal criteria.

The water management targets for 2021 and 2022 are summarized in Table 4-8. These targets are aligned with the water objectives of the Meadowbank Complex and go beyond the License limit. These targets strive to minimize risk, conserve freshwater, and minimize water usage. In 2021 more freshwater was used than targeted mostly due to issues with the reclaim system and higher than anticipated production rates. However, majors improvements were made to the reclaim system in 2021 and this will continue to be a focus in 2022. In 2021 slightly less water was reclaimed than planned.

The 2022 targets assume continued improvements in the amount of reclaim water withdrawn from the pits to reuse in the Mill which will decrease the amount of freshwater used per tonne processed and increase the amount of water in recirculation. Higher production rates in 2022 will require slightly more fresh water withdrawn from Third Portage Lake.

Table 4-8 Meadowbank Water Management Targets

Water Objective	Target 2021	Target 2022
Fresh Water Withdrawn from Third Portage Lake (Mill and Camp)	781,839 m^3	807,000 m^3
Contact Water Withdrawn from Pit (reclaim water to Mill)	2,939,048 m^3	3,508,822 m^3
Freshwater per tonne processed	0.22 m^3/t	0.20 m^3/t
Water discharge (treated)	0 m^3	0 m^3
Water discharge (fresh)	89,000 m^3 (East Dike to Second Portage Lake)	70,000 m^3 (East Dike to Second Portage Lake)
Water in recirculation (water recycled / total water use)	78.40%	81.30%

To avoid and minimize water related impacts and risks and to help achieve the water management targets above Agnico Eagle implemented several initiatives in 2021. These initiatives are summarized in Table 4-9.

Table 4-9 Initiatives Taken to Decrease Water Management Risks

Initiative	Description
Reclaim System Improvement	Modification of reclaim pumping system in 2021 to increase reclaim flow to process plant (i.e. decrease freshwater usage)
Process Plant Freshwater Reduction	Implementation of an action plan in 2021 to understand and decrease freshwater consumption at process plant
Tailings dust suppression campaign	In the summer of 2021 a program was established to spray environmentally responsible product on the tailings surface with an helicopter to prevent wind blown tailings dust to reach the environment and surrounding waterbodies
East Dike seepage pumping system improvement	Modification of the seepage system at the East Dike station

The life-of-mine (LOM) considered for the water balance reflects the mining plan summarized in the 2021 Water Management Report and Plan, as it pertains to the activities within the current approved license for the Meadowbank mine.

Revisions and modifications to the Water Balance and Water Quality Forecast are discussed in detail in the Meadowbank 2021 Water Management Report and Plan Version 10 (Appendix 12).

In 2021 water transfers continued throughout the site to meet the water management objectives outlined above. Table 4-10 below outlines the various water transfer volumes in 2021.

Table 4-10 2021 Meadowbank Water Transfers

Water Transfer Name	2021 Transfer Volume (m^3)
North Cell to South Cell	447,461
SMP to South Cell	11,597
SMP to Pit A	0
South Cell to Pit A	294,781
South Cell to Goose	0
Goose to Pit A	416,907
Goose to Pit E	0
Pit A to Pit E	0
SD 3, 4 & 5 to South Cell	21,496
SD 1, 2, NCA-D, NCIS to North Cell	40,099
Interception sump to North Cell	275,144
ST-16 & WEP to North Cell	76,226
CD D/S pond to Pit A	850,292
CD D/S pond to SC	0
CD D/S pond to Pit E	33,024
Goose Pit Inflow	201,289

4.4.2.2 *Whale Tail Site*

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 9: ***Summary of reporting results for the Water Balance and Water Quality model and any calibrations as required in Part E Items 5, 6, and 8.***

And

As required by NWB Water License 2AM-WTP1830 Part E, Item 5: ***The Licensee shall submit an updated Water Management Plan on an annual basis to the Board for review following the commencement of Operations. The Plan must include an updated Water Balance. The Water Management Plan shall include an action plan to be implemented if predicted re-flooded pit water quality indicates that treatment is necessary.***

And

As required by NWB Water License 2AM-WTP1830 Part E, Item 6: ***The Licensee shall submit a Water Quality Model for pit re-flooding and for WRSF contact water mixing into Mammoth Lake post-Closure as part of the Water Management Plan which shall be re-calibrated as necessary and updated annually following commencement of Operations. The results and implications of the predictive model shall be reported to the Board.***

A water balance, water quality forecast and water management report and plan update for 2021 was completed. The technical report 2021 Water Management Report and Plan Version 7 is included in Appendix 13

The water management targets for 2021 and 2022 are summarized in Table 4-11. These targets are aligned with the water objectives of the Meadowbank Complex (see the section above) and go beyond the License limit. These targets strive to minimize risk, conserve freshwater, and minimize water usage. In 2021 less freshwater was used than targeted. More contact water was withdrawn from the Pit in 2021 than what was targeted; however, it is important to note that 2021 was a wet year.

The 2022 targets assume continued improvements in the amount of contact water withdrawn from the Pit. The 2022 target for contact water withdrawn from the Pit was calculated for 2022 considering an average year.

Table 4-11 Whale Tail Water Management Targets

Water Objective	Target 2021	Target 2022
Fresh Water Withdrawn from Nemo Lake (Mining and Camp)	85,284 m^3	75,000 m^3
Contact Water Withdrawn from Pit (pit inflow)	761,820 m^3	910,827 m^3 Calculated taking an average year
Contact Water Withdrawn from Underground (inflow)	0 m^3	3,000 m^3
Water discharge from site (WTS / Mammoth Lake)	2,244,538 m^3	2,488,068 m^3
Water in recirculation (water recycled / total water use)	0%	0%

The life-of-mine (LOM) considered for the water balance reflects the mining plan summarized in the 2021 Water Management Plan, as it pertains to the activities within the current approved license for the Whale Tail mine.

Revisions and modifications to the Water Balance and Water Quality Forecast are discussed in detail in the 2021 Water Management Report and Plan Version 7 (Appendix 13).

As per comments received on the 2020 Annual Report, Agnico Eagle is providing the quantification use of explosive relative FEIS. In 2021, approximately 11.2 tonnes of explosives were used at the Whale Tail Project for open pit and underground. Water quality predictions outlined in the Appendix 6H of the FEIS Addendum for the Whale Tail Pit – Expansion Project (Agnico, 2018) related to explosive usage are specified for residual explosives in WRSF's, pit sumps, and underground sumps. Applied concentrations for nitrate and ammonia in operations for WRSF and pit sump runoff flows are 12 mg/L-N (NO_3) and 0.3 mg/L-N (NH_4) while applied concentrations for nitrate and ammonia in underground sumps are 321 mg/L-N (NO_3) and 321 mg/L-N (NH_4). The concentration of explosives by-products (ammonia and nitrate) in site contact water is sensitive to the management of blasting agents during their use. Given the proximity and similarity both in setting and operation of the Project to the Meadowbank Mine (similar mining rate, explosives type and explosives usage rate), it was assumed that similar nitrogen and ammonia contents would occur in the waste rock, and open pit drainages. Similarly, average ammonia and nitrate concentrations observed in the underground sumps at the Meliadine Mine were used as input chemistry to the model for underground sump concentrations.

Analysis of 2021 water chemistry results for the WT WRSF Pond (ST-WT-3), WT WRSF Pond (ST-WT-30, 31, 32, and 33), and IVR WRSF Pond (ST-WT-34, 35, and 36) all exhibit average nitrate results less than the predicted 12 mg/L-N outlined in the FEIS with combined average nitrate values of 2.27 mg/L-N in 2021 Analysis of total ammonia-N results for these stations results in an average of 0.325 mg/L-N which is slightly higher than the concentrations outlined in the FEIS predictions, however the more toxic un-ionized ammonia concentration averages out to a result of 0.00095 mg/L-N.

Analysis of 2021 water chemistry results for both the WT Pit (ST-WT-4) and IVR Pit (ST-WT-18) Sumps exhibit nitrate results of 2.83 mg/L-N and 15.44 mg/L-N respectively, however average nitrate results are less than the predicted 12 mg/L-N as outlined in the FEIS with combined average nitrate values of 9.14 mg/L-N. Analysis of total ammonia-N results for these stations results in an average of 5.17 mg/L-N, which is higher than the FEIS predictions, however the more toxic un-ionized ammonia concentration averages out to a result 0.04 mg/L-N.

Analysis of 2021 water chemistry results for the Whale Tail Groundwater Storage Pond (GSP-1) (ST-WT-20) exhibit average nitrate results of 34.37 mg/L-N and average total ammonia-N results 12.0 mg/L-N, both of which are well below the average of 321 mg/L-N for both nitrate and ammonia concentrations outlined in the predictions.

All results for the aforementioned monitoring stations can be found in Section 8.5.3.2 of this report. It is important to note that none of the monitoring stations exhibited results for total ammonia-N exceeded the maximum authorized monthly mean or grab concentrations of 15 mg/L-N and 30 mg/L-N respectively, as included in the effluent quality limits found in the Whale Tail Pit Water License (2AM-WTP1830).

Additionally, as mentioned in the FEIS predictions, if explosives waste management differs from that which is practiced at Meliadine, the sump concentrations at the Whale Tail Pit Project may differ from the model predictions. Ammonia is expected to be attenuated through the FWTP. Agnico Eagle will continue to monitor the residual explosive concentrations and how they correlate to FEIS predictions in future annual reports.

4.4.3 Predicted Vs Measured Water Quality

4.4.3.1 *Meadowbank Site*

As required by NWB Water License 2AM-MEA1530 Part E, Item 9: ***The Licensee shall, on an annual basis during Operations, compare the predicted water quantity and quality within the pits, to the measured water quantity and quality. Should the difference between the predicted and measured values be 20% or greater, then the cause(s) of the difference(s) shall be identified and the implications of the difference shall be assessed and reported to the Board. The comparison of predicted water quality in reflooded pits also addresses Water License 2AM-MEA1530 Part E, Item 7.***

The comparison between the predicted water quantity and quality within the pits will be compared to the measured water quantity and quality from 2012 to 2021. Because the Portage Pit was not deep enough to collect sufficient data from the sumps in 2011, this comparison used 2012 as a start point.

Appendix 20 provides a comparison between predicted (originally predicted in support of the NWB license) and measured water quantity within Portage, Goose and Vault Pit. The appendix includes the measured data for 2021, and from 2012 to 2020. The information is summarized in Figure 9 below. Agnico Eagle will refer to previous years Meadowbank Complex Annual Reports for a complete discussion of the results.

Percent difference between the predicted and measured values for water quantity and quality was calculated using the following formula:

*% difference = ((A-B) / B)*100;*
where: A = measured value and B = predicted

Water Quantity

For Portage Pit, as presented in Appendix 20, the % difference between water volume predicted in Golder (2007) and water volume measured were less than predicted by more than 20% from 2013 to 2018. For 2012, the volume was slightly higher than predicted (+10%). This indicates that the seepage and groundwater sources and volumes predicted that collectively make up the water in the pits from 2013 to 2018, are less than what was originally predicted for operations. More specifically for 2018, Portage Pit was -84% less than the predicted value. Before 2014, seepage water from East Dike was pumped to the Portage Pit sump. However, as of January 2014, water from the East Dike Seepage has been pumped back to Second Portage Lake which contributes to significantly decrease the water quantity in Portage Pit between 2014 and 2018. As of 2019, the % difference between water volume predicted in the Meadowbank Interim Closure and Reclamation Plan (ICRP), updated in 2019 and water volume measured was more than predicted by more than 20 % for 2019. More precisely, the measured water volume in 2019 in Portage Pit is 73 % higher than the predicted water volume. This can be explained in part by the higher precipitation observed in 2019 at the site and the transfer of the runoff volumes toward Portage Pit. In 2020, the % difference between the predicted and measured water value is 80 %. In

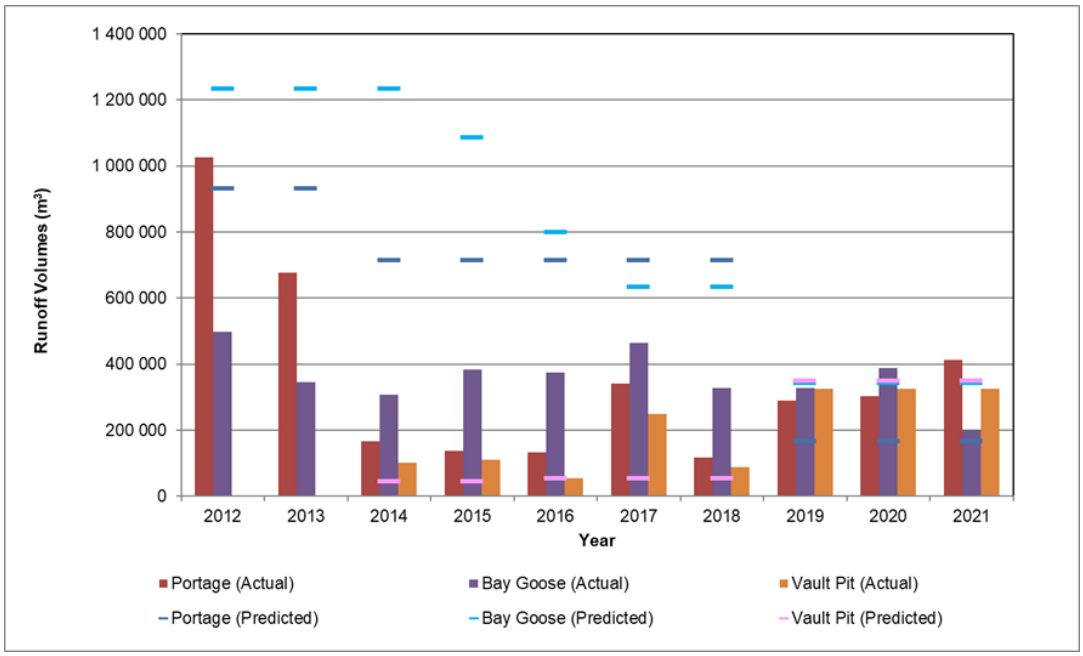
2021, the % difference between the predicted and measured water value is 147%. This increase could be explained in part by higher anticipated runoff volume reporting the pit.

For Goose Pit, the % difference between water volume predicted in Golder (2007) and water volume measured in Goose Pit were less than predicted by more the 20% from 2012 to 2018. More specifically for 2018, Goose Pit was -49% less than the predicted value. This indicates that since 2012, the seepage and groundwater sources and volumes predicted that collectively make up the water in the Goose pit are less than what was originally predicted for operations. As the mining activity ceased in 2015 in Goose Pit, runoff, groundwater and seepage will contribute to the natural reflooding of the pit. The % difference between water volume predicted in the Meadowbank ICRP updated in 2019 and water volume measured in Goose Pit was not significant in 2019 (i.e. -5%). In 2020, the measured volume was higher than the predicted value by 13%. In 2021, the measured volume was -41% less than the predicted value.

For Vault Pit, the % differences were higher by 120% in 2014 (commencement of mining operations) and 142% in 2015 between water volume predicted in Golder (2007) and water volume measured. This can be explained by the fact that there was more precipitation including larger freshet and rainfalls in 2015. In 2016, there was no significant difference between the predicted and measured volume (i.e. -1%). In 2017 however, the % difference was higher by 363% when comparing the predicted and measured volume, which could be caused by a larger freshet and rainfall flowing to Vault and Phaser Pits, as well as higher accumulation of snow in the area. In 2018, the estimated runoff volume reporting to Vault and Phaser Pits is 64% above the predicted value. In 2018, a large ice wall was formed in the Vault pit over the winter months. This phenomenon indicates a higher seepage flow rate entering the pit that was not accounted for in the original water balance. The main implication of the higher volumes of water to manage at the Vault Pit area is the requirement for longer pumping period than anticipated, which in turn translated to a higher consumption of diesel fuel to operate the pumps. From 2019 to 2021, there was no significant difference between the predicted and measured volume (i.e. -7%).

The following figure summarizes the runoff to the different pits measured from 2012 to 2021 and compares them against the forecasted values.

Figure 9 Meadowbank Summary of Runoff Volumes to the Pits



Water Quality

According to the original NWB application documents (Golder, 2007- Water Quality Predictions), a Probable scenario and a Possible Poor End scenario for predicted water quality results were evaluated. These models were developed to anticipate a representative range of water quality that would be used for management and mitigative decisions. The Probable scenario used input values that simulate predicted observed field conditions and added realistic scaling factors related to explosives management and pit operations. The Possible Poor End scenario input values simulated probable variance on observed field characteristics and selected input parameters to capture possible, conservative variance. The predicted values in the Probable scenario and the Possible Poor End scenario represented the summer averages.

The measured values for 2012 to 2021 are summarized in Appendix 20. The yearly mean and lower 25th percentile of all the data available throughout the year at Portage Pit (ST-17 and ST-19), Goose Pit (ST-20), Vault Pit (ST-23/ST-26) and Phaser Pits (ST-41 and ST-42) were compared to the predicted values where data were available. The lower 25th percentile values were calculated and compared to the predicted values when 3 or more samples were taken during the year. For year 2012 to 2018, the predicted values were evaluated in the water quality prediction model developed in 2007. As of 2019, the predicted values for Portage and Goose pits were based on the water quality forecast considered in the Meadowbank Interim Closure and Reclamation Plan, updated in 2019 since in-pit deposition has started in Goose Pit. In addition, as of 2019, the measured values were also compared to the predicted values obtained in the water quality prediction model developed in 2007 to ensure continuity with previous years analysis.

Furthermore, the measured data was also compared to the Water License discharge criteria to Third Portage Lake and Wally Lake, the Metal and Diamond Mining Effluent Regulations (MDMER) and the CCME water quality guidelines for the protection of aquatic life. With regard to the MDMER, the discharge

criteria were updated as of June 2021 and thus, the measured data was compared to these updated values. Sulphate concentrations were compared to a guideline value based on a threshold value from BC Environment guideline for the protection of aquatic life for very soft water (0-30 mg/L) (April 2013). It is understood that the Water Licence, MDMER and CCME criteria apply to mining effluents discharged to the environment and are as such not applicable to the pit water since it is managed within the site and undergoes a treatment step if required prior to discharge to the environment. These criteria are used as a guide to identify potential parameters of concern.

The laboratory services selected by Agnico Eagle are conducted by accredited facilities and reach the analysis lower detection limits (LDL) where the results can be compared to the CCME guidelines. Agnico Eagle will continue to ensure that the accredited laboratory can reach the required detection limits.

The following observations can be made for 2021. Agnico Eagle will refer to previous years Meadowbank Complex Annual Reports for a complete discussion of the 2012-2020 results.

In 2021 (year 12 of the Life of Mine):

- For Vault Pit:
    - Exceedances of greater than +/-20% percent difference between predicted (Probable and Possible Poor End scenarios of year 10) versus the mean of measured values in Vault Pit were found for all the parameters except for pH (+13% for Probable and +12% for Possible Poor), dissolved lead (-15% for both scenarios), and dissolved barium (+8% for Possible Poor scenario). For the lower 25th percentile, all parameters measured exceeded the predicted (Probable and Possible Poor End scenarios of year 10), except for pH (+13% for Probable and +12% for Possible Poor), dissolved copper (-1% for Possible Poor), dissolved barium (-13% for Possible Poor scenario) and dissolved manganese (+17% for Possible Poor scenario).
    - All measured parameters were found to be lower than the CCME guidelines. No parameters exceeded the MDMER and Water Licence criteria.
    - The Vault Pit is undergoing natural reflooding since 2020. There is an observable improvement in water quality in 2021 compared to 2019 measurements.

- For Phaser Pit:
    - Exceedances of greater than +/-20% percent difference between predicted (Probable and Possible Poor End scenarios of year 10) versus the mean of measured values in Phaser Pit were found for all of the parameters except for pH (+16% for Probable and +15% for Possible Poor), dissolved barium (+11% for Possible Poor scenario), and dissolved barium (+5% for Probable and -17% for Possible Poor scenario). For the lower 25th percentile, all parameters measured exceeded the predicted (Probable and Possible Poor End scenarios of year 10), except for pH (+16% for Probable and +14% for Possible Poor) and dissolved barium (-9% for Possible Poor scenario).
    - The following measured parameters were found to be slightly higher than the CCME guidelines: dissolved copper (mean value 0.0027 mg/L vs CCME guideline of 0.0020 mg/L). All other measured parameters were found to be lower than the CCME guidelines. No parameters exceeded the MDMER and Water Licence criteria.

- The Phaser Pit is undergoing natural reflooding. There is an observable improvement in water quality in 2021 compared to 2019 measurements.

- For Goose Pit:
  - Comparison Based on In-Pit Deposition Water Quality Model (Interim Closure and Reclamation Plan, 2020):
    - The mean water quality concentrations measured in the Goose Pit Lake exceeded +/-20% predicted concentrations for Annual Average and Lower 25th centile scenarios of year 12 for all the parameters.
    - The lower 25th percentile water quality measured in the Goose Pit Lake exceeded +/-20% predicted concentrations for Annual Average and Lower 25th centile scenarios of year 12 for all the parameters except for dissolved molybdenum (-3% for Annual Average scenario).
  - Comparison Based on Initial Model, Year 3 (Golder, 2007):
    - The mean water quality concentrations measured in the Goose Pit Lake exceeded +/-20% predicted concentrations for Probable and Possible Poor scenarios of year 3 for all the parameters.
    - The lower 25th percentile water quality concentrations measured in Goose Pit Lake exceeded +/-20% predicted concentrations for Probable and Possible Poor scenarios of year 3 for all the parameters except for dissolved barium (-3% for both scenarios).
    - The measured values in Goose Pit are generally higher than the prediction of year 3. This can be explained by the in-pit deposition in Goose Pit from 2019 to 2020, that added contaminants to the water body accumulated in the pit.
  - The following measured parameters were found to be higher than the CCME guidelines:
    - unionized ammonia (mean value of 0.11 mg/L vs CCME guideline of 0.016 mg/L)
    - ammonia nitrogen (mean value of 22.4 mg/L vs CCME guideline of 1.83 mg/L)
    - dissolved arsenic (mean value of 0.344 mg/L vs CCME guideline of 0.005 mg/L)
    - dissolved copper (mean value of 0.0158 mg/L vs CCME guideline of 0.002 mg/L)
    - fluoride (mean value of 0.22 mg/L vs CCME guideline of 0.12 mg/L)
    - dissolved nickel (mean value of 0.0497 mg/L vs CCME guideline of 0.025 mg/L)
    - dissolved selenium (mean value of 0.0255 mg/L vs CCME guideline of 0.001 mg/L)
  - Dissolved arsenic was slightly higher than MDMER (based on June 2021 revision) and Water Licence criteria (mean value of 0.344 mg/L vs MDMER and Water Licence criteria of 0.3 mg/L respectively). Also, ammonia nitrogen was higher than Water License criteria (mean value of 22.4 mg N/L vs 16 mg N/L). Note that the discharge criteria outlined in the Water

License are based on total concentrations and are used herein for compassion purposes only.

- Sulphate concentration was higher than the threshold value.

- For Third Portage Pit (Pit E):
  - Comparison Based on In-Pit Deposition Water Quality Model (Interim Closure and Reclamation Plan, 2020):
    - The mean water quality concentrations measured in the Third Portage Pit sump exceeded +/-20% predicted concentrations for Annual Average and Lower 25th centile scenarios of year 12 for all the parameters, except for alkalinity (+6% for Annual Average and +18% for Lower 25th centile scenario), fluoride (+7% for Annual Average scenario and +16% for Lower 25th centile) and sulphate (-14% for Annual Average and -6% for Lower 25th centile scenario).
    - For the lower 25th percentile, all parameters measured exceeded the predicted (Average Annual and Lower 25th centile scenarios of year 12), except for alkalinity (-7% for Annual Average and +4% for Lower 25th scenario), dissolved copper (+5% for Annual Average and +15% for Lower 25th scenario), fluoride (-5% for Annual Average and +3% for Lower 25th scenario), dissolved molybdenum (+4% for Annual Average and +12% for Lower 25th scenario) and total dissolved solids (+8% for Annual Average and +20% for Lower 25th scenario).
    - The measured value dissolved selenium is much higher than model prediction.
  - Comparison Based on Initial Model, Year 4 (Golder, 2007):
    - The mean water quality concentrations measured in the Third Portage Pit sump exceeded +/-20% predicted concentrations for Probable and Possible Poor scenarios of year 4 for all the parameters, except for dissolved barium (+17% for Probable Poor End scenario).
    - For the lower 25th percentile, all parameters measured exceeded the predicted (Probable and Possible Poor scenarios of year 4), except for dissolved arsenic (-19% for Probable Poor End scenario), fluoride (+12% for Probable and -11% Possible Poor End scenario), for dissolved barium (+5% for Probable scenario) and nitrate (+14% for Possible Poor scenario).
    - The measured value of ammonia (unionized), dissolved arsenic, dissolved copper and dissolved selenium is significantly higher than the prediction of year 4, which can be explained by the start of in-pit deposition in Pit E in 2020.
  - The following measured parameters were found to be higher than the CCME guidelines:
    - unionized ammonia (mean value of 1.32 mg/L vs CCME guideline of 0.016 mg/L)
    - ammonia nitrogen (mean value of 41 mg/L vs CCME guideline of 1.83 mg/L)
    - dissolved arsenic (mean value of 0.11 mg/L vs CCME guideline of 0.005 mg/L)
    - chloride (mean value of 173 mg/L vs CCME guideline of 120 mg/L)

- dissolved copper (mean value of 1.9 mg/L vs CCME guideline of 0.002 mg/L)
- fluoride (mean value of 0.24 mg/L vs CCME guideline of 0.12 mg/L)
- dissolved nickel (mean value of 0.22 mg/L vs CCME guideline of 0.025 mg/L)
- dissolved cadmium (mean value of 0.000033 mg/L vs CCME guideline of 0.000026 mg/L)
- dissolved mercury (mean value of 0.00005 mg/L vs CCME guideline of 0.00004 mg/L)
- dissolved molybdenum (mean value of 0.092 mg/L vs CCME guideline of 0.073 mg/L)
- dissolved selenium (mean value of 0.089 mg/L vs CCME guideline of 0.001 mg/L)
- nitrate (mean value of 7.3 mg N/L vs CCME guideline 2.94 mg N/L)

o Dissolved copper was higher than MDMER criteria (mean value of 1.97 mg/L vs MDMER criteria of 0.3 mg/L) and higher than Water Licence criteria (Water Licence criteria of 0.1 mg/L). Also, dissolved nickel was slightly higher than the Water License criteria (mean value of 0.22 mg/L vs Water License criteria of 0.2 mg/L respectively). Ammonia nitrogen was higher than the Water Licence criteria (mean value of 41 mg N/L vs Water Licence criteria of 16 mg N/L). Note that the discharge criteria outlined in the MDMER and Water License are based on total concentrations and are used herein for compassion purposes only.

o Sulphate concentration was higher than the threshold value.

- For North Portage Pit (Pit A):
  - o Comparison Based on In-Pit Deposition Water Quality Model (Interim Closure and Reclamation Plan, 2020):
    - The mean water quality concentrations measured in the North Portage Pit sump exceeded +/-20% predicted concentrations for Annual Average and Lower 25th centile scenarios of year 12 for all the parameters except for ammonia nitrogen (-18% for Annual average and -8% for Lower 25th centile scenario), dissolved selenium (-10% for Lower 25th centile scenario), and dissolved zinc (-7% for Average Annual scenario and -6% for Lower 25th centile scenario).
    - For the lower 25th percentile, all parameters measured exceeded the predicted (Average Annual and Lower 25th centile scenarios of year 12.
    - The measured value dissolved nickel is much higher than model prediction.
  - o Comparison Based on Initial Model, Year 4 (Golder, 2007):
    - The mean water quality concentrations measured in the North Portage Pit exceeded +/-20% predicted concentrations for Probable and Possible Poor scenarios of year 4 for all the parameters except for pH (+19% for Probable

scenario), dissolved arsenic (-6% for Possible Poor scenario), dissolved mercury (-6% for Possible Poor scenario), and dissolved thallium (+7 % for Possible Poor scenario).

- For the lower 25th percentile, all parameters measured exceeded the predicted (Probable and Possible Poor scenarios of year 4), except for pH (+16% for Probable scenario) and for ammonia nitrogen (+12% for Probable scenario).
- The measured values in North Portage Pit are significantly higher than the prediction of year 4. This can be explained by the continued transfer of reclaim water from South Cell TSF, Central Downstream Pond and Goose Pit to North Portage Pit that added contaminants into the pit water.

o The following measured parameters were found to be higher than the CCME guidelines:

- unionized ammonia (mean value of 0.19 mg/L vs CCME guideline of 0.016 mg/L)
- ammonia nitrogen (mean value of 17 mg/L vs CCME guideline of 1.83 mg/L)
- dissolved arsenic (mean value of 0.05 mg/L vs CCME guideline of 0.005 mg/L)
- dissolved copper (mean value of 0.49 mg/L vs CCME guideline of 0.002 mg/L)
- fluoride (mean value of 0.23 mg/L vs CCME guideline of 0.12 mg/L)
- dissolved nickel (mean value of 0.32 mg/L vs CCME guideline of 0.025 mg/L)
- dissolved mercury (mean value of 0.000027 mg/L vs CCME guideline of 0.000026 mg/L)
- dissolved manganese (mean value of 0.39 mg/L vs CCME guideline of 0.23 mg/L)
- dissolved selenium (mean value of 0.015 mg/L vs CCME guideline of 0.001 mg/L)

o Dissolved copper was higher than MDMER criteria (mean value of 0.49 mg/L vs MDMER criteria of 0.3 mg/L) and higher than Water Licence criteria (Water Licence criteria of 0.1 mg/L). Also, dissolved nickel higher than Water License criteria (mean value of 0.32 mg/L vs Water License criteria of 0.2 mg/L respectively). Ammonia nitrogen was slightly higher than the Water Licence criteria (mean value of 17 mg N/L vs Water Licence criteria of 16 mg N/L). Note that the discharge criteria outlined in the MDMER and Water License are based on total concentrations and are used herein for compassion purposes only.

o Sulphate concentration was higher than the threshold value.

Figures 10 to 13 on the following pages illustrate the measured annual mean concentrations (represented by the vertical bars) and the probable and possible poor scenario, for years 2012 to 2021, or annual average and lower 25th centile scenarios for year 2021 (represented by horizontal lines). Graphics for the 25th percentile data were not plotted since there are years where not enough samples were taken to statistically evaluate this value.

Figure 10 Meadowbank Mean Annual Water Quality - Vault and Phaser Open Pit Sumps

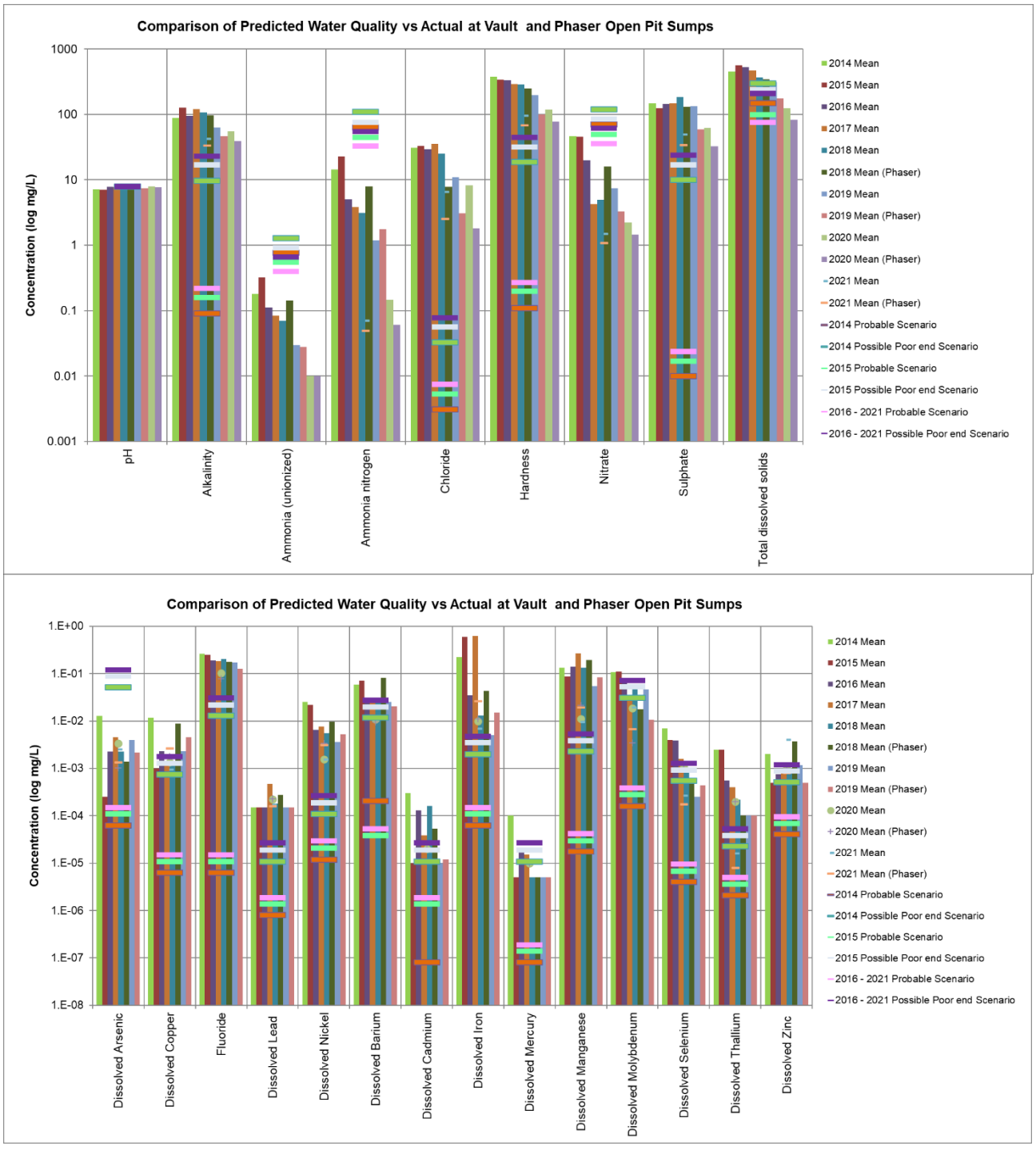


Figure 11 Meadowbank Mean Annual Water Quality – Goose Open Pit Sumps

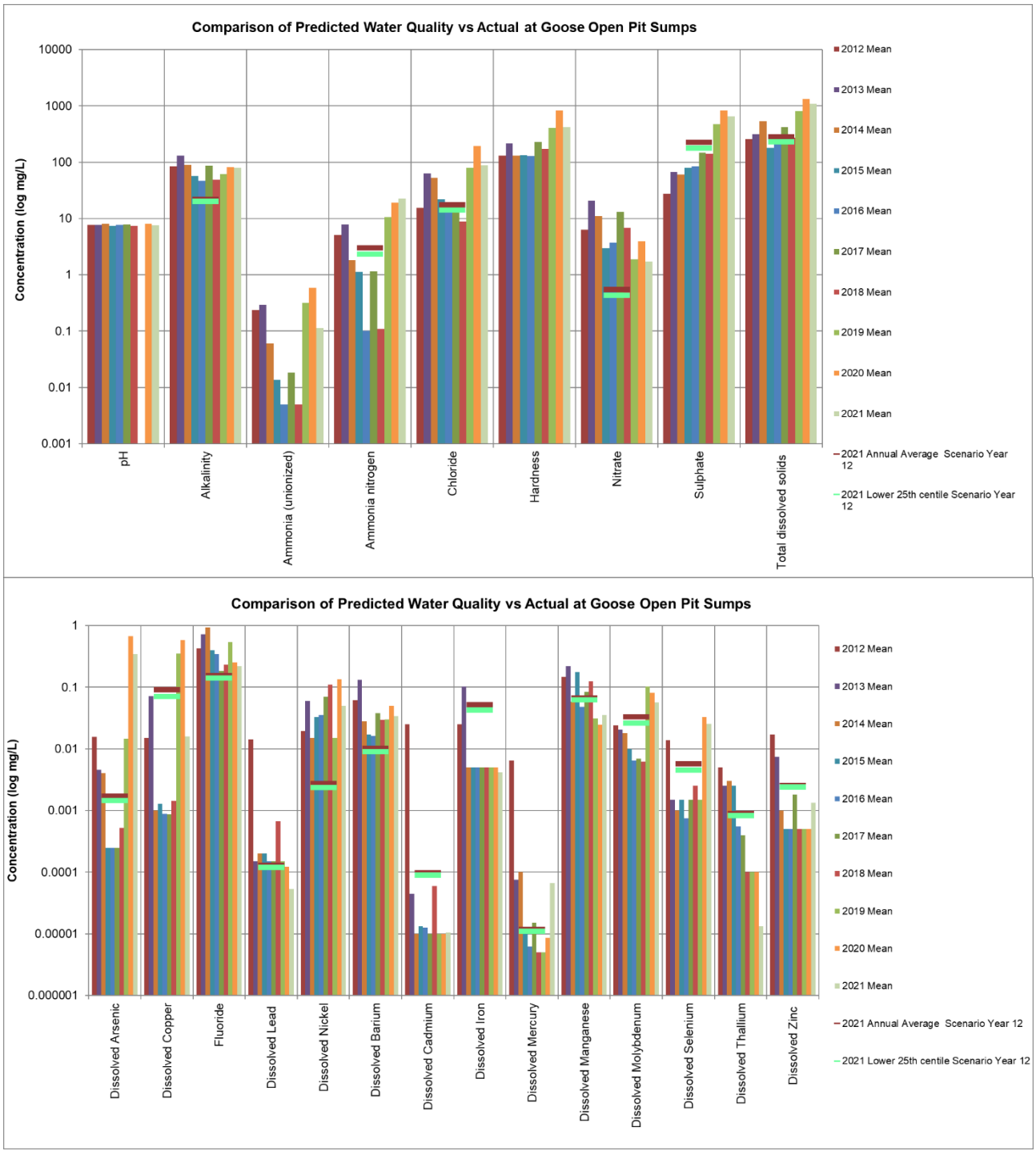


Figure 12 Meadowbank Mean Annual Water Quality – Third Portage Pit (Pit E) Sumps

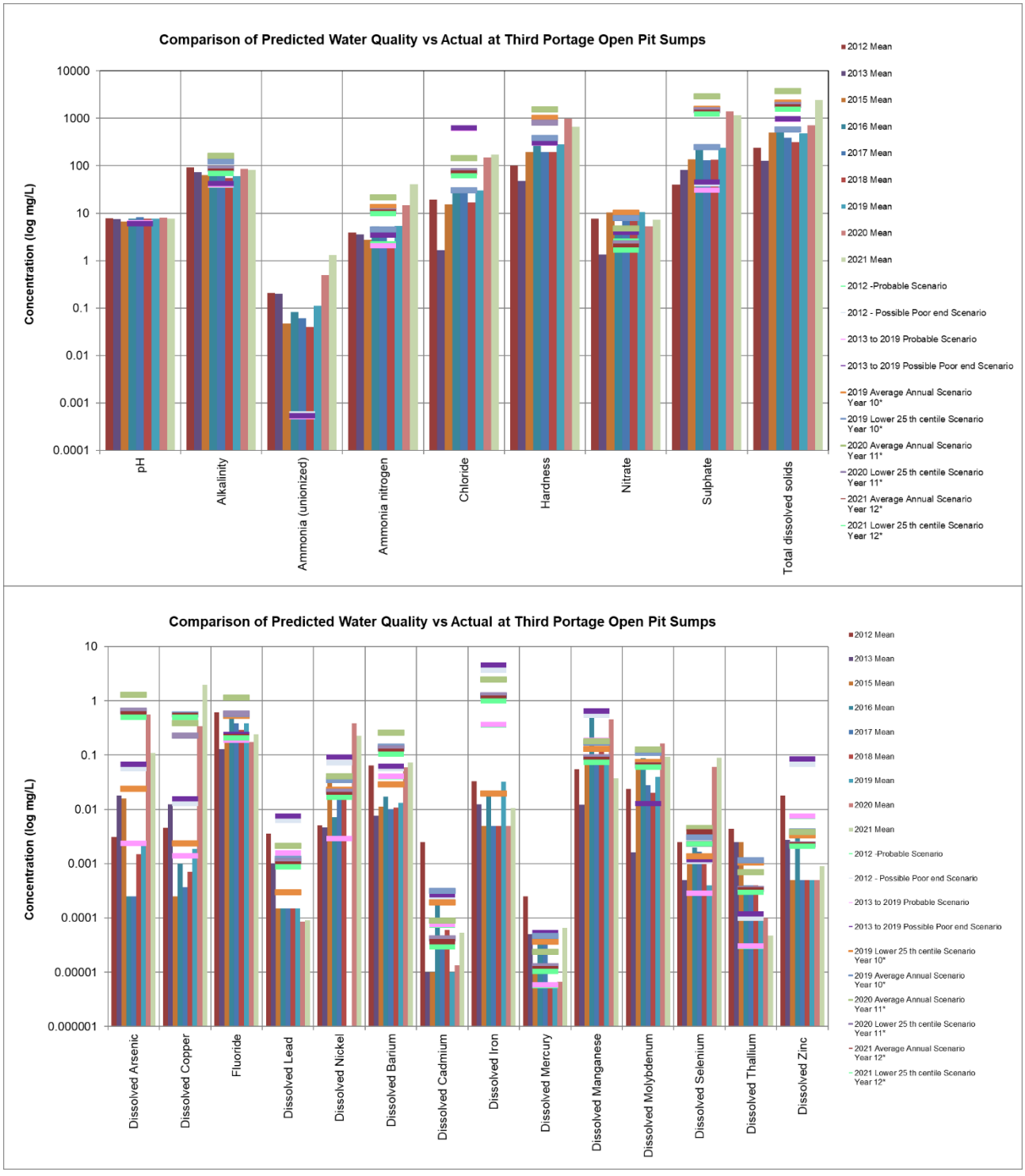
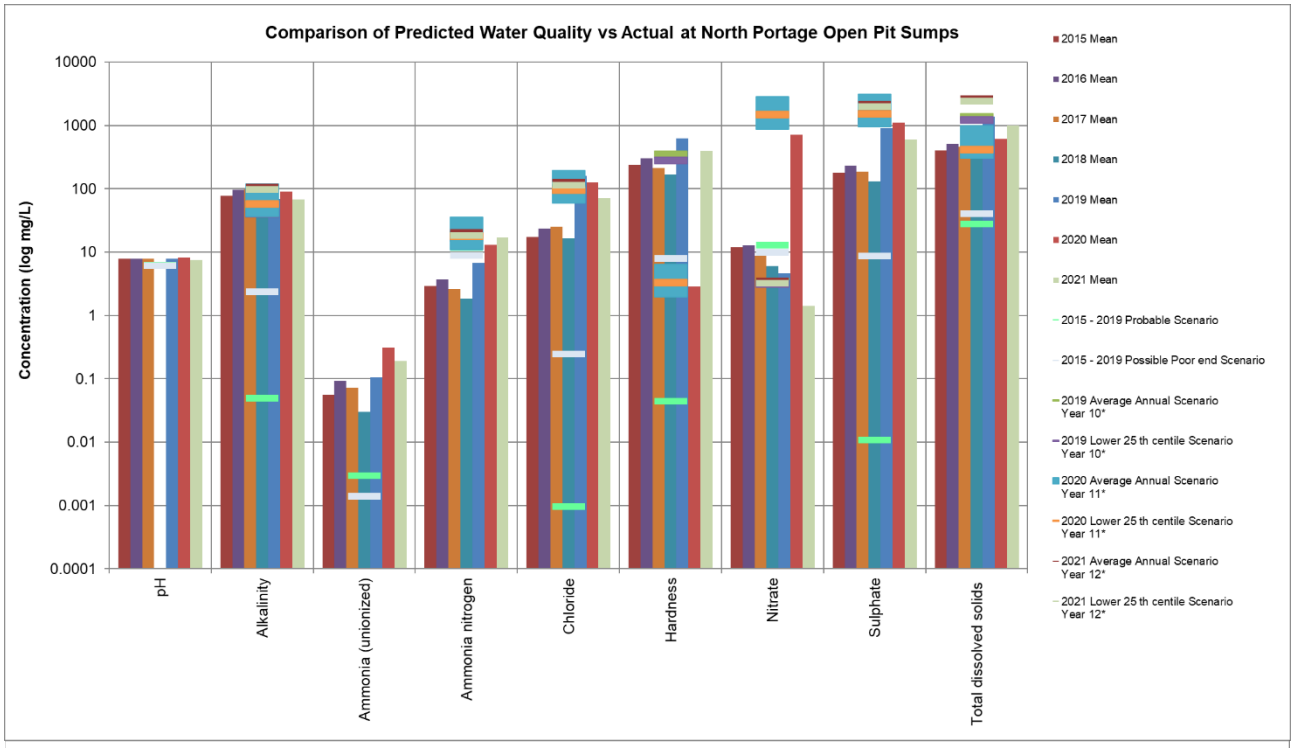
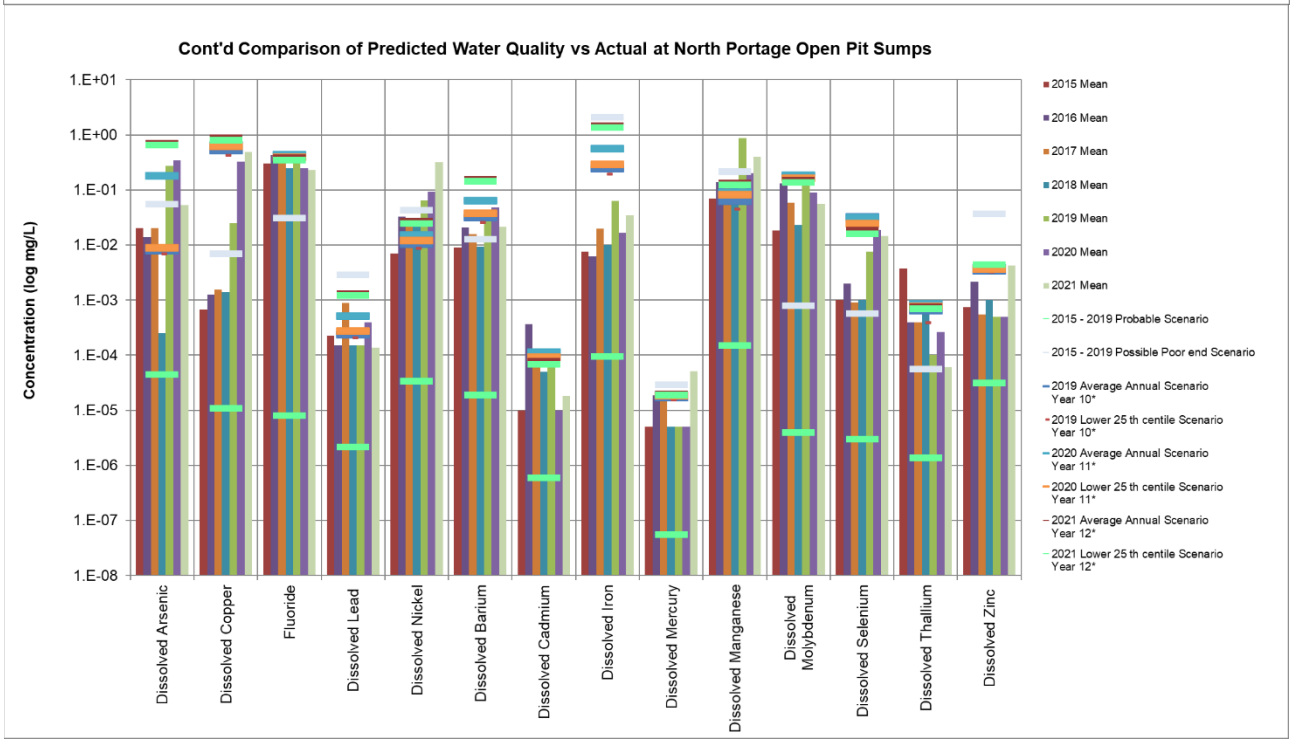


Figure 13 Meadowbank Mean Annual Water Quality – North Portage Pit (Pit A) Sumps





Based on this analysis, many of the predicted values for the Probable and Probable Poor End scenarios and Annual Average and 25% Centile Water Quality Forecast have differences greater than +/- 20% when compared to the measured values. There are several potential causes that could contribute to these differences:

- For Portage and Goose Pits, the measured water volumes were significantly less than what was originally predicted, specifically from 2012 to 2018. This reflects the fact that seepage, ground water and local runoff volumes were being managed and less water than what was originally predicted was reporting to the pit sumps. Consequently, there was less volume of water to attenuate any contaminant loads that may accumulate in the pit sump water body.
- For Portage Pit, the measured water volumes of 2019 and 2021 were higher than what was originally predicted. This can be explained by the higher observed precipitation at the site and more runoff being directed toward Portage Pit. Consequently, there was more volume of water to attenuate contaminant loads that may accumulate in the pit sump water body.
- The contaminant loads measured in Portage and Goose Pits water were higher than the prediction until 2018. In 2019, the contaminant loads measured in Third Portage and Goose Pits water were lower than the prediction of year 10. However, in Goose Pit, the sample data set available in 2019 for the pit lake was limited. In North Portage pit, some parameters were much higher than the forecasted values of year 10, such as dissolved arsenic and manganese. This can be explained by the additional transfer of reclaim water from the Central Downstream Pond to North Portage Pit that in 2019.
- In 2020, in-pit deposition continued in Goose Pit and started in Third Portage Pit (Pit E). In Goose Pit, there were some measured concentrations higher than the prediction for year 11. Of note, dissolved arsenic and dissolved nickel were significantly higher. A higher proportion of tailings deposited in Goose Pit originated from ore from Whale Tail Pit. This ore was shown to leach out higher concentration for certain metals, such as arsenic.
- For Third Portage Pit, in 2020, the measured values were generally lower than the prediction of year 11, which accounted for the nature of the tailings originating from the Whale Tail Pit. Dissolved manganese and selenium where found to be higher than the model prediction for year 11. In 2021, the measured values were higher than the prediction of year 12, specifically with regard to ammonia, nitrate, chloride, dissolved copper and dissolved selenium. Dissolved arsenic on the other hand was lower. The increase of these parameters is mainly due to the continue deposition of tailings in Third Portage Pit in 2021.
- For North Portage Pit, in 2020, the measured values were generally lower than the prediction of year 11, except for dissolved arsenic, nickel and manganese. The higher load could originate from water transfer from South Cell TSF, Downstream Pond and Goose Pit that occurred in 2020. In 2021, the measured values were generally lower than the prediction of year 12, except for dissolved nickel and manganese. The higher load could originate from water transfer from South Cell TSF, Downstream Pond and Goose Pit and transfer from Third Portage Pit that occurred in 2021.
- The contaminant loads measured in Vault and Phaser Pits water were generally higher than the prediction. However, there has been a continued improvement in pit water quality year after year since the end of mining at Vault and natural re-flooding was allowed to take place in the pits.

- Higher observed load in the seepages flowing into the pits seems to contribute in part to the contaminant loads observed in Goose and Portage pits.
- Since 2019, in-pit deposition activities in Goose and Portage Pit contribute the main contaminant loading to the pit water.
- Some accredited laboratory water quality measurements have detection limits that are higher than the predicted values. This is particularly true for dissolved metal analysis, such as cadmium, iron, lead, nickel, molybdenum, selenium, thallium and zinc. The accredited laboratory used for analysis was changed in 2021 and the detection limits for these parameters were revised to align with the probable and possible poor end scenario predictions for North Portage Pit Sumps, Third Portage Pit Sumps, and Goose Island Pit. As for Phaser Pit Sumps and Vault Pit Sumps, dissolved metal parameters have really low water quality prediction, currently lower than CCME guideline and actual laboratory detection limits.
- The pH measured in Portage and Goose pits is generally higher than the predicted values. A possible cause for this phenomenon is that the groundwater infiltrating into the pits have a higher alkalinity concentration and pH when compared against the background water quality of the surrounding Third Portage Lake.

Un-ionized ammonia concentration in water is greatly influenced by the pH. The higher the pH, the higher the fraction of un-ionized ammonia in the water. The predicted pH of the Portage and Goose pit water is between 6.1 and 6.3, while the measured values are generally between 7.0 and 8.3.

Furthermore, there are many parameters in the pit water from Goose Pit, Third Portage Pit and North Portage Pit that are slightly higher or higher than the CCME water quality guidelines for the protection of aquatic life. Some parameters, such as ammonia and nitrate, are present in the pit water from the use of explosive during the pit development and from natural degradation of cyanate, the by-product produced from the cyanide destruction process. Other parameters found in the pit water could originate from the natural groundwater seepage into the pit (i.e. fluoride, sulphates, etc.), from contact of runoff water and seepage water with potentially acid generating (PAG) rock surfaces of the pit wall and/or from loads coming from the reclaim water that is deposited with the tailings in the pits.

However, it is important to note that the water from all the pits is extensively monitored and is not discharged directly into the environment:

- For Portage and Goose Pit sump water, no water was discharged to the environment from these pits. Up until November 2014, the pit water was transferred to the former Attenuation Pond. The water accumulated in the Attenuation Pond was sent to the Tailings Storage Facility or treated by the Water Treatment Plant (WTP) before being discharged in the Third Portage Lake. No discharge limits were exceeded in 2012, 2013 and 2014 as all the results are below the maximum value required by NWB (Water License 2AM-MEA1526) and Environment and Climate Changes Canada (MDMER). It should also be noted that since the South Cell Tailings Storage Facility was put into operation (November, 2014), no additional water from the former Portage Attenuation Pond has been discharged into the receiving environment during mining operations. Since mining activities are completed in Goose, all water inflows will remain in Goose Pit and form part of the natural re-flooding volume (since July 2015). In-pit tailings deposition in Goose Pit was started in July 2019 and finished in August 2020. It continued in Third Portage Pit as of August 2020. Reclaim water from the South Cell TSF Reclaim Pond and Central Downstream Pond was also transferred to North Portage pit in 2020 and 2021.

- For Vault and Phaser Pits sump water, the pit water reports to the Vault Attenuation Pond. The water accumulated in the Vault Attenuation Pond could be treated by the WTP, if required, until the end of 2017 for Total Suspended Solids (TSS) removal before discharge into the receiving environment (Wally Lake). No discharge limits were exceeded in 2014, 2015, 2016 and 2017, as all the results are below the maximum average concentration value required by NWB (Water License 2AM-MEA1526) and Environment and Climate Changes Canada (MDMER). From 2018 to 2021, there was no discharge to the environment.

The sample results from Portage, Goose, Vault and Phaser Pits will continue to be monitored in the future and the results will be considered in the water quality modelling, revised yearly, to assist in informing management of water quality in the pits during closure. All factors including the proportional volume of pit water and reclaim water in the TSF, as well as possible implementation of mitigative measures during operation and closure, will be considered when deciding if water treatment will be required at closure. All of this information including the applicable parameters are integrated into the water quality model and is discussed in the subsequent section.

Water Quality Forecast model - Pit Water Quality

Based on the updated Interim Closure and Reclamation Plan 2020, reclaim Water stored in Goose Pit, Third Portage Pit and North Portage Pit shall be treated and discharge to Third Portage Lake following the end of in-pit deposition. Once treatment is completed, aggregate cover construction over the tailings in the pits will begin, if feasible, followed by re-flooding of the pits with natural runoff and water transfer from Third Portage Lake. For this study, parameters of concern were identified using the current Water License limits, however, final site-specific treated effluent discharge limits for closure will be developed through review of the final closure plan by regulatory agencies.

The Water Quality Forecast model is completed yearly with the updated, measured data from site, as well as the water balance used on site. Review of the water quality predictions at the end of in-pit deposition is in this forecast. Table 4.1 of the Meadowbank Water Quality Forecasting Update for the 2021 Water Management Plan found in Appendix C of the 2021 Water Management Report and Plan Version 10 (Appendix 12) summarizes the forecasted concentrations of applicable parameters in Portage and Goose Pits (based on measured water quality from the TSF) predicted in the pits at the end of in-pit deposition.

Based on the results of the water quality mass balance presented in Section 4.2 of the Meadowbank Water Quality Forecasting Update for the 2021 Water Management Plan, treatment of the reclaim water at the end of in-pit deposition will be required for metals removal (such as for arsenic, copper, iron and nickel) and TSS removal. Ammonia removal may also be needed, as well as Total Dissolved Solids reduction.

For the Vault pit, no treatment would likely be required after the pit has been re-flooded prior to dike reconnection. This is largely due to the fact that there is no interaction of contact water with a tailings disposal facility at the Vault site and all parameters are expected to meet the CCME guidelines or other site specific criteria developed during the closure process and/or baseline criteria per the Water License. Table 5.1 of the Meadowbank Water Quality Forecasting Update for the 2021 Water Management Plan Report presents the average concentrations of water quality from samples taken in the Vault area in 2021.

Potential treatment option for the removal of the metals in Reclaim Water prior to discharge to Third Portage Lake is caustic or lime precipitation, while aeration, biological treatment or zeolite exchange are recommended for total nitrogen reduction. Coagulation with ferric sulfate could be used to co-precipitate the arsenic as a ferric arsenate precipitate. Additional treatment steps could be considered once the actual nature of the water to treat is known, such as additional polishing steps, like multimedia or membrane filtration.

For the Vault area, ammonia and nitrate are the parameters of concern identified by Environment Canada, but no actual or forecasted concentration exceeds the Type A Water License discharge requirements for this area. Current concentrations for these two parameters are also below the CCME guidelines.

It is important to note that the water quality in the pits will be subject to CCME guidelines or site-specific criteria and/or baseline criteria per the Water License at closure once the water level in the Goose and Portage Pits are equal to the water level in the Third Portage Lake, following reclaim water treatment and natural and active pit reflooding. The dikes will only be breached once the water quality in the pits meets CCME guidelines or site specific criteria and/or baseline criteria per the Water License developed during the closure plan approval process. This applies also for the Vault area.

4.4.3.2 *Whale Tail Site*

As required by NWB Water License 2AM-WTP1830 Part E, Item 8: ***The Licensee shall, on an annual basis during Closure, compare the predicted water quantity and quality within the pit and lake, to the measured water quantity and quality. Should the difference between the predicted base case values and measured values be 20% or greater, then the cause(s) of the difference(s) shall be identified and the implications of the difference shall be assessed and reported to the Board.***

As per the NWB requirement, this comparison will be provided once in closure.

4.4.4 Alternative Effluent Discharge Locations

As required by Project Certificate No. 008 Condition 67: ***Subject to the additional direction and requirements of the Nunavut Water Board (NWB), the Proponent shall:***

a)Conduct an evaluation of the potential aquatic effects to Lakes D1 and D5 and downstream that may result from the discharge of treated effluent. The evaluation will include:

- ***Additional water quality and phytoplankton baseline data in Lakes D1 and D5***
- ***Updated water balance and water quality forecast***
- ***Updated near field and far field effluent discharge modelling***
- ***Updated Water management Plan, Water Quality and Flow Monitoring, and Core-receiving Environment Monitoring Plan***

b) Provide adequate rationale for the need to use the alternative discharge contingency, based on the thresholds established as per the Whale Tail Pit Expansion Project water management decision tree.

c) In the event that discharge to Lakes D1 and/or D5 is not approved to proceed by the NWB, the Proponent will develop alternative effluent management plans as part of the Water Management Plan.

Agnico Eagle completed additional baseline data collection in Lakes D1 and D5 in 2021 but no studies were completed as discharge to Lakes D1 and D5 is not considered at this point.

4.5 HYDRODYMANIC STUDIES WHALE TAIL SITE

As required by NIRB Project Certificate No.008 Condition 6: ***The Proponent shall provide a summary of activities undertaken to address the requirements of this term and condition in annual report(s) to the NIRB. The Proponent shall:***

> ***a) Conduct detailed hydrodynamic modelling during operations and closure to evaluate the mixing of the Waste Rock Storage Facility seepage into Mammoth Lake post-closure; and***
>
> ***b) Based on the results of the modelling implement monitoring programs and adaptive management strategies that minimize the need for active intervention, including long-term treatment of mine contact water.***

This condition was fulfilled with the submission of the Hydrodynamic Modelling of Mammoth Lake report found in Appendix 16 of the 2018 Annual Report. Agnico Eagle will review the hydrodynamic model during operation, if needed, and during closure.

4.6 ADDITIONAL INFORMATION

4.6.1 Meadowbank Site

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 25: ***Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.***

No additional information was requested in 2021.

4.6.2 Whale Tail Site

As required by Water License 2AM-WTP1830 Schedule B, Item 28: ***Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.***

No additional information was requested in 2021.

SECTION 5. WASTE ROCK MANAGEMENT ACTIVITIES

5.1 GEOCHEMICAL MONITORING

5.1.1 Meadowbank Site

As required by NIRB Project Certificate No.004 Condition 15: ***Within two (2) years of commencing operations re-evaluate the characterization of mine waste materials, including the Vault area, for acid generating potential, metal leaching and non-metal constituents to confirm FEIS predictions, and re-evaluate rock disposal practices by conducting systematic sampling of the waste rock and tailings in order to incorporate preventive and control measures into the Waste Management Plan to enhance tailing management during operations and closure; results of the re-evaluations shall be provided to the NWB and NIRB's Monitoring Officer.***

And

In accordance with NWB Water License 2AM-MEA1530 Schedule B, Item 7: ***Geochemical monitoring results including:***

a. Operational acid/base accounting and paste pH test work used for waste rock designation (PAG and NPAG rock);

As no mining occurred at Meadowbank mine in 2021, no blast holes were analyzed for sulphur and carbon. Agnico Eagle will refer to previous annual report for historical information.

b. As-built volumes of waste rock used in construction and sent to the Waste Rock Storage Facilities with estimated balance of acid generation to acid neutralization capacity in a given sample as well as metal toxicity;

Refer to the Section 5.2.1 of this report.

c. All monitoring data with respect to geochemical analyses on site and related to roads, quarries, and the All Weather Access Road;

Unless there are significant changes during reclamation, no more surface water quality monitoring have been completed since 2012. Previous water sampling results showed no evidence of geochemical issues in the quarries. Agnico Eagle will refer to the 2012 and previous Annual Reports. The water chemistry in quarries remains consistent between years and due to the isolated nature of the pool, the water collected in the quarry does not likely pose a risk to the aquatic environment. It was recommended that unless turbidity issues are visually observed, surface water quality sampling is not deemed necessary at non-HADD crossings or contact pools. In 2021, no turbidity issues were visually observed so surface water quality sampling was not deemed necessary at quarry contact water pool. As in the past, Quarry 4 and 14 are flooded, as noted in the 2021 Annual Geotechnical Inspection (Appendix 9). The water ponding at freshet or during the summer period in the quarries does not drain to any nearby watercourse. During previous summer periods, no mitigation was deemed necessary in Quarry 4, 13 and 14 and in any other quarry along the AWAR as no significant amounts of water were observed in the quarries. The quarry reclamation along the AWAR will form part of the Meadowbank Final Closure Plan. Reclamation activities for some quarries may occur during operations. The remaining reclamation activities for the quarries will occur during the closure period.

There are no issues to report for 2021 along the AWAR. Pre-freshet and freshet inspections were conducted at crossings along the AWAR and quarries in 2021. These inspections are conducted to document the presence/absence of flow, erosional concerns and turbidity plumes and to ensure that runoff, if any, would be free of any contaminant and would not impact the environment. Refer to Section 8.5.3.2.17.2 for more information. Agnico Eagle also conducted daily inspections in collaboration with the Meadowbank Energy and Infrastructures Department (in charge of the road and travel the road daily for ongoing maintenance). No turbidity issues were visually observed so surface water quality sampling was not deemed necessary at non-HADD crossings or quarry contact water pools. As the road is made of NPAG material, and has no sign of erosion or turbidity, Agnico Eagle considers the planned monitoring approach sufficient. As described in the 2012 Annual Report: *'HADD crossings R02, R06, R09 and R15 water quality monitoring results continue to suggest an improvement from post AWAR construction (complete March 2008) as mine related road activity did not cause any observable effects on the receiving environment from the field observations and water chemistry data collected in 2012. Consistent with 2011, the AWAR surface water quality results did not present concerns to the receiving environment as none of the parameters exceeded CCME (2007) in 2012. Based on the monitoring results, the road construction material appears to be stable; therefore Agnico did not conduct any surface water chemistry sampling in 2013 unless visual turbidity observed. If in the future, an erosion issue occurs, detailed monitoring will be conducted in response to the event.'*

d. Leaching observations and tests on pit slope and dike exposure;

No leaching was observed on the pit slope or dike faces in 2021.

e. Any geochemical outcomes or observations that could imply or lead to environmental impact;

In 2021, Agnico Eagle continued to conducts inspections around the Rock Storage Facilities (RSF) to determine if there is seepage at the base of the RSF. In 2021, as in previous years, seepage has been observed. Samples are taken in accordance with the NWB Water License 2AM-MEA1530 and reported in the annual report – ST-16 for the ponding water at the base of Portage RSF (Section 8.5.3.1.7).

The waste rock storage facility at Portage includes a sector with only NPAG material, and a sector for PAG material, capped with NPAG material during operations. Inspection and monitoring around the Portage waste rock storage facility report very minimal water accumulation around the facility, mostly related to melt and runoff water in the spring. Thermistors installed in the Portage RSF also indicate that freeze back is occurring within the rock pile; freeze back of the pile and the 4.0 m layer of NPAG rock will provide geochemical stability and to act as a thermal barrier to control acid rock drainage potential. The station ST-16 collects some water accumulating along the Portage RSF. It is important to be noted that the seepage reported at ST-16 in 2013 is not related with acid rock drainage from the waste rock contained in the Portage RSF, but rather from infiltration of reclaim water from the TSF through the RSF. Several mitigation measures were implemented in since 2013 to effectively control this seepage.

In 2014, as per inspections conducted within the framework of the Freshet Action Plan, run off was noted at the northeast side of the Portage NPAG waste rock extension pile in a natural depression (WEP). Agnico Eagle contained this run off and pumped it back to the North Cell TSF as a precaution and to prevent egress to the East Diversion non-contact water ditch. Sampling has commenced in 2016 at sumps WEP1 and WEP2 as per NWB Water License 2AM-MEA1530. There are no applicable license limits. Results are presented in Table 8-31 for WEP1 and Table 8-32 for WEP 2, and discussed in Section

8.5.3.1.15. Refer to Section 8.5.3.1.7 regarding the seepage event; mitigation and monitoring that occurred in NP2 Lake and other downstream lakes (i.e. NP1, Dogleg, and SPL).

The waste rock mined at Vault is largely NPAG. As a mitigative measure any PAG or uncertain waste rock material were placed in the middle of the Vault Waste Rock Storage Facility while NPAG material is placed on the perimeter to encapsulate the PAG material. Runoff or seepage water monitoring analysis confirms to date the effectiveness of this abatement measure. To date water monitoring analysis from run off indicates no concerns related to ARD. The water seepage from the Vault RSF area is expected to be of suitable quality to allow discharge to the environment without treatment and capping of this facility is therefore not proposed. Agnico Eagle initiated water quality monitoring at Vault in 2014 and results to date confirm the prediction. An adaptive management plan will include continued monitoring of water quality during operations to confirm modelling predictions, and to allow adjustments to the closure plan as required. As discussed in Section 8.5.3.1.13, in 2021, ponded water was observed at the base of the WRSF (sampling station ST-24) and was sampled in June, July, August and September. As per NWB Water License, samples were collected to assess water quality and the results are presented in Table 8-29. No water was pumped from this location as there is no major water accumulation and it's mainly a ponding area without flow.

f. Geochemical data associated with tailings solids, tailings supernatant, cyanide leach residue, and bleed from the cyanide destruction process including an interpretation of the data;

Agnico Eagle takes throughout the year monthly samples of tailings (as per the Pore Water Quality Monitoring Program – Section 5.1.1.1 below) that are sent to an accredited laboratory to analyse for ABA and Metal Leaching. Table 5-1 below presents the results of tailings solids. These sample results are also integrated in the Water Quality Forecast updated yearly.

Table 5-1 Meadowbank 2021 Tailings Solids Monitoring

Analysis	Date	2021											
	Units	10-Jan	3-Feb	14-Mar	11-Apr	9-May	6-Jun	4-Jul	3-Aug	6-Sep	9-Oct	8-Nov	14-Dec
NP	t $CaCO_3$ /1000 t	112.0	60.0	70.1	98.6	66.4	49.4	75.1	63.0	363.0	76.2	135.0	78.8
AP	t $CaCO_3$ /1000 t	35.9	67.5	33.4	72.5	60.3	77.8	48.1	61.6	40.9	52.2	31.9	51.2
Net NP	t $CaCO_3$ /1000 t	76.4	-7.5	36.7	26.1	6.1	-28.4	27.0	1.4	322.0	24.0	103.0	27.6
NP/AP	ratio	3.12	0.89	2.10	1.36	1.10	0.63	1.56	1.02	8.86	1.46	4.24	1.54
Sulphur	%	1.28	2.49	1.52	2.61	2.44	3.17	1.92	2.53	1.56	1.91	1.19	1.94
Acid Leachable SO4-S	%	0.13	0.33	0.45	0.29	0.51	0.68	0.38	0.56	0.25	0.24	0.17	0.30
Sulphide	%	1.15	2.16	1.07	2.32	1.93	2.49	1.54	1.97	1.31	1.67	1.02	1.64
C	%	1.35	0.82	1.11	0.72	0.69	0.54	0.88	0.78	1.22	1.00	1.45	0.85
CO_3	%	4.89	2.49	3.95	1.66	2.03	1.30	2.17	3.28	5.49	4.46	6.87	3.22
Final pH	units	1.87	1.62	1.72	1.57	1.81	1.63	1.50	1.66	1.91	1.63	1.66	1.79
As	mg/L	1.20	1.40	0.83	1.60	1.00	1.50	1.10	1.40	1.20	1.50	0.92	1.50
Cu	mg/L	0.089	0.120	0.100	0.094	0.100	0.080	0.110	0.093	0.095	0.099	0.120	0.110
Ni	mg/L	0.75	0.610	0.870	0.670	0.920	0.660	0.730	0.820	0.870	0.680	0.820	0.750
Zn	mg/L	0.068	0.071	0.075	0.071	0.087	0.071	0.073	0.085	0.170	0.075	0.074	0.075

g. Results related to the road quarries and the All Weather Private Access Road.

See Section 5.1.1c above.

5.1.1.1 *Pore Water Quality*

Agnico Eagle received on May 24th, 2019 from NWB the Ministers Approval regarding the Amendment No.3 to Type A Water Licence No. 2AM-MEA1526 to authorize Water Uses and Waste Deposits associated with the In-Pit Tailings Disposal Proposal. Tailings generated from the Whale Tail Pit Project will be deposited in the mined-out Goose and Portage pits. As part of their decisions, Agnico Eagle was required to submit a Tailings Pore Water Quality Monitoring Program for the Board review and approval (Section IV, Part B: General Conditions). The approved Pore Water Quality Monitoring Program is attached in Appendix 23 of the 2019 Annual Report.

The chemical composition of the mill effluent process water will have significant influence on the quality of supernatant water above the tailings surface (i.e. reclaim water) as well as the exfiltration from the tailings. The chemical composition of the tailings pore water is expected to be controlled by the chemical composition of the mill effluent and the reclaim water, which is a mixture of mill effluent process water and any other direct inputs to the pit (i.e. precipitation, runoff, etc.). Geochemical reactions within the tailings solids themselves are not expected to influence pore water chemistry.

In-Pit disposal in Goose Pits started on July 5th, 2019 and stopped on August 19th, 2020. In-pit disposal in Portage Pit E started on August 20th, 2020 and is ongoing. As part of this program, Agnico Eagle collected on a monthly basis one sample of plant effluent slurry representative of the end of pipe prior to tailings disposal in Goose/Portage pits (collected in the mill). Tailings samples were taken each month in 2021. Samples of reclaim water from the Pits where tailings are actively being deposited were also taken, if possible to be done safely, and the result are provided in Section 8.5.3.1 below.

Once Goose Pit has reached its full storage capacity, pore water samples will be collected directly from the in-pit tailings, once it is safe to do. Agnico Eagle will sample in-pit tailings for two (2) subsequent years. If year two is within 20% or lower of year one, and within our prediction, then no further sampling in-situ will be performed. Monitoring pore water quality from Goose Pit will provide insights on the behavior of the pore water quality over time as the tailings self-consolidate. The data collected from Goose Pit should be representative of the behavior within Portage Pit A and Pit E since similar tailings are deposited in these pits.

5.1.2 Whale Tail Site

As required by NIRB Project Certificate No.008, Condition 8: ***The Plan should be submitted to the NIRB at least 30 days prior to the start of construction, with subsequent updates or revisions to the Plan submitted annually thereafter or as may otherwise be required by the NIRB for the life of the Project. The Proponent shall submit a detailed Acid Rock Drainage and Metal Leaching Management Plan that includes the following items:***

- ***Waste rock segregation and testing;***
- ***Thermal monitoring of waste rock;***
- ***Seepage management and monitoring;***

- ***A schedule for reporting of results and periodic updating of predictions for the WRSF pond quality;***
- ***Planning for optimal cover conditions;***
- ***Contingency measures that may be implemented if required;***
- ***Plans for comparing monitoring results from receiving waters to model predictions; and***
- ***The identification of thresholds that will trigger management actions if trends analysis indicates water quality objectives may be exceeded.***

And

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 10: ***Geochemical monitoring results including:***

After one (1) year of mining activity in Whale Tail Pit and after accumulating substantial information and knowledge of the Whale Tail deposit, in 2020 Agnico Eagle reviewed the waste sampling default ratios defined by the Operational ARD-ML Sampling and Testing. An updated Operational ADR-ML Sampling Testing and Plan (Appendix 21 of the 2020 Annual Report) which included new sampling frequency in Whale Tail Pit was provided to and approved by the NWB on January 22nd, 2021.

This document presented the Operational ARD-ML Sampling and Testing, with the exception of thermal monitoring of waste rock, which is covered in the Thermal Monitoring Plan (Appendix 25). The objectives of the Plan are to define the sampling, analysis, and testing procedures that are to be implemented to define the acid generating and metal leaching potential of waste rock for the Project. This characterization is to be used by mine staff to ensure that waste rock, overburden (till), and lake sediments are identified, managed, segregated and disposed of in an environmentally appropriate manner, as designated in the Plan. The Plan will also define if the waste rock, the overburden, and the lake sediment can be used as construction/closure material.

a. Operational acid/base accounting and paste pH test work used for Waste Rock designation (PAG and NPAG rock);

In 2021, Agnico Eagle sampled approximately 25% of the blast holes and analyzed the percentages of sulphur and carbon. The results from these analyses are used to differentiate Non-Potentially Acid Generating (NPAG) from Potentially Acid Generating (PAG) materials. For detailed process regarding the ARD-ML for Whale Tail waste rock and overburden classification, please refer to the Operational ARD-ML Sampling Testing Plan Section 3.2 (Appendix 21 of the 2020 Annual Report). See Table 5-2 below for a summary of Acid Rock Drainage (ARD) Guidelines used to classify Whale Tail waste rock. The plan also described the frequency of sampling. Once characterized by the geology team, the waste rock material is segregated and placed in appropriate location.

Table 5-2 Summary of ARD Guidelines used to classify Waste

Initial Screening Criteria	ARD Potential
NPR< 1	Potentially Acid Generating (PAG)
1 < NPR < 2	Uncertain or low acid generating
2 < NPR, As < 75 ppm	Non Potentially Acid Generating (NPAG)
2 < NPR, As > 75 ppm	Potentially Acid Generating (PAG)

The mine geology staff uses the derived NPR and arsenic (As) values to characterize the rock in the blast pattern. Mine surveyors and grade control technicians use this information to delineate and place the dig limits within the blasted rock to guide the shovel and loader operators in directing where the rock is to be taken. See Section 5.2.2 and Table 5-4 for a discussion of the use and location of waste rock.

Segregation of ore, waste rock as potentially acid generating (PAG) or non-potentially acid generating (NPAG) material based on operational testing during mining activity to differentiate waste rock type is part of the Whale Tail Waste Rock Management Plan. Sampling and testing of waste materials for acid rock drainage (ARD) is conducted during mine operation in order to segregate PAG waste from NPAG waste rock material, so that waste material can be assigned to specific locations or use. This practice has been ongoing since the beginning of the mining operations at Meadowbank, and continue to be applied at the Whale Tail Project. Operational sampling and analysis is completed on site during mining activities in order to identify and delineate the material type in the pits during mining.

The geochemical properties of all mining wastes have been confirmed with duplicates samples sent to a certified laboratory, through both static and kinetic testing on numerous representative samples, by various test methods and through multiple project development stages. In 2021, to validate the method used by Agnico Eagle, approximately 446 samples from Whale Tail and IVR Pits were sent to an accredited commercial lab (external lab) for acid base accounting (ABA) analysis using the Modified Sobek Method for determination of NP/AP, metal leaching using the Shake Flask Method, bulk metals analysis and for whole rock analysis. The results from the external laboratory confirmed Agnico Eagle's methodology and results to differentiate PAG/NPAG rock.

The results of the NPAG-PAG classification confirmation are logged in the Meadowbank LIMS database and also stored as models in MineTrust. Due to the large volume of data, the results are not included in this annual report. These results can be provided upon request.

Information regarding the waste rock characterization is also managed and recorded by the mine dispatch in Wenco system, tracking in real time load of material, including waste rock, and their respective destination. The system and the dispatcher in charge, guides the operators and ensures the ore and waste rock material is transported to the appropriate destination. The system displays in real time information about equipment location and destination, as well as pit development information. All production data, including all waste rock haulage to the PAG and NPAG waste rock storage facilities, as well as construction use are recorded into a database.

In 2021, Agnico Eagle analyzed 15,792 samples from blast holes at Whale Tail Pit and 8,077 samples from IVR Pit at its on-site laboratory. Refer to Table 5-3 below for the percentage of PAG, uncertain and NPAG per pits.

Table 5-3 Whale Tail Site Geochemical ARD determination 2018-2021 (including all waste types)

Year	Whale Tail Pit			IVR Pit		
	PAG (%)	Uncertain (%)	NPAG (%)	PAG (%)	Uncertain (%)	NPAG (%)
2018	28	11	61	NA	NA	NA
2019	42	11	47	NA	NA	NA
2020	30	11	58	2	1	93
2021	30	13	57	2	2	96

The Whale Tail and IVR WRSF's will be constructed to encapsulate potentially acid generating (PAG) and metal leaching (ML) waste rock inside a layer of NPAG material as a control measure for ARD and ML. The NPAG rock that is placed on the top and sides of the storage pile is needed in the long term to host the thawed layer and prevent liquids from contacting the centre of the pile that contains PAG and ML waste rock. Presently it is anticipated that the cover design will be similar to the Meadowbank Portage WRSF. The cover will consist of a 4.7 m thick NPAG/NML waste rock layer on the top and edges of the facility. The cover is expected to maintain freezing conditions in the pile in the long-term. This rationale is based on results to date on thermal modelling that considers thermistor readings at the Portage waste rock pile. Rock oxidation can still occur in frozen material but will proceed at a slower rate than predicted by laboratory testing because of the cold temperatures prevalent for much of the year. Permafrost will retain water as ice, so it was predicted that contaminants will not be transported away from the core of the WRSF in the long-term. Further information of the Whale Tail and IVR WRSF are provided in the Whale Tail Pit – Waste Rock Management Plan (Appendix 23).

Sampling and testing of waste materials for ARD and ML are conducted during mine operation in order to segregate suitable waste for use in construction and for closure from that which will report directly to the Whale Tail and IVR WRSF.

If ponding water is found at the base of the Whale Tail WRSF (ST-WT-30, ST-WT-31, ST-WT-32, and ST-WT-33) this water reports to the WRSF Pond (ST-WT-3), and ponding water at the base of the IVR WRSF (ST-WT-34, ST-WT-35, and ST-WT-36) reports to the IVR Attenuation Pond. As per NWB Water License, samples are to be collected to assess water quality. Refer to Sections 8.5.3.2.12 and 8.5.3.2.13 for a complete discussion of the results. An adaptive management plan will include continued monitoring of water quality during operations to confirm modelling predictions, and to allow adjustments to the closure plan as required.

b. As-built volumes of Waste Rock used in construction and sent to the Waste Rock Storage Facility with estimated balance of acid generation to acid neutralization capacity in a given sample as well as metal toxicity;

Refer to the Section 5.2.2 of this report.

c. All monitoring data with respect to geochemical analyses on site and related to roads, quarries, and the Whale Tail Haul Road;

There are no issues to report for 2021.

Pre-freshet and freshet inspections were conducted at crossings along the Whale Tail Haul Road, eskers and quarries in 2021. These inspections are conducted to document the presence/absence of flow, erosional concerns and turbidity plumes and to ensure that runoff, if any, would be free of any contaminant and would not impact the environment. Refer to Section 8.5.3.2.17 for more information.

d. Leaching observations and tests on pit slope and dike exposure; and

No leaching was observed on the pit slope or dike faces in 2021.

e. Any geochemical outcomes or observations that could imply or lead to environmental impact.

There is no geochemical outcomes or observations that could lead to an environmental impact in 2021. Refer to Section 8.5.8.2.4 for a discussed regarding the WRSF dike flow in 2021.

5.2 WASTE ROCK AND ORE VOLUME

5.2.1 Meadowbank Site

In accordance with NWB Water License 2AM-MEA1530 Schedule B, Item 8: ***Volumes of waste rock used in construction and placed in the Rock Storage Facilities.***

There is no more mining at Meadowbank so no more waste rock was generated in 2021.

The Mine Waste Rock and Tailings Management Plan (Version 12) was revised in March 2022 and can be found in Appendix 22. Details of all waste rock deposition and tailings management are contained in the revised plan.

5.2.2 Whale Tail Site

5.2.2.1 *Waste and Ore Stockpile Volume*

In accordance with NWB Water License 2AM-WTP1830 Schedule B, Item 11 ***Volumes of Waste Rock used in construction and placed in the Waste Rock Storage Facility.***

And

In accordance with NWB Water License 2AM-WTP1830 Schedule B, Item 12: ***Volumes of ore stockpiled and overburden stored at Whale Tail Pit site.***

The total volume of waste rock generated by Whale Tail and IVR Pits in 2021 was 38,762,802 tonnes. The use and location of all of the rock, by volume, is presented in Table 5-4 and is identified by the following categories:

- Roads – used for road construction and maintenance;
- WRSF – stored in the Waste Rock Storage Facilities;
- Stockpiles – stored in stockpile for later usage for construction purposes;
- Construction;
    - Crushers – taken to the mobile crusher and used for construction or maintenance purposes;
    - Miscellaneous uses;
    - Pads construction;

- Dewatering ramp road construction.

The Whale Tail Waste Management Plan (Version 9) was revised in March 2022 and can be found in Appendix 23. Details of all waste rock deposition and tailings management are contained in the Plan.

Table 5-4 Whale Tail 2021 Rock Volume

Month	Whale Tail and IVR Pits								Ore Processed in Mill (tonnes)
	Ore[1]	Waste Rock						Overburden	
		Dikes	Roads[2]	WRSF[3]	Stockpiles	Construction[4]	Total		
January	332,956	-	151,533	3,053,557	136,918	506,257	3,848,265	68,941	321,759
February	312,431	2,814	6,026	2,555,162	112,348	130,055	2,806,405	26,675	290,338
March	431,887	46,872	26,797	2,764,170	136,918	506,256	3,481,013	-	311,487
April	376,331	50,208	371,224	2,791,844	82,276	231,063	3,526,615	1,100	246,082
May	392,816	3,360	337,224	3,175,593	73,877	331,873	3,921,927	1,627	313,291
June	257,727	-	30,364	2,682,967	58,844	182,181	2.954.356	-	216,794
July	328,726	-	8,501	2,980,386	146,172	140,962	3,276,021	45,786	313,418
August	369,427	-	68,136	2,685,576	139,517	89,779	2,983,008	16,014	331,671
September	330,173	-	153,185	2,655,863	120,764	259,256	3,189,068	38,418	326,619
October	276,426	-	289,785	2,711,291	211590	353,298	3,565,954	63,410	247,128
November	326,872	-	169,085	2,433,715	81,653	142,759	2,827,212	160,505	332,683
December	329,244	-	25,442	2,193,014	78,964	85,529	2,382,949	199,683	214,589
TOTAL	**4,065,016**	**103,254**	**1,637,302**	**32,683,138**	**1,298,188**	**2,816,509**	**38,762,802**	**622,159**	**3,465,859**

1 All ore mined is stockpiled before it's long hauled to the Mill;
2 Include road construction and maintenance; excludes Whale Tail Haul Road
3 Includes the waste rock that is stored in temporary locations
4 Earthworks excluding road and Dike construction

5.2.2.2 *Monitoring Program*

In accordance with NIRB Project Certificate No.008 Condition 7: ***Prior to commencement of mining of the Whale Tail deposit, and in consultation with applicable regulatory agencies, including Natural Resources Canada, the Proponent shall as part of a Mine Waste Rock and Tailings Management Plan that reflects site-specific geological and geochemical conditions. The Plan should be submitted to the NIRB at least 60 days prior to the start of construction of the Waste Rock Storage Facility, with subsequent updates or revisions to the Plan submitted annually thereafter or as may otherwise be required by the NIRB for the life of the Project.***

a) Develop and implement monitoring programs for the Tailings Storage Facility and the Waste Rock Storage Facility at the Whale Tail Pit;

b) Establish thresholds that will trigger the requirement for the Proponent to implement adaptive management strategies to minimize the potential for impacts from these Facilities; and

c) Identify the adaptive management strategies that will be used by the Proponent to minimize the potential for impacts from these Facilities.

The Whale Tail Pit – Waste Rock Management Plan was initially submitted in January 2017 (Version 1) with subsequent updates. The last Version 9 (March 2022) (Appendix 23) was updated to align with the current operation. Agnico Eagle will continue to update the plan on an annual basis during the operation phase of the Whale Tail Project.

5.2.2.3 *Site-specific geotechnical investigations*

In accordance with NIRB Project Certificate No.008 Condition 9: ***The Proponent shall undertake the additional site-specific geotechnical investigations required to identify sensitive land features and to inform final engineering design prior to the construction of project components such as the waste rock storage facility and quarries. Results from these studies should be submitted to the NIRB at least 30 days prior to the start of construction of these facilities, with results or updates submitted annually thereafter as applicable.***

Agnico Eagle have submitted to NIRB on June 4th, 2018 the memorandum Site Specific Geotechnical Studies (Appendix 18 of the 2018 Annual Report) as required by Condition 9. Please refer to this document in for a complete overview of the investigations completed. The below is a summary of the memorandum Site Specific Geotechnical Studies.

Since 2015, many field investigations have been carried out at the Whale Tail Project in order to characterize the field conditions (types of soils encountered, overburden thicknesses, rock quality, etc.). This memorandum outlines the geotechnical studies conducted at five (5) specific locations:

- WRSF and WRSF Dike,
- Quarry;
- Mammoth Dike;
- Whale Tail Dike;
- IVR D-1 Dike.

Field investigation campaigns have been carried out at the WRSF, Mammoth Dike, and quarry areas between 2014 and 2016. The information available as of May 2018 indicates that the bedrock depth varies from 7.2 m within the footprint of the WRSF – Phase 1 area (2.7 m within the footprint of the WRSF Dike), 5.1 m in the Mammoth Dike area and 4.9 m in the quarry area, on average. No further geotechnical data are available in these areas, hence no major sensitive land features have been identified at these locations. The design report of the Whale Tail Dike (WTD) contains all the required information on the field investigations carried out at the WTD, and should be referred to for all the implications of geotechnical investigations for construction.

Geotechnical investigations (test pits and boreholes) were conducted in 2019 and 2020 in the area of the projected IVR D-1 Dike, which will form part of the IVR attenuation pond. The information available indicates that the bedrock depth varies between 2.1 m and 6.7 m below ground surface. hence no major sensitive land features have been identified at these locations. The design report of the IVR D-1 Dike

contains all the required information on the field investigations carried out at the IVR D-1 Dike, and should be referred to for all the implications of geotechnical investigations for construction.

5.3 TAILINGS STORAGE FACILITY MEADOWBANK SITE

5.3.1 Tailings Storage Facility Capacity*

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 9: ***An update on the remaining capacity of the Tailings Storage Facility.***

And

As required by NIRB Project Certificate No.004, Condition 18: ***commit to a pro-active tailings management strategy through active monitoring, inspection, and mitigation. The tailings management strategy will include the review and evaluation of any future changes to the rate of global warming, compliance with regulatory changes, and the ongoing review and evaluation of relevant technology developments, and will respond to studies conducted during the mine operation.***

From 2010 to 2021 a total of 40.5 Mt of dry tailings slurry from the mill had been deposited in the TSF's and the In-Pit Tailings Deposition sites as indicated in Table 5-5. In 2021, a total of 3.5 Mt of dry tailings slurry was deposited in the In-Pit Tailings Deposition sites. A monthly summary of the tailings produced in 2021 is provided in Table 5-6.

Agnico Eagle revised the tailings deposition plan (available in the 2021 Mine Waste Rock and Tailing Management Plan Version 12 presented in (Appendix 22)), to comply with the new LOM produced. The deposition model completed is valid until the end of the operation in 2026. The model is based on the data collected during previous years of operation. The filling scheme for the two cells of the tailings storage facility and the In-Pit Tailings Deposition sites is designed for end of pipe discharge.

Table 5-7 presents the summary of the tailings management strategy in 2021-2026. More information on the tailings deposition modeling is presented in the Waste Rock and Tailings Management Plan.

The main conclusions from the modeling results are:

- The total maximum capacity of the In-Pit Tailings Deposition sites up to 134 masl is estimated at 48.1 Mm^3;
- All tailings deposition for the remainder of the LOM is to be done in Portage Pit E; this greatly simplifies construction and tailings modeling.

Table 5-5 Meadowbank Deposition location (realized)

Date	Deposition location	Tailings deposited (dried tonnes)
February 2010 to November 2014	North Cell	16.0M tonnes
November 2014 to July 2015	South Cell	2.7M tonnes
July 2015 to October 2015	North Cell	1.0M tonnes
October 2015 to August 2018	South Cell	10.8M tonnes
August 2018 to October 2018	North Cell	0.5M tonnes
October 2018 to April 2019	South Cell	1.4M tonnes
April 2019 to July 2019	North Cell	0.6M tonnes
July 2019 to December 2019	Goose Pit	1.4M tonnes
January 2020 to August 2020	Goose Pit	1.4M tonnes
August 2020 to July 2021	Pit E	3.1M tonnes
July 2021 to August 2021	North Cell	0.4M tonnes
August 2021 to December 2021	Pit E	1.2M tonnes

Table 5-6 Meadowbank 2021 Processed Tailings Volume

Month	Total Dry Tailings (tonnes)
January-21	321,759
February-21	290,338
March-21	311,487
April-21	246,082
May-21	313,291
June-21	321,462
July-21	313,418
August-21	331,671
September-21	326,619
October-21	247,126
November-21	332,683
December-21	214,589
TOTAL	**3,570,525**

Table 5-7 Meadowbank Deposition plan and infrastructure construction – summary

Date	Discharge location	Dry tonnes deposited	Comments
January 2022 - December 2026	Pit E	19.2 Mt	• Reclaim water from Pit E (Pit A is the backup reclaim system) • Transfer water from Pit E to Pit A • Transfer water form Goose Pit as required for elevation control

5.3.2 Tailings In-Pit Disposal Meadowbank Site*

As required by NIRB Project Certificate No.004, Condition 87: ***The Proponent shall, prior to the deposition of tailings into the Portage or Goose Pits, file with the Nunavut Water Board (NWB) a report containing updated hydrogeological modelling addressing information gaps as per the NIRB recommendation in the Reconsideration Report and Recommendations to the satisfaction of the NWB. The Proponent shall not deposit tailings into the Portage or Goose pits until the Water Board is satisfied that the modelling addresses the specific information gaps, and that the proponent can manage any identified risks with existing designs and feasible management strategies. The Proponent shall file a report with the Nunavut Water Board, containing updated hydrogeological modelling addressing information gaps, prior to the deposition of tailings into the Portage or Goose pits. Confirmation of the report's filing, conclusions of this report, and any further updates to reporting requirements as determined under the water licence, shall be provided to the NIRB in Agnico Eagle's Annual Report for the project.***

And

As required by NIRB Project Certificate No.004, Condition 20: ***Prior to construction, Cumberland shall identify mitigation measures that can be taken if groundwater monitoring around the tailings facility demonstrates that contamination from tailings has occurred through the fault. Upon drawdown of the North arm of Second Portage Lake, Cumberland shall conduct further tests to assess the permeability of any faults and provide the results to regulators. If doubt remains Cumberland shall seal the fault and conduct further permeability testing and monitoring. Following completion of the permitting process for the In-Pit Tailings Modification Proposal, the Proponent shall provide an update to the NIRB on any fault identified related to either Portage Pit A, Portage Pit E, and Goose Pit, any plans to address groundwater movement considering any fault, and how potential monitoring of tailings and groundwater movement would be undertaken to inform management plans.***

As per Condition 87 (Project Certificate 008), Agnico Eagle has submitted the requested study in advance of the Meadowbank In-pit disposal. Thermal modeling was carried out in early 2018 for the in-pit tailings deposition detailed engineering study at the Goose Pit, Portage Pit A and Portage Pit E up to a 100-year period after closure. The modeling details and results were presented in the "In Pit Tailings Deposition Thermal Modeling Report", dated April 16th, 2018 (Appendix 19 of the 2018 Annual Report). To address NRCan's outstanding comments from the meeting on September 25th, 2018, additional long term thermal modeling beyond 100 years and up to 20,000 years after closure was carried out to evaluate the long

term thermal regime/permafrost conditions for the three pits. Modeling summary of this work is presented in the report 'Meadowbank In-Pit Tailings Disposal - Thermal and Hydrogeological Modeling Update to Address NRCan's Comments' and can be found in Appendix 20 of the 2018 Annual Report. Agnico Eagle have received the Minister approval for the NWB Water License 2AM-MEA1526 Amendment no.3 on May 23rd, 2019.

To ensure the environment protection and evaluate potential risks for tailing migration into groundwater, a feasibility study was conducted by SNC-Lavalin professionals in 2016-2017. The feasibility study included a complementary characterization of the geological structures and permafrost extent on site and the development of a detailed hydrogeological numerical 3D model. Main geological structures (Bay Fault, Second Portage Lake Fault and geological contact with quartzite formation) were identified and implemented in the 3D model with defined hydraulic conductivity and porosity to simulate potential reclaim water seepages out from in-pit tailings pore water. The numerical simulations were designed to represent the worst-case scenarios in terms of contaminant transport within the aquifers. Therefore, a groundwater monitoring program was designed in relation to the groundwater flow and contaminant transport simulation results. The hydrogeological model and solute transport simulations were updated to version 4 during the detailed engineering study completed by SNC-Lavalin and following Natural Resources Canada (NRCan) recommendations addressed during In-Pit Tailings Deposition Project approval process.

In 2018, the latest version of the groundwater numerical model was used to forecast the post closure evolution of chloride concentrations at existing wells, including the four new wells installed in 2018. Breakthrough chloride concentration curves (predicted concentrations of chloride over time at a specific point of the 3D model) were extracted from the model at each monitoring well. Concentration increases over time showed that monitoring wells could intercept the contaminant plume from Pit A, Pit E and Goose Pit after closure over different period and at different concentrations.

As the in-pit deposition project will continue, updates of the hydrogeological model will be performed at closure period using the gathered site data such as ground temperature, hydraulics heads, in-pit tailings pore water quality, etc. Breakthrough curves will be reviewed at this time to adapt the Groundwater Monitoring Plan.

As Goose Pit, Portage Pit A and Portage Pit E are mined out, faults mapping and (location, azimuth, dip, aperture) could be carry out in each current final pit shells. Other former and new structural information can be revisited such as existing televiewer surveys performed in few geotechnical boreholes, specifically in IPD boreholes and in the Central Dike area. Other available investigation results such the pit wall stability analysis or any rock core logging database could be also reviewed to identify main fracture zones or lithology contacts. Relevant information will be integrated to the revised 3D model, at closure period.

The Groundwater Management Plan (Version 11, March 2020 – Appendix 60 of the 2019 Annual Report) is considered to be compliant with the term and condition.

5.4 FREEZEBACK, PERMAFROST, THERMAL MONITORING AND CAPPING THICKNESS

5.4.1 Meadowbank Site

As required by NIRB Project Certificate No.004, Condition 19: ***Provide for a minimum of two (2) metres cover of tailings at closure, and shall install thermistor cables, temperature loggers, and core sampling technology as***

required to monitor tailing freezeback efficiency. Report to NIRB's Monitoring Officer for the annual reporting of freezeback effectiveness.

And

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 18: ***A summary of on-going field trials to determine effective capping thickness for the Tailings Storage Facility and Waste Rock Storage Facilities for the purpose of long term environmental protection.***

The current concept for the TSF landform at closure include a cover system comprised of a minimum 2 m thick layer of NAG rockfill. Since 2015, progressive capping has been ongoing in the TSF North Cell. Agnico Eagle is planning in 2022 to imitate a study to re-affirm or update the design of the TSF landform. The objective of that study will be to reaffirm the applicability of the technology retained for the cover design, clarify the geometry of the landform and define if new structure are required and when they should be put in place. This will be achieved by reviewing the closure concept, updating the concept design based on information gathered through operation, updating the landform surface water management system and updating the monitoring plan.

The current concept for the WRSF landform is to place 4 m of NAG cover to maintain geochemical stability of the facility. Agnico Eagle as initiated in 2022 a study to re-affirm or update the design of the Portage WRSF landform. This will be achieved by reviewing the closure concept, updating the concept design based on information gathered through operation, updating the landform water balance and water quality and updating the monitoring plan. As a first step of this exercise, a review of the closure objectives, design basis, and modelling work done to support the Portage RSF cover system design, as well as regulator comment on the closure cover concept as been done. Refer to the Meadowbank Portage RSF landform closure strategy memo attached to the 2021 Meadowbank Thermal Report (Appendix 24). This memorandum also include a summary of the path forward and expected timeline of the work plan until the final submission of the design of the Portage RSF cover system.

Thermistors are installed within the tailings of the TSF and the waste rock of the Portage RSF. These instruments are used to obtain thermal data within the operation of these structures. Additional instruments will be installed as required to support the design of these landform and to monitor their performance. It is planned in 2022 to install additional near surface monitoring instruments at Portage WRSF to further increase understanding of mechanism that could impact the geochemical stability of the structure.

The thermistors installed within the tailings of the North Cell indicate that tailings freezeback is occurring as most of the tailings are frozen except for a seasonal active layer. The thermistors are indicating that freezeback is occurring within the North Cell TSF. Instruments located near the pond of water of the North Cell are showing a portion of unfrozen tailings at depth with frozen tailings in surface and a progression of the freezing front advancing at depth. Instruments installed in the capping or rockfill structure above tailings show that the active layer remained confined in the waste rock showing the effectiveness of the capping concept.

The thermal prediction of the tailings freezeback made by Golder in 2008 indicated that for the more conservative scenario the entire tailings body would be completely frozen within a period of about 40 years after the end of operations with the freezing front advancing into the foundation beneath the tailings

in the long term. The results are aligned with this modelling with most data showing a quicker freezeback than anticipated. As part of the study to update the TSF landform design, it is planned to perform supplemental modelling as required to demonstrate the effectiveness of the final design and to develop monitoring trigger to ease the evaluation of cover performance against the design intent.

Thermistors installed within the Portage RSF indicate that freezeback is occurring within the Portage RSF structures. However the long term performance of the structure can not only be measured as a function of whether the structure is frozen or not but will also depend on how water move through it. Refer to Meadowbank Thermal Report (Appendix 24) for more information on the review of the available thermistor data. As part of the study to update the Portage RSF landform design, it is planned to perform supplemental modelling as required to demonstrate the effectiveness of the final design and to develop monitoring trigger to ease the evaluation of cover performance against the design intent.

Update on Field Trials

A research project in collaboration with the Research Institute of Mines and Environment (RIME) was initiated in 2014 at Meadowbank. The Research Institute on Mines and Environment, through the NSERC-UQAT Chair on Mine Site Reclamation, is mandated to evaluate the performance of three field experimental cells constructed in 2014 and 2015 on Meadowbank's North Cell TSF. The three experimental cells that were built on Meadowbank's TSF are two insulation covers and one thermal cover with capillary barrier effects (CCBE).

The tested experimental cells are a 2m and a 4m thick insulation cover as well as a 2m thick cover with capillary barrier effects. The cells were built with coarse and fine non-potentially acid generating (NAG) ultramafic waste rock (soapstone) and are instrumented in order to follow their thermal and hydrogeological behaviors.

Also in collaboration with the RIME, in 2016 a laboratory testing program was developed to obtain a good overview of the effects of freeze/thaw (F/T) and wet/dry (W/D) cycles on the soapstone. The developed experimental program is primarily focused towards the evaluation of the resistance to F/T and W/D of the soapstone to be used as cover materials for the TSF and RSF. Testing was completed to evaluate the effects of F/T and W/D on rock cores and rock slabs, the effects of F/T on various soapstone grain size fractions, and the effects of F/T on the permeability of a compacted soapstone layer.

In 2019 the RIME finished collecting and analysing the data on the cover field trial and on the long term performance of ultramafic rockfill as a cover material. Research papers on this subject were published in 2020 and 2021.

The memorandum made by O'Kane on the Meadowbank Portage RSF landform closure strategy (948-228-002) attached to the thermal report as a section that summarize the study made by the RIME and how the information will be useful to re-affirm or update the design of the RSF landform. A similar literature review exercise is planned to be performed as part of the project to update the TSF cover concept.

The full list of all publications produced by the RIME related to the TSF and RSF covers is listed below.

RIME Publication List

Conference papers and abstracts

Awoh, A.S., Bruno, B., Batzenschlager, C., Boulanger-Martel, V., Lépine, T. & Voyer, É. 2016. Design, construction and preliminary results of two insulation covers at the Meadowbank mine. Geo-Chicago 2016: Sustainability, Energy, and the Geoenvironment. American Society of Civil Engineers, Chicago, IL, 12. (TSF)

Boulanger-Martel, V., Bussière, B., Côté, J. & Gagnon, P. 2017. Design, construction, and preliminary performance of an insulation cover with capillary barrier effects at Meadowbank mine, Nunavut. 70th Canadian Geotechnical Conference, Ottawa, Ontario, Canada. (TSF)

Boulanger-Martel, V., Bussière, B. & Côte, J. 2018. Évaluation de modes de restauration pour le parc à résidus miniers de la mine Meadowbank. Rouyn-Noranda 2018 Symposium on mines and the environment. Canadian Institut of Mining, Metallurgy and Petroleum, Rouyn-Noranda, Québec, Canada. (TSF)

Boulanger-Martel, V., Poirier, A., Côté, J. & Bussière, B. 2018. Thermal conductivity of Meadowbank's mine waste rocks and tailings. 71th Canadian Geotechnical Conference, Edmonton, Alberta, Canada. (TSF + RSF)

Boulanger-Martel, V., Bussière, B. & Rossit, M. 2020. Determination of the water retention curve of large particle sizes–high water retention capacities materials. 73th Canadian Geotechnical Conference, Calgary, Alberta, Canada. Abstract no. 300 (TSF)

Special presentations

Boulanger-Martel, V. 2019. Thermal performance of two insulation covers to control sulfide oxidation at Meadowbank mine, Nunavut. Canadian Geotechnical Society graduate presentation award, 72th Canadian Geotechnical Conference, St- John’s, Newfoundland and Labrador, Canada. October 1st 2019. (TSF)

Journal papers

Poirier, A., Bussière, B., Côte, J., & Boulanger-Martel, V. 2019. Thermal behaviour of a waste rock pile located in the Arctic: case study of Meadowbank mine, Nunavut. Paper to be resubmitted to the Canadian Geotechnical Journal in 2021. (RSF)

Boulanger-Martel, V., Bussière, B. & Côte, J. 2021. Resistance of a waste rock unit to freeze-thaw and wet-dry cycles: implications for use in a reclamation cover in the Canadian Arctic. Bulletin of Engineering Geology and the Environment, 80: 41-54. (TSF + RSF)

Boulanger-Martel, V., Bussière, B. & Côte, J. 2021. Thermal behaviour and performance of two field experimental insulation covers to control sulfide oxidation at Meadowbank mine, Nunavut. Canadian Geotechnical Journal. 58(3): 427–440. doi:10.1139/cgj-2019-0616. (TSF)

Boulanger-Martel, V., Bussière, B. & Côte, J. 2021. Insulation covers with capillary barrier effects to control sulfide oxidation in the Arctic. Canadian Geotechnical Journal. doi:10.1139/cgj-2019-0684. (TSF)

Thesis

Boulanger-Martel, V. 2019. Évaluation de la performance de recouvrements miniers pour contrôler le drainage minier acide en climat nordique. Ph. D. thesis, Département des génies civil, géologique et des mines, Polytechnique Montréal. 446 pp. (TSF)

Poirier, A. 2019. Étude du comportement thermique d'une halde à stérile située en conditions nordiques. M.S.A. thesis, Département des génies civil, géologique et des mines, Polytechnique Montréal. 196 pp. (RSF)

Published dataset

Boulanger-Martel, V. 2019. Evolution of the physical and mechanical properties of NPAG waste rock cores with respect to freeze-thaw and wet-dry cycles. Mendeley data, v1, http://dx.doi.org/10.17632/2kzf6grgvb.1 (TSF and RSF)

5.4.2 Whale Tail Site

As required by Water License 2AM-WTP1830 Schedule B, Item 21: ***A summary of on-going field trials to determine effective capping thickness for the Waste Rock Storage Facility for the purpose of long term environmental protection.***

And

As required by NIRB Project Certificate No.008 Condition 10: ***Results of these studies should be submitted to the NIRB at least 30 days prior to the start of construction of these facilities, with subsequent updates submitted annually thereafter. In consultation with applicable regulatory agencies such as Indigenous and Northern Affairs Canada and Natural Resources Canada, the Proponent shall undertake additional site-specific permafrost monitoring, mapping and thermal analysis to:***

- ***Document permafrost conditions, including seasonal thaw and amount of ground ice;***
- ***Inform the detailed design of project infrastructure such as the Whale Tail pit, water management structures, mine site and haul roads, waste rock storage facility, tailings storage facility; and***
- ***Ensure the integrity of such infrastructure is maintained after construction.***

And

As required by NIRB Project Certificate No.008 Condition 14: ***The Proponent shall develop and implement a Thermal Monitoring Plan to identify potential changes in talik distribution and flow paths that may result from the development of project infrastructure, including the Whale Tail pit, dikes, and water impoundments. The Plan should be submitted to the NIRB at least 60 days prior to the start of construction of these facilities, with subsequent updates submitted annually thereafter or as may otherwise be required by the NIRB.***

In 2018, studies were initiated with a consultant (O'Kane) to develop the detailed engineering design for the capping of the Whale Tail RSF. This mandate included thermal modelling to re-assess the capping thickness. This information was also used to inform the instrumentation program to ensure that the WRSF cover performs according to its design intent. These studies were completed in 2019 and provided to the authorities (Landform Water Balance Modelling of Whale Tail and IVR WRSF under RCP8.5., O'Kane Reference No. 948-011-015 rev4 and Amaruq Waste Rock Storage Facility Thermal Cover System Design Basis. O'Kane Reference No. 948-011-M-007 Rev3).

The study "Landform Water Balance Modelling of Whale Tail and IVR WRSF under RCP8.5" completed a landform water balance including estimates of runoff, interflow, and basal seepage rates for different slopes and aspects of the WRSF under the Representative Concentration Pathway 8.5 (RCP8.5) climate change condition. The results of the study provided effective precipitation for the 150-year climate database, provided a surface water balance, concluded that basal seepage will be negligible, determined the interflow distribution by month, and forecasted trends in pore space temperature. Results of the surface water balance support the conceptual model that the hydraulic regimes are expected to be different based on the North and South aspect. Generally, higher net radiation results in greater evaporation and soil heating. With more evaporation, less water is available to runoff and/or infiltrate. Higher net radiation will also result in more sublimation, as more energy is available to convert snow into water vapour.

The study "Amaruq Waste Rock Storage Facility Thermal Cover System Design Basis" goes over the cover system design, the surface water management design, design drawings, construction specifications, and the Operations, Maintenance and Surveillance Manual for the WRSF cover systems.

Agnico Eagle has documented permafrost conditions on site with thermistors placed at strategic locations recommended by the different designers and consultants involved in the project. The Thermal Monitoring Report (Appendix 25) presents a summary of the thermal monitoring program at Whale Tail Pit Project from the period of 2016 to 2021 along with interpretation of the thermistor results.

Agnico Eagle updated the Whale Tail Thermal Monitoring Plan (Version 4) in March 2022 and it is presented in Appendix 25.

The data presented in Appendix A of the Thermal Monitoring Report informed and will continue to inform the detailed design of the project infrastructure such as the Whale Tail Pit, water management structures, mine site and haul roads, and the waste rock storage facility.

At the WRSF thermistors are showing thermal behaviour along the expected trend (permafrost aggradation) and the instruments are now covered by waste rock. The analysis of this data against adaptive monitoring trigger indicate that the current thermal performance of the WRSF is as expected.

Refer to the 2021 Whale Tail Thermal Monitoring Report (Appendix 25) report for a discussion and interpretation of the thermal data for the Dike and Pit Area.

The detailed analysis of the thermal monitoring of the dikes is presented in the 2021 Annual Geotechnical Inspection Report (Appendix 9). Table 5-8 below presents the sections of this report associated with each structure. Agnico Eagle will refer the reader to the 2021 Annual Geotechnical Inspection Report for a complete review of the results.

Table 5-8 Whale Tail Thermal Data Interpretation Sections in the 2021 Annual Geotechnical Inspection

Structure	Section in the 2021 Annual Geotechnical inspection
Whale Tail Dike	4.1.2.2
WRSF Dike	4.2.2
Mammoth Dike	4.4.2
IVR Dike D1	4.3.2

SECTION 6. WASTE MANAGEMENT ACTIVITIES

6.1 GENERAL WASTE DISPOSAL ACTIVITY

6.1.1 Meadowbank Site

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 11: ***A summary report of general waste disposal activities including monthly and annual quantities in cubic metres of waste generated and location of disposal.***

And

NIRB Project Certificate No.004 Commitment 74***: Provide annual report of the quantity and type of waste generated at the mine site distinguishing landfilled, recycled and incinerated streams.***

6.1.1.1 Incinerator

A monthly summary of the amount of waste transferred to the incinerator in 2021 is included in Table 6-1. A total of 3,450.7 m^3 were incinerated. More details regarding quantities incinerated can be found in Section 6.2.1.

Table 6-1 Meadowbank 2021 volume of waste transferred to incinerator

Month	Volume of waste send to incinerator (m^3) *
January	265.4
February	210.1
March	331.8
April	320.7
May	243.3
June	331.8
July	331.8
August	342.9
September	309.7
October	221.2
November	309.7
December	232.3
TOTAL	**3,450.7**

**Volume included waste from Whale Tail Project*

6.1.1.2 Landfill

Agnico Eagle estimated from the engineering surveys that approximately 4,905 m^3 of waste was landfilled at Meadowbank in 2021. Landfill #11 is currently in use. Table 6-2 below indicates the volume of waste in cubic meter (m^3) disposed of in each sub-landfill from 2012 to 2021 and Figure 14 indicates the location

of each sub-landfill used to date. The volume of waste landfilled from the start of the project is approximately 118,788 m^3. This is based on the engineering surveys done at each sub-landfill. It should be noted that this amount is overestimated as some of the surveys were completed once the landfill capping were done. The waste was not always compacted in the landfill when surveyed causing volumes to be overestimated.

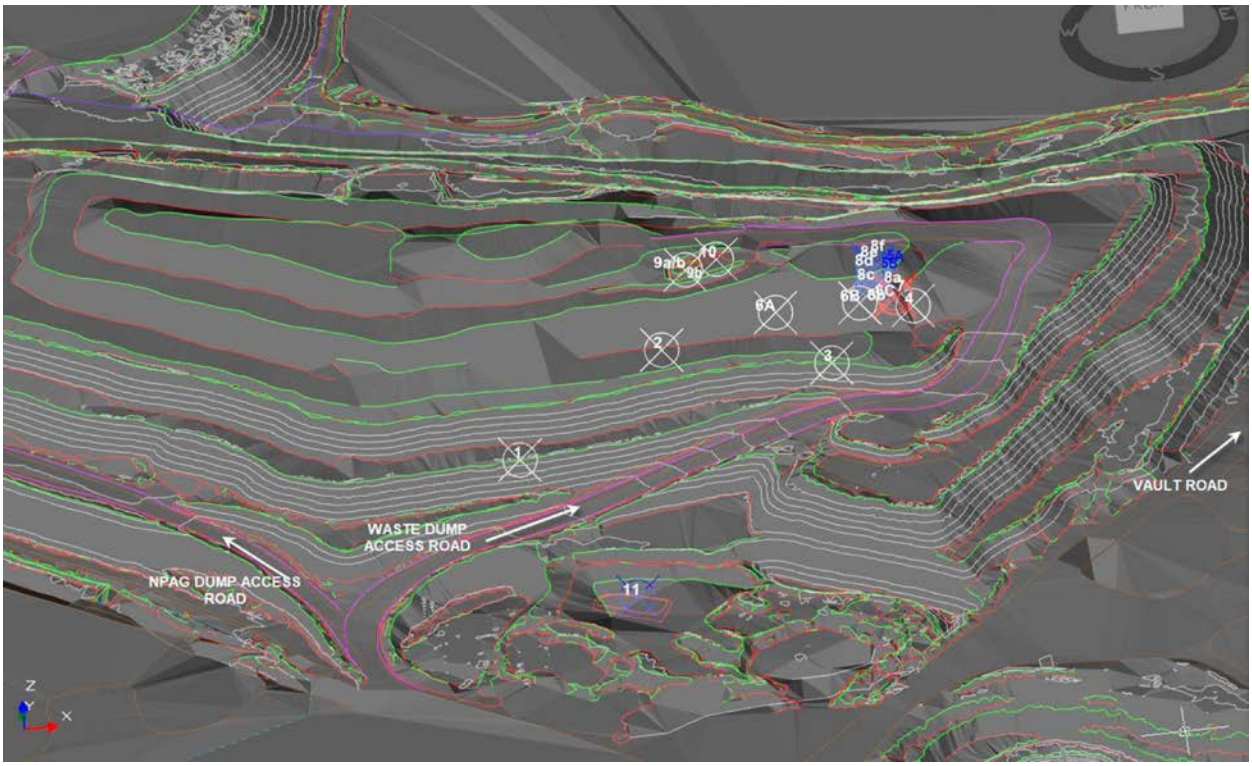
In December 2021, the Meadowbank landfill burned from an undetermined cause. The volume of waste of the end of 2020 (1,691 m^3) and 2021 (4,905 m^3) were added to the table below as indicative purpose to obtain the total volume disposed over the years, as those volumes do no longer exist due to the fire event. A volume of 308 m^3 was remaining in the landfill #11 at the end of 2021.

Table 6-2 Meadowbank volume of waste disposed in each sub-landfill (from survey)

Landfill	Coordinates (UTM)			Volume (m^3)	Date covered
	Northing	Easting	Elevation		
#1	7215715.6	638601.6	160	3,650	December 12, 2012
#2	7215795.8	638711.4	186	840	February 27, 2013
#3	7215743.1	638827.8	195	1,656	May 14, 2013
#4	7215796.5	638890.9	200	9,507	January 19, 2014
#5A	7206586.1	643115.9	210	3,870	November 30, 2014
#5B	7206586.1	643115.9	210	2,768	March 13, 2015
#6A	7215788.8	638793.3	212	278	March 21, 2015
#6B	7215789.3	638853.1	212	3,260	September 5, 2015
#6C	7215790.8	638878.1	212	9,290	May 20, 2016
#7	7215790.8	638878.1	214	4,560	December 20, 2016
#8a	7215790.1	638878.1	217	17,864	November 30, 2017
#8b	7215790.1	638878.4	217	2,709	January 27, 2018
#8b	7215790.1	638878.4	217	13,019	June 1, 2018
#8c	7215800.7	638865.4	221	2,800	October 1,2018
#8d	7215800.7	638865.4	227	9,377	April 4, 2019
#8e	7215800.7	638865.4	232	8,482	August 1, 2019
#8f	7215800.7	638865.4	235	12,175	September 2, 2019
#9a	7215823.5	638733.9	233	350	March 28, 2020
#9b	7215823.5	638733.9	235	4,079	March 28, 2020
#10	7215829.7	638756.6	235	1,350	November 17, 2020
#11	*7215539.9*	*638667.78*	*150*	*1,691**	*Burned in 2021*
#11	*7215539.9*	*638667.78*	*150*	*4,905**	*Burned in 2021*
#11	7215539.9	638667.78	150	308	Active
			Total	**118,788**	

**Volume added to the volume of waste disposed to the landfill. See text above for more information.*

Figure 14 Meadowbank sub-landfill location



6.1.1.3 *Hazardous and non-hazardous waste*

In 2021, a total of 148 (20 foot) sea containers hazardous waste (610.87 tonnes) were transported to Solva-Rec Environnement (Solva-Rec), Terrapure, Metaux Depot and RPM ECO. In addition, 44 sea containers (20 feet) and 5 sea containers (40 feet) containing used tires (243.32 tonnes) were emptied at the port and transported to Revalorisation TPOL. A total of 15 sea containers containing domestic garbage or expired food waste (81.14 tonnes) were transported to Enfouibec. These companies are all registered companies or disposal facilities located in the Province of Quebec. This amount of sea cans does not include the scrap metal (1,132 tonnes).

The sea cans were shipped from the spud barge at Agnico Eagle's Baker Lake marshalling facilities to Bécancour (Quebec) by sealift. These materials were transported under Waste Manifest #'s ES71313-1 (Appendix 26) , in accordance with the GN Guidelines for the shipment of such waste.

A description of the types of waste, packaging and volume is provided in Table 6-3. The volume of hazardous and non-hazardous waste disposed by sealift in 2021 are for Meadowbank and Whale Tail Site. The waste to be disposed off-site from Whale Tail Site transit by Meadowbank during the year, there is no possibility to make any distinction between both site.

Table 6-3 Meadowbank and Whale Tail 2021 waste shipped to licensed hazardous waste companies

Description	UN	Class	P. G.[1]	Regulated under T.D.G.A.[2]	Quantity	Container Type and Capacity	Unit Capacity	Volume (L)	Weight (kg)	Disposal Method
Waste, Aerosol, flammable	UN 1950	2.1	-	yes	7	Drum	205 L	1,435	274	Cleaning and metal recycling
Waste, Aerosol, flammable	UN 1950	2.1	-	yes	1	Quatrex	765 L	765	471	Cleaning and metal recycling
Waste, Amine liquid corrosive -hardener	UN 2735	8	II	yes	5	Drum	205 L	1,025	630	Incineration
Waste, Batteries, Wet - Lead Batteries	UN 2794	8	-	yes	24	Quatrex	765 L	18,360	11,062	Neutralization and metal recycling
Waste, Diesel Fuel	UN 1202	3	III	yes	18	Drum	205 L	3,690	2,240	Energy recovery
Waste, Diesel Fuel	UN 1202	3	III	yes	20	Tote	1,000 L	20,000	15,200	Energy recovery
Empty drum, last residue contained, Nitric Acid	UN 2031	8	II	yes	123	Drum	205 L	25,215	1,838	Cleaning and drum recycling
Environmentally Hazardous Substances, solid (LEAD) - Lab sample	UN 3077	9	III	yes	39	Quatrex	765 L	29,835	3,882	Secure landfill
Waste, Gasoline	UN 1203	3	II	yes	3	Drum	205 L	615	487	Energy recovery
Waste Labpack Acidic, Inorganic - Hydrofluoric Acid and Phosphoric acid	UN 3264	8	II	yes	1	Drum	205 L	205	36	Neutralization and incineration
Waste, Methanol	UN 1230	3 (6.1)	II	yes	2	Drum	205 L	410	382	Energy recovery
Waste, Methanol	UN 1230	3 (6.1)	II	yes	1	Tote	1,000 L	1,000	285	Energy recovery
Waste, Petroleum distillates	UN 1268	3	III	yes	4	Drum	205 L	820	211	Energy recovery
Waste, Toxic liquid, organic, Methylene Diisocyanate MDI	UN 2810	6.1	III	yes	3	Drum	205 L	615	430	Incineration
Empty plastic pails, last residue cont. Oil/grease	N/R[3]	N/R	-	no	5,173	Pail (20 L)	20 L	103,460	5,191	Cleaning and plastic recycling
Empty drum, last residue contained oil/grease/Antifreeze	N/R	N/R	-	no	510	Drum	205 L	104,550	9,068	Cleaning, reconditioning or metal recycling
Empty tote-tank, Residue last contained Oil/Antifreeze/Dust Suppressants, etc.	N/R	N/R	-	no	212	Tote	1,000 L	212,000	15,394	Cleaning, reconditioning or metal recycling
Oily contaminated solid	N/R	N/R	-	no	328	Drum	205 L	67,240	28,112	Energy recovery
Oily contaminated solid	N/R	N/R	-	no	620	Quatrex	765 L	474,300	106,618	Energy recovery
Oily contaminated solid	N/R	N/R	-	no	1	Tote	1,000 L	1,000	109	Energy recovery
Waste, Antifreeze - concentration more than 30%	N/R	N/R	-	no	70	Tote	1,000 L	70,000	60,010	Antifreeze recycling
Waste, contaminated empty pails and cans	N/R	N/R	-	no	10	Quatrex	765 L	7,650	2,159	Cleaning and metal or plastic recycling
Waste, Diesel exhaust fluid, D.E.F.	N/R	N/R	-	no	2	Drum	205 L	410	366	Incineration
Waste, Grease	N/R	N/R	-	no	6	Drum(60L)	60 L	360	238	Solidification and secure landfill
Waste, Grease	N/R	N/R	-	no	294	Drum	205 L	60,270	29,857	Solidification and secure landfill
Waste, Kitchen grease	N/R	N/R	-	no	36	Drum	205 L	7,380	7,085	Energy recovery
Waste Oil	*Used Oil acceptable for recycling or energy recovery*[4]				55 247	Drum Tote	205 L 1,000 L	176,563	159,074	Oil recycling or energy recovery
	Oily water mixed with waste oil							23,039	23,039	Water treatment and oil recycling
	Antifreeze < 30 % + water mixed with waste oil							26,347	26,347	Incineration
Waste, Oil filters	N/R	N/R	-	no	169	Drum	205 L	34,645	20,916	Energy recovery and metal recycling
Waste, Oil Filters	N/R	N/R	-	no	13	Quatrex	765 L	9,945	4,025	Energy recovery and metal recycling
Waste, Oil Filters	N/R	N/R	-	no	14	Tote	1,000 L	14,000	6,217	Energy recovery and metal recycling

Description	UN	Class	P. G.[1]	Regulated under T.D.G.A.[2]	Quantity	Container Type and Capacity	Unit Capacity	Volume (L)	Weight (kg)	Disposal Method
Waste, Oily sludge and debris	N/R	N/R	-	no	2	Drum	205 L	410	522	Solidification and secure landfill
Waste, Oily sludge and debris	N/R	N/R	-	no	6	Tote	1,000 L	6,000	5,572	Solidification and secure landfill
Waste, Oily water	N/R	N/R	-	no	3	Drum	205 L	615	463	Water treatment and oil recycling
Waste, Oily water	N/R	N/R	-	no	62	Tote	1,000 L	62,000	61,782	Water treatment and oil recycling
Waste, Tar, Solid	N/R	N/R	-	no	7	Drum	205 L	1,435	1,279	Secure landfill
							Total	**1,567,609**	**610,871**	

1. Packaging Group as per TDGA
2. Transportation of Dangerous Good Act, Canada 1992, S.C. 1992, c. 34
3. Not regulated under TDGA
4. As per Schedule 6 of Regulation Respecting Hazardous Materials (CQLR, Q-2, r. 32)

In 2021, Agnico Eagle generated approximately 9,206 tonnes of waste for Meadowbank and Whale Tail Site. This represents 67.5% of general waste disposed in the landfill, 8.5% of organic waste disposed in the incinerator/composter or off-site, 17.6 % of waste recycled on and off-site, and 6.4% of industrial/hazardous waste sent to an approval facility off-site. As shown of in Table 6-4 below the percentage of waste recycle, disposed on site or off-site are in the same range as previous years.

Table 6-4 Percentage of waste disposed from 2015-2021

Waste	2015 Weight (tonnes)	2016 Weight (tonnes)	2017 Weight (tonnes)	2018 Weight (tonnes)	2019 Weight (tonnes)	2020 Weight (tonnes)	2021 Weight (tonnes)	2015 Total waste (%)	2016 Total waste (%)	2017 Total waste (%)	2018 Total waste (%)	2019 Total waste (%)	2020 Total waste (%)	2021 Total waste (%)	Disposal Recycling location
General	8,561	8,672	8,403	11,073	24,339[4]	7,505	6,325[1]	74.9	76.5	78.7	75.7	87.8	69.4	67.5	Landfill On-site disposal
Organic	545	541	557	924	810	700	796[2]	4.8	4.8	5.2	6.3	2.9	6.5	8.5	Incinerator On-site/off-site disposal
Industrial/ Hazardous[3]	289	161	243	483	470	622	600	2.5	1.4	2.3	3.3	1.7	5.8	6.4	Off-site disposal + recycling
Waste oil	358	280	280	337	210	162	263	3.1	2.5	2.6	2.3	0.8	1.5	2.8	On-site recycling
Steel	1,449	1,550	1,097	1,690	1,813	1,657	1,132	12.7	13.6	10.3	11.5	6.5	15.3	12.1	Off-site recycling
Wood	88	55	0	0	0	0	0	0.8	0.5	0	0	0	0	0	Baker lake recycling
Batteries	38	17	17	19	19	31	11	0.3	0.1	0.2	0.1	0.1	0.3	0.1	Off-site recycling
Tire	97	67	81	110	63	136	243	0.9	0.6	0.8	0.8	0.2	1.3	2.6	Off-site recycling
TOTAL	**11,425**	**11,343**	**10,678**	**14,636**	**27,724**	**10,813**	**9,370**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	

1. *2021 - Volume of general waste sent to Meadowbank Landfill is 3,435 tonnes and to Whale Tail Landfill is 2,890 tonnes*
2. *2021 - Volume of organic waste sent to the Meadowbank Site incinerator (493 tonnes), composter (222 tonnes) and to a registered down south company (81 tonnes).*
3. *Industrial/ Hazardous waste does not include the batteries weight. Including waste oil sent off-site.*
4. *Higher volume of general waste disposed of in 2019 compared to previous are mainly due to the construction and development of the Whale Tail Project and to the fact the that volume reported is from October 2018 to January 2020.*

Several projects for waste reduction/recycling were undertaken or were ongoing in 2021 at Meadowbank Complex:

- Recycling of used protective personnel equipment (PPE)
    - The objective of the Used PPE Project is to provide a second life to reusable PPEs. With the collaboration of all departments, Agnico Eagle collected used PPE around the Meadowbank Complex to create a used PPE inventory. This used PPE is now reused instead of ordering new equipment and disposing of reusable materials in the landfill. This initiative has been successful in reducing waste sent to landfill and as an overall cost saving measure.
- Waste oil recycling plan
    - Agnico Eagle has an existing waste oil reuse plan. In 2021, Agnico Eagle reused approximately 298.9 m^3 of waste oil as a fuel source in the on-site incinerator (79.6 m^3) and in waste oil heaters (219.3 m^3). Table 6-9 provides a breakdown of the volume of waste oil incinerated by month. Agnico Eagle is planning on continuing to reuse waste oil produced in 2021 during 2022.
- Steel Recycling
    - A total of 1,132 tonnes of steel was packaged and transported south for recycling. This material was removed from our solid waste stream and not landfilled on site.
- Aluminum Recycling
    - In 2020 and 2021, aluminum pop cans were not donated to local groups given the restriction related to COVID-19 as it was done in previous years. It is anticipated that these will be donated in 2022 to a local charity if restriction related to the pandemic situation are lifted or shipped south for recycling.
- Battery recycling
    - In 2021, 11.06 tonnes of batteries were shipped south and recycled in an accredited facility.
- Tire recycling
    - In 2021, 243.32 tonnes of scrap tire were shipped south and recycled in an accredited facility.

6.1.1.4 *Composter*

The Meadowbank composter was in operation in 2021 and continue to contribute to optimizing waste management by reducing the amount of waste going to the incinerator.

In 2021, 113,170 kg of cardboard and 108,662 kg of food waste was loaded into composter. A total of 115 totes of compost (Table 6-5) were produced and transferred to the Meadowbank landfill as per the approved Incinerator Waste Management Plan.

Table 6-5 2021 Compost totes produced

Month	Quantity of totes produced
January	0
February	3
March	11
April	12
May	12
June	19
July	11
August	12
September	10
October	6
November	11
December	8
Total	**115**

6.1.2 Whale Tail Site

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 14: ***A summary report of all general waste disposal activities including monthly and annual quantities in cubic metres of waste generated and location of disposal***

As detailed in Section 6.1.1 above, all hazardous and non-hazardous waste that required an off-site disposal to an accredited facilities for recycling or disposal according to regulations are sent to Meadowbank Site by the Whale Tail Haul Road. From there, the hazardous and non-hazardous waste are segregated along with the waste generated by the Meadowbank Site. There is no distinction possible between the site provenance of the waste. A description of the types of waste, packaging and volume is provided in Table 6-4.

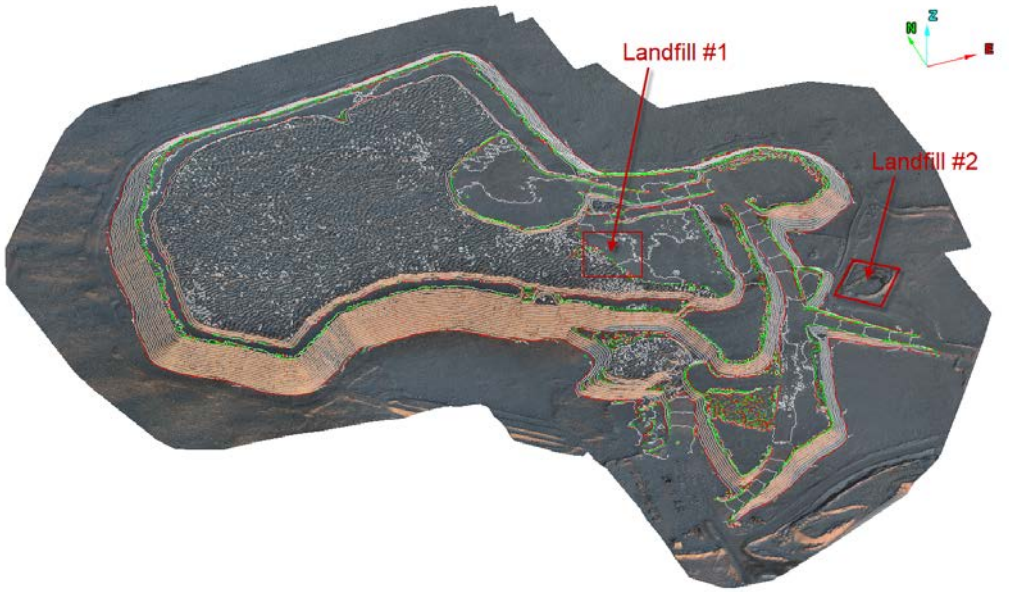
All inert waste that can be landfilled consist primarily of plastics, fiberglass, wood, cardboard, rubber, clothing and some metal that was not recycled. Landfillable waste were transported via the Whale Tail Haul Road to the Meadowbank Landfill up to October 2019. After October 2019 and following the approval from the NWB to operate a landfill at Whale Tail, waste were no longer sent to Meadowbank but were disposed of directly on site.

Table 6-6 below indicates the volume of waste in cubic meter (m^3) disposed in Whale Tail Landfill starting October 2019 and Figure 15 indicates the location used to date. The volume of waste landfilled since 2019 is 12,115 m^3. This is based on the engineering survey done at each landfill. From that amount, Agnico Eagle landfilled 4,128 m^3 in 2021. Landfill #2 is currently in use.

Table 6-6 Whale Tail Volume of waste disposed in landfill (from survey)

Landfill	Coordinates (UTM)			Volume (m^3)	Date Covered
	Northing	Easting	Elevation		
#1	7256069.069	605637.584	168	6,151	December 6, 2020
#2	7256087.459	606021.081	171	5,964	Still active
			Total	**12,115**	

Figure 15 Whale Tail landfill location



There is no incinerator at Whale Tail in 2021 and thus all domestic wastes were sent to the Meadowbank incinerator/composter. There is no distinction possible between the volume site provenance of domestic waste in 2021.

6.2 INCINERATOR

6.2.1 Meadowbank Site

As per NWB Water License 2AM-MEA1530 Schedule B, Item 12: ***Report of Incinerator test results including the materials burned and the efficiency of the Incinerator as they relate to water and the deposit of waste into water.***

And

NIRB Project Certificate No.004 Condition 72: ***On-site incinerators shall comply with Canadian Council of Ministers of Environment and Canada-Wide Standards for dioxins and furan emissions, and Canada-wide Standards for mercury emissions, and AEM shall conduct annual stack testing to demonstrate that the on-site incinerators are operating in compliance with these standards. The results of stack testing shall be contained in an annual monitoring report submitted to GN, EC and NIRB's Monitoring Officer.***

The incinerator was in operation throughout 2021. Based on the data recorded, approximately 15% of the material incinerated was food waste; the other 85% was dry waste comprised of food containers, cardboard boxes and paper. In 2021, a total of 3,450.7 m^3 of waste burned in the incinerator. The location of the incinerator is highlighted in Figure 1.

In 2021, the incinerator was in operation for 312 days. The average temperature in the secondary chamber reached the minimum 1,000°C for every completed burn cycle. In 2020, 2 events did not reach the 1,000°C, representing 0.68 % of the total burn. In 2018 and 2019 this issue was reported in 2.36% and 19% of burns respectively. This significant decrease since 2018 clearly shows that the actions implemented by Agnico Eagle to improve overall performance of the incinerator to maintain the appropriate temperature of 1,000°C in the secondary chamber throughout the entire burn cycle produced clear results.

Continued actions in 2021:

- Average temperature readings are automatically recording from the HMI into the daily reports instead of manual instantaneous readings from operators. Reducing the risk of human error and providing a more accurate account of the temperature in the secondary chamber during the burn cycle;

- The temperature in the secondary chamber continued to be set at 1,050°C to ensure the temperature does not fall below the recommended 1,000°C at any point in the burn cycle;

- The HMI is providing the temperature trends throughout the burn cycle.

Some maintenance work was completed on the primary and secondary chambers in 2021 to improve the overall performance. On the primary chamber, replacement of the back wall and roof refractory sections, primary burner replacement and insulation work were performed. On the secondary chamber, insulation maintenance was performed. Chimney repaired was also performed.

In 2021, Agnico Eagle continued to conduct weekly regular inspections at the incinerator. During the inspection, workers were reminded regularly of the importance of maintaining a proper and detailed log of the incinerator. Staff on site are also reminded regularly on proper waste segregation through departmental toolbox meetings and site wide communications.

6.2.1.1 *Stack testing*

As per discussions with Environment and Climate Change Canada, the frequency of stack testing changed in 2012 to every other year. Results from the 2014 test indicated that mercury level average exceeded the Environment Canada guideline (Refer to 2014 and 2015 Annual Reports for more information). Investigation was performed to determine the potential sources of this exceedance. Although Agnico Eagle had an alkaline battery recycling program, the investigation revealed the possibility of a significant volume of batteries disposed of along with regular solid waste destined for the onsite incinerator. As a result, Agnico Eagle committed to conduct confirmatory stack testing in the summer of 2015 and implemented a comprehensive site wide communication program to reinforce the requirements of the battery recycling program and proper waste segregation.

The number of Quatrex of batteries backhauled in 2021 (Table 6-7) confirms the ongoing segregation efforts are effective at reducing the number of batteries accidently burnt in the incinerator.

Toolbox meetings on waste management still continue to be held with different departments to continue education and improve awareness of employees and contractors.

Table 6-7 Number of Quatrex of batteries backhauled 2013-2021

Year	Quantity (unit)
2013	29
2014	12
2015	34
2016	20
2017	20
2018	47
2019	36
2020	69
2021	24

In 2020, Agnico Eagle requested a revised stack testing frequency to a biennial schedule following five year of compliance (from 2015 to 2019). On December 3rd, 2020, Agnico Eagle received the 2019-2020 Board Recommendation recommending that the stack testing continue to be conduct annually based on the guidance provided by ECCC, and therefore stack testing was not completed in 2020. NIRB recommended to continue to do annual stack testing in 2021.

In accordance with Agnico Eagle's Incinerator Waste Management Plan (Version 9, March 2022), annually stack testing program is to be conducted.

Partial incinerator stack testing program was conducted from September 16th to 21st at the Meadowbank facility, as required by Condition 72 of the NIRB Project Certificate No. 004. During this program, only two of three tests for particulate matter, metals, hydrochloric acid gas, carbon monoxide, oxygen, carbon dioxide, sulphur dioxide and oxides of nitrogen were able to be conducted due to logistical issues. Agnico Eagle sent a letter to the NIRB on October 6th to seek guidance as to whether the two duplicate samples taken in September will be considered valid if the remaining of the sampling are performed in November.

NIRB responded on October 27th; that "The NIRB does not specify the methods to complete the stack testing, therefore it is the responsibility of the Proponent to demonstrate compliance with these Terms and Conditions should the methods require modifying". NIRB suggested that further negotiation of this detail should be completed with ECCC.

Agnico Eagle sent a communication to ECCC and on November 8th, ECCC mentioned that they "reviewed the information provided in the November 1st, 2021, letter and finds it acceptable for Agnico Eagle to run a second and final program to conduct a third test for Particulate Matter & Metals, HCl, Carbon Monoxide, O2, CO2, SO2, and NOx, as well as triplicate test for dioxins/furans in November."

It was also mentioned in the letter that ECCC does not regulate air quality emissions at this time, but does provide guidance to the Nunavut Impact Review Board when expert advice is requested.

Stack testing program was completed from November 20th to 28th. The 2021 Source Emission Survey Report completed by Bureau Veritas is provided in Appendix 52. Results from the 2021 test indicated that the applicable mercury guideline was met for all the test. However, the application standards for dioxins and furans were exceeded in test 3 and 4 and for the overall average. Table 6-8 below provide the summary results for the stack testing from 2014 to 2021. Mercury and dioxins and furans guidelines are referenced from the Government of Nunavut Environmental Guideline for the Burning and Incineration of Solid Waste and the Canadian Council of Ministers of Environment Canada-Wide Standards for mercury emissions.

Table 6-8 Meadowbank 2014- 2021 Stack Testing Results

Year	Mercury		Dioxins and Furans	
	(µg/Rm^3 @ 11% v/v O_2)		(ng/Rm^3 @ 11% v/v O_2)	
	GN Standard	**Stack Testing Results (Average)**	**GN Standard**	**Stack Testing Results (Average)**
2014	20	64.09	0.08	0.054
2015		<0.22		0.021
2016		<0.46		0.033
2017		3.8		0.022
2018		<0.19		0.01
2019		0.45		0.027
2020		No stack testing program completed		No stack testing program completed
2021		1.33		0.286

R: Reference conditions 25 °C and 101.3 kPa on a dry basis
Grey cells represent exceedances

Following receipt of the dioxins and furans exceedance, Agnico Eagle notified the NIRB on March 31st, 2022 of the non-compliance. Due to laboratory delay in processing the samples, the results were not communicated to Agnico Eagle before March 2022.

Investigation of the 2021 dioxins and furans exceedance is currently ongoing to identify the potential root causes and to define the future steps to be taken in order to prevent any exceedance. As of now, Agnico Eagle investigate the below potential causes:

- During the November sampling, various freezing issues were encountered by Bureau Veritas on several of the November testing dates due to ambient temperatures at the time of sampling. The freezing complications were identified by Bureau Veritas and troubleshooting was conducted either in the morning or during the day before each test was started throughout the November Source Emission Survey test dates. Freezing complications were not encountered during the September testing period. Although the Bureau Veritas sampling team encountered sampling train freezing complications during the November testing period, Bureau Veritas finds the results to be accurate and representative of the sampling conditions during testing. All sampling, analysis, and QA/QC for this project was performed by Bureau Veritas and complies with the applicable protocols (US EPA Code of Federal Regulations and ECCC Reference Method EPS 1/RM/8). The results are therefore considered to be representative of the source during the testing period.

- Operational parameters of the incinerators during the November sampling days were analysed and didn't show any abnormal operations. The temperatures in the secondary chamber reach at least the 1,000C required and the operational graphics show no outstanding condition that will prevent the incinerator from normal operation.

- Review of incinerators maintenance works performed in 2021 are ongoing.

- Review of incinerator designs specifications are currently ongoing along with the review of a potential impact from a change in the waste stream.

- Agnico Eagle also requested external consultant to provided guidance on the potential causes of the exceedance – discussion will take place in April 2022.

The next stack testing is scheduled for 2022.

6.2.1.2 *Ash Monitoring*

In 2021, Agnico Eagle continue to monitored the ash quality on a monthly basis as per due diligence of the exceedance that happened in October 2020. As the ash results were below the regulatory guideline in 2021 (Table 6-9), Agnico Eagle will reduce the testing frequency in 2022 and will return to a frequency more align with the with the Incinerator Waste Management Plan, which stipulated twice a year.

Table 6-9 Meadowbank 2021 incinerator ash monitoring

Parameter	Guideline for Industrial Waste Discharge*	Sample Date / Unit	1/10/2021	2/6/2021	3/7/2021	4/9/2021	5/9/2021	6/7/2021
Arsenic	2.5	mg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.6
Barium	100	mg/L	0.4	0.4	< 0.2	0.2	< 0.2	0.2
Cadmium	0.5	mg/L	< 0.3	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chromium	5	mg/L	2.7	1.4	0.7	2.3	2.8	< 0.1
Lead	5	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Mercury	0.1	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Silver	5	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Zinc	500	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	6.4

Parameter	Guideline for Industrial Waste Discharge*	Sample Date / Unit	7/3/2021	8/1/2021	9/5/2021	10/18/2021	11/2/2021	12/17/2021
Arsenic	2.5	mg/L	< 0.2	1.6	0.0322	< 0.0005	< 0.0005	0.8535
Barium	100	mg/L	0.5	0.2	0.2159	0.4089	< 0.0005	1.4345
Cadmium	0.5	mg/L	< 0.05	< 0.05	< 0.0001	< 0.0001	< 0.0001	0.0088
Chromium	5	mg/L	1.5	0.3	2.6669	2.035	< 0.0006	0.0111
Lead	5	mg/L	< 0.1	< 0.1	< 0.0005	0.0006	< 0.0005	< 0.0005
Mercury	0.1	mg/L	< 0.001	< 0.001	0.00003	0.00006	< 0.00002	< 0.00002
Selenium	1	mg/L	< 0.1	< 0.1	0.002	0.007	< 0.001	0.006
Silver	5	mg/L	< 0.01	< 0.01	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Zinc	500	mg/L	< 0.1	< 0.1	< 0.001	0.007	< 0.001	10.761

** Government of Nunavut Environmental Guideline for Industrial Waste Discharges (D of SD, 2011).*

6.2.1.3 *Waste Oil Monitoring*

In 2021, a total of approximately 298.9 m^3 of waste oil was burned in the incinerator and/or in the furnace. Volume of waste oil reused as fuel in 2021 are presented in Table 6-10.

Table 6-10 Meadowbank 2021 volume of waste oil incinerated and consumed

Month	At the incinerator (m^3)	In the furnace at Cat Dome, Blue coverall and SS Coverall) (m^3)
January	9.6	0
February	6	49
March	6.6	48.6
April	12	44
May	4.4	30
June	7.4	9
July	7	0
August	8	0
September	7.2	5
October	2.8	12
November	4.5	11.6
December	4.2	10.1
Total	**79.6**	**219.3**

No sampling frequency for waste oil is specified in the GN Environmental Guideline for Used Oil and Waste Fuel (2012). To ensure compliance with the Guideline parameters, Agnico Eagle will sampled the waste oil feedstock twice a year. These data are presented in Table 6-11.

In 2021, Agnico Eagle collected one waste oil sample per month. All metals and PCB parameters have meet the GN Environmental Guideline. It should be noted that for six samples the detection limits for polychlorinated biphenyls were above the maximum allowable concentration.

Table 6-11 Meadowbank 2021 Waste Oil monitoring

Parameter	Maximum Allowable Concentration*	Sample date / Unit	1/10/2021	2/6/2021	3/7/2021	4/9/2021	5/9/2021	6/7/2021
Flash Point	≥ 37.7	C	104	128	128	74	133	122
Total Halogen	1000	mg/kg	28	20	< 2	24	102	105
Cadmium	2	mg/kg	<1**	<1**	0.009	0.016	0.02	0.022
Chromium	10	mg/kg	<1**	<1**	0.462	0.35	1.64	0.46
Lead	100	mg/kg	6**	1**	0.105	0.862	0.974	4.08
Polychlorinated Biphenyls	2	mg/kg	< 10	< 40	< 1	< 40	< 4	< 2

Parameter	Maximum Allowable Concentration*	Sample date / Unit	7/3/2021	8/16/2021	9/5/2021	10/24/2021	11/2/2021	12/19/2021
Flash Point	≥ 37.7	C	62	160	81	118	86	>80
Total Halogen	1000	mg/kg	133	4	30	26	10	80
Cadmium	2	mg/kg	0.005	0.016	0.032	0.037	< 0.004	< 1
Chromium	10	mg/kg	0.19	0.09	0.98	0.63	0.36	< 1
Lead	100	mg/kg	0.114	0.713	1.11	0.82	0.142	< 5
Polychlorinated Biphenyls	2	mg/kg	< 2	< 1	< 10	< 10	< 1	< 1

** GN Environmental Guideline for Used Oil and Waste Fuel (GN, 2012)*
*** Reported as dissolved fraction*

6.2.2 Whale Tail Site

As per Water License 2AM-WTP1830 Schedule B, Item 15: ***Reporting of Incinerator test results including the materials burned and the efficiency of the Incinerator in relation to effects on Water and the potential Deposit of Waste into Water***

There is currently no incinerator associated with the Water License 2AM-WTP1830. In 2021, waste that needed to be burn were hauled to the Meadowbank Site to be burned/composted or shipped down south for disposal.

6.3 ADDITIONAL INFORMATION

6.3.1 Meadowbank Site

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 25: ***Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.***

The Board did not request any additional details on waste disposal in 2021.

6.3.2 Whale Tail Site

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 28: ***Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.***

The Board did not request any additional details on waste disposal in 2021.

SECTION 7. SPILL MANAGEMENT

7.1 SPILL SUMMARY

The number of spills in 2021 for both Meadowbank and Whale Tail Site are summarized in Table 7-1 below. The construction of the Whale Tail Project started in 2016 with the construction of the Amaruq Exploration Access Road (Whale Tail Haul Road). For this reason, there are no spills to report from the Whale Tail site prior to 2016. Spills that occurred along the Amaruq Exploration Access Road were reported in 2016 and 2017 in the report submitted as part of the NWB Water License 8BC-AEA1525, which was cancelled as of November 2018 and are reported in the Table 7-1 below.

To be consistent with previous years, Agnico Eagle will continue to present spills for the Meadowbank Mine site, AWAR and Bake Laker infrastructures (Section 7.1.1) and the ones for Whale Tail Site and Whale Tail Haul Road (Section 7.1.2) separately.

Table 7-1 Total reportable and non-reportable spills for the Meadowbank and Whale Tail Sites from 2011 to 2021

Year	Meadowbank Site			Whale Tail Site			Total both site
	Number Reportable Spills	Number Non-Reportable Spills	Total	Number Reportable Spills	Number Non-Reportable Spills	Total	
2011	12	68	**80**	NA	NA	**NA**	**80**
2012	16	82	**98**	NA	NA	**NA**	**98**
2013	7	85	**92**	NA	NA	**NA**	**92**
2014	9	63	**72**	NA	NA	**NA**	**72**
2015	18	148	**166**	NA	NA	**NA**	**166**
2016	34	374	**408**	0	14	**14**	**422**
2017	28	383	**411**	0	34	**34**	**445**
2018	26	217	**243**	15	114	**129**	**372**
2019	22	97	**119**	43	177	**220**	**339**
2020	11	38	**49**	21	204	**225**	**274**
2021	20	48	**68**	14	148	**162**	**230**

With the main mining operation shifted from Meadowbank towards Whale Tail Project in 2019, it was expected to see a significant decrease in spill internally and externally reported at Meadowbank and an increase at the Whale Tail site.

In 2016, Agnico Eagle noticed an increase in reported spills and began a Spill Reduction Action Plan. Key Performance Indicators (KPI) were developed to monitor the reported spills. A Spill Frequency is calculated and reported to the daily management meeting. All spills are discussed daily in the management meeting with respective departments. The Spill Frequency is the ratio of the total number of spill to date in the year over the number of days in the current year. The total number of spill to date includes the spills internally reported as well as the spills reported to the regulators. This KPI is used to

follow trends related to spill increase or reduction, and to guide corrective actions when required. Areas for improvement, when identified, are highlighted at the daily management meetings. This enabled site management to identify any potential risks and work on preventing further spills. Since 2017, the total site spills have continued to decrease as a result of these efforts. As part of the continual improvement initiatives, in 2022, the investigation process will be reviewed to help better identify root causes of spills and continue implementation of corrective actions to avoid reoccurrences.

Agnico Eagle operates Meadowbank and Whale Tail under extreme cold condition during winter, and thus create extra pressure on equipment that can lead to more frequent equipment failure even if good inspections and maintenance are conducted. In 2021, as per previous and for the following years, particular attention was paid to operating practices on sites. The stand down of equipment during extreme cold temperatures was fully integrated within mining operations and reduced overall pressures on hydraulic systems.

Mandatory spill training is included in the Meadowbank and Whale Tail sites induction and the Environmental Department is working in a collaborative approach to ensure field personnel are reminded consistently on best practices in spill management. Refresher training was developed to be specifically focused on key departments and operators. By continuing education and awareness within our sites, Agnico Eagle is confident that the overall environmental impacts are limited. Measures put in place were found to be effective as a decrease in spill overall was observed in 2021.

All internal reported spills and spills reported to regulators are managed according to the spill contingency plan. Spills are contained and cleaned, contaminated material is disposed to the appropriate area and the clean-up actions are monitored by the Environment team.

To prevent and ensure all spills are reported internally, spill prevention training was provided to employees in 2021. Training activities include the following:

- All employees and contractors must participate in an induction session online prior to the arrival at the mine site, which includes a training section on spill management (prevention, reporting and cleaning);

- Every employee and contractor who operates a vehicle on site must participate in training on vehicle operation. Spill management is a component of this training session;

- Frequent toolbox meetings were given in 2021 by the Environmental Department to different departments at Meadowbank and Whale Tail. Topics during the meetings included spill reporting and spill response;

- A mock spill exercise was completed on October 9th, 2021 at the Baker Lake Marshalling Facility. The scenario was: during a fuel transfer from the vessel to Agnico Eagle's tank, a leak was noticed in one of the transfer pipes close to the shore of Baker Lake. The exercise was used to gain experience on spill intervention and awareness of spill management gear. Overall, the reaction of participants was satisfactory and lessons learned from the event will ensure a more efficient future response, if needed. The mock spill exercise report can be found in Appendix K of the Spill Contingency Plan, Version 16 (Appendix 27).

- A table top exercise was performed on August 18th, 2021. The scenario analyzed involved a tractor trailer containing two sea cans that roll over the AWAR and a code one was initiated. The exercise allowed to review the spill management procedure, gain experience on spill intervention and awareness of spill management gear.

In 2021, Agnico Eagle continued to raise worker awareness to the importance to add full details in the spill report regarding contaminated material disposal. It should be noted that the contaminated material has always been disposed of as per the Spill Contingency Plan. Agnico Eagle intends in 2022 to improve on spill investigation process, keep updating and improving the spill reporting procedure and will continue to conduct individual toolbox meetings with all departments.

7.1.1 Meadowbank Site

As per NWB Water License 2AM-MEA1530 Schedule B, Item 13 ***A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.***

A summary of all unauthorized discharges that were reported to the GN Spill hotline in 2021 are presented in Table 7-2. A summary of all non-reportable spills can be found in Table 7-3. This data was also included in monthly monitoring reports submitted to the NWB 2AM-MEA1530 and quarterly via the KivIA Production Lease Report. GN Spill Reporting Forms and the follow up reports as requested by the Water License 2AM-MEA1530 Part H, Item 8 for reported spills are included in Appendix 28. The spills presented in Table 7-2 and Table 7-3 below include spill events related to the Meadowbank Site, AWAR and Baker Lake infrastructures.

In 2021, eighteen (18) spills were reported to the GN Spill hotline. The decrease observed in 2018 in the significantly lower number of non-reportable spills reported continued to be observed in 2021. This decrease is mainly due to the fact that the construction/operation activities at Meadowbank were reduced in previous years, i.e. mining activities ceased in October 2019 and construction/operation activities continued to be shifted towards the Whale Tail Project in 2019.

In 2021, two (2) non-compliances related to the MDMER and Meadowbank Water License 2AM-MEA1530 regulation occurred. These events were not reported through to the GN Spill hotline but were reported to the ECCC inspector and were included as part of the monthly NWB monitoring summaries. Non-compliances were associated with effluent discharge from East Dike to Second Portage Lake (ST-8 / ST-MMER-3) and pertain to the exceedance of the TSS maximum monthly average concentration (15 mg/L) permitted by the Water License and MDMER in April and May 2021. More information are provided in Section 11.6.1 of this report. These two (2) non-compliances were included in the Table 7-1 but were not included in the Table 7-2 as they were not reported through the GN Spill Hotline.

Table 7-2 Meadowbank 2021 spills reported to the GN 24Hr spill HotLine

Date of Spill	Hazardous Material	Quantity	Units	Site	Location	Cause of spill	Clean-up action taken	Spill Number
January 13, 2021	Sulphur prills	150	Kg	Meadowbank	Process Plant Meadowbank	A ripped sulphur prill bag was brought from the storage sea-can to the mill. The rip was not noticed causing a trail of sulphur prills from the storage to the mill.	The spill was shoveled and swept into an empty sulphur bag and brought to the tailings for disposal.	2021-010
January 26, 2021	Contaminated Water	Unknown	L	Meadowbank	Internal ditch at airstrip	Cracked grey water line.	The STP pumps were stopped and the leak was repaired. Cleanup was completed during the summer and disposed of adequately.	2021-026
March 13, 2021	Diesel	100	L	Meadowbank	AWAR	Fuel tanker went off the road and tipped damaging the passenger side fuel tank.	Spill pads and a secondary containment were deployed to contain the spill. Contaminated material was removed and adequately disposed of in the MBK landfarm	2021-093
March 22, 2021	Grey/sewage water	50	L	Meadowbank	Wing 4	Frozen pipe cracked causing spill.	Section of pipe was replaced and material was removed and adequately dispose of.	2021-108
May 3, 2021	TSS	13.4	Kg	Meadowbank	ST-MMER-3	The effluent of ST-MMER-3 East dike discharge was sampled on May 3, 2021, at 8:15 am as required by the Water License 2AM-MEA1530 and MDMER. The results of the internal TSS analysis revealed a concentration of 55 mg/L. Upon the receipt of results on May 4 at 8:45 am, another sample was taken with an internal result of 9 mg/L of TSS. Based on a total flow of 243 m^3 between May 3 8:15 am (previous grab sample) and May 4, 8:45 am, the quantity of TSS is estimated at 13.4 kg. The result of the external laboratory from the sample taken on May 3, and received on May 7, is 29 mg/L.	Discharged stopped and notification to regulators. After receiving the external results, there was no exceedance of the MDMER and WL grab sample limit	2021-148
June 11, 2021	Diesel Fuel	500	L	Meadowbank	Maintenance Shop	Fuel tank tipped over due to ice melt.	The contaminated soil was collected and disposed properly	2021-244
June 16, 2021	Diesel Fuel	10	m^2	Meadowbank	Meadowbank Fuel Tank	During a routine inspection, a small presence of diesel fuel was observed in the secondary containment of the Meadowbank Fuel Tank. Further investigation has failed to demonstrate any new inflow of fuel in the secondary containment. No conclusion has come to as the origin of the fuel. Nevertheless, due to the proximity of the fuel storage facility, further investigation and monitoring is ongoing. This spill report is communicated in the spirit of transparency, and by due diligence, as the diesel is fully contained within the secondary containment.	Diesel is fully contained within the secondary containment.	2021-250

Date of Spill	Hazardous Material	Quantity	Units	Site	Location	Cause of spill	Clean-up action taken	Spill Number
June 25, 2021	TSS	Unknown	Kg	Meadowbank	Baker Lake	During operations at the Meadowbank Complex - overburden material was being removed for the pad extension at the Baker Lake spud barge. The construction activities were in a wet area and the runoff created an apparent plume of TSS flowing into Baker Lake.	Construction activities were stopped and efforts to prevent further TSS discharge are underway. Internal water samples were collected at the time of the incident and external laboratory samples results didn't show any impacts. Please refer to the follow up report for more details.	2021-264
August 18, 2021	Cupric Sulphate	10	Kg	Meadowbank	Transit Laydown	During operations at Meadowbank, the hyster operator removed a sea can from the flatbed and noticed that copper sulphate was leaking from underneath it.	The copper sulphate in the sea can and on the ground that could be picked up, were placed in some Quatrex bags and then brought to the HAZMAT laydown.	2021-354
September 8, 2021	Oil, Coolant, and Diesel Fuel	11,650	L	Meadowbank	Blind Hill EMR (bottom)	9,000L of coolant, 2,600L of oil and 50L of diesel fuel spilled from containers damaged during a tip over of a tractor-trailer on the AWAR near KM 103.	ERT responded to the event to contain the spill. Absorbent pads, combined with a localized low point and trenches were utilized to contain the spill. A vacuum truck was used to pick up the contaminated liquid and was disposed in the tailings facilities as well as 1000L totes. Contaminated material was excavated and brought back to the Meadowbank facility.	2021-387
September 10, 2021	Contaminated Water	280	m^3	Meadowbank	Tank 5 & 6 Containment, Tank Farm, Baker Lake	During the transfer of potentially contaminated water with diesel from the secondary containment of tanks 5 and 6 towards secondary containment tanks 3 and 4, a certain portion of the flow have migrated towards the tundra due to the misplacement of the discharge pipe of water transfer between ST-40.1 and ST-40.2	Hydrocarbon spill booms and woodchip turbidity booms were deployed in 2 visible streams to minimize potential impact on the Environment. Monitoring actions at the Baker Lake tank farm began on September 10th and included, petroleum test strip testing, soil sampling downstream of the discharge point, and sampling of water stations ST-40.1 and ST-40.2. Further monitoring actions along the Baker Lake shoreline included an acute lethality of effluent to Daphnia Magna and Rainbow Trout analysis, and daily water quality sampling from September 10th – 15th, excluding the 13th, and weekly until freeze-up thereafter. An internal investigation was initiated.	2021-392
September 24, 2021	Waste Oil	250	L	Meadowbank	Meadowbank CAT Dome	The cap of the tote had not been unscrewed thus creating suction and perforation of the tote.	Spill pads were used to control the spill. The contaminated material is being collected and will be brought to the landfarm at Meadowbank.	2021-414
October 4, 2021	Petroleum Product	1	L	Meadowbank	Baker Lake Spud Barge	Unknown	A CIRNAC inspector contacted Agnico Eagle to report a petroleum product that was photographed in the water near the Marshalling Facilities, along the floating dock. Agnico Eagle inspected the spud barge upon notification and found no remaining evidence of petroleum product in or near the water. The inspection frequency of the Spud Barge was increased following the notification by CIRNAC, until barge activities were completed.	2021-439
October 9, 2021	Sewage	100	L	Meadowbank	Baker Lake Spud Barge	Damaged pipe	A small trench was dug on the pad to collect possible run off and a plumber was called to fix the pipe. The sewage tank was removed and the area underneath and around the spill was collected with an excavator. Contaminated material was collected and brought to the Meadowbank landfarm for disposal.	2021-437

Date of Spill	Hazardous Material	Quantity	Units	Site	Location	Cause of spill	Clean-up action taken	Spill Number
October 12, 2021	Unknown	Unknown	L	Meadowbank	Baker Lake	Unknown	Following the detection of the spill, the Emergency Response Plan was initiated. The ship-to-shore fuel transfer was stopped, and thorough inspection of all lines and areas surrounding the boat was performed. A clean-up operation was launched, by using U-shape petroleum absorbent booms pulled by boats. None of the used material absorbed the apparent sheen.	2021-438
October 19, 2021	Lead Nitrate	250	Kg	Meadowbank	Meadowbank Landfill	Improper disposal	Mill workers identified the damaged Lead Nitrate bag at the landfill and barricaded the area off. The vacuum truck and excavator were used to collect the spilled Lead Nitrate and brought to the tailings area at Meadowbank where it was adequately disposed of. The lead nitrate remaining in the original mega bag was brought back to the Mill for use.	2021-450
October 19, 2021	Coolant	150	L	Meadowbank	Transit Laydown	Punctured Tote	The punctured tote was flipped on its side to minimize the spill and coolant was transferred to an empty tote. The contaminated soil was scraped up and adequately disposed of in the tailings facility at Meadowbank.	2021-447
December 7, 2021	Blackwater	150	L	Meadowbank	Baker Lake Camp	Overflow due to closed valve	A sewage spill was reported to the environment department by the Baker Lake Conservation Officer. The septic tank was drained immediately to stop the spill. Approximately 0.5 cubic metres of the accessible ice was chipped away and an excavator was sent to remove further material. Contaminated material will be collected and brought to the Meadowbank Landfarm for disposal.	2021-489

Table 7-3 Meadowbank 2021 non-reportable spills

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
January 4, 2021	Diesel Fuel	1	L	Fuel farm	While refueling the vehicle, a small amount of diesel fuel overflowed on the snow underneath.	The snow was shoveled into the appropriate container immediately after the spill occurred.
January 10, 2021	Oil	2	L	Winter parking	Pickup truck had leak, oil was dripping onto the ground.	Material was removed and adequately disposed of.
January 15, 2021	Coolant	10	L	Maintenance shop	Pump failure	Contaminated material was adequately disposed of.
January 20, 2021	Hydraulic Oil	15	L	Pit A	Hydraulic hose failure	Contaminated material was removed and disposed on in the MBK landfarm
January 24, 2021	Coolant	20	L	Near air strip	A ratchet strap broke and became caught in the engine fan and breaking the coolant lines to the radiator.	Contaminated material was removed and adequately disposed of.
January 30, 2021	Transmission Fluid	10	L	Winter parking	Slow leak of transmission fluid.	Spill pads were used and the contaminated material was removed and adequately disposed of.
February 18, 2021	Diesel Fuel	50	L	Downline parking dome side	Fuel filter not on tight enough	shut off engine, spill was contained, absorbent pads were used, and contaminated snow picked up and disposed of appropriately.
February 18, 2021	Used Oil	35	L	Oil Trailer	Used oil tote punctured by zoom boom	Contaminated material was cleaned and adequately disposed of in yellow roll off bin.
February 25, 2021	Diesel Fuel	80	L	Meadowbank Truck Shop Yard (dome side)	A solenoid had fallen out of a brass fitting causing fuel to leak out of the tank onto the ground	The leak was stopped, a spill kit was used to contain the spill and E&I was contacted to scrape the area up and dispose of the contaminated snow. Contaminated snow picked up and disposed of in the landfarm.
March 7, 2021	Coolant	1	L	Winter parking	Equipment failure	Contaminated material was removed and adequately disposed of.
March 14, 2021	Coolant	2	L	Winter parking	Equipment failure	Contaminated material was removed and adequately disposed of.
March 31, 2021	Coolant	3	L	Winter parking	Equipment failure	Contaminated material was removed and adequately disposed of.
March 31, 2021	Diesel Fuel	4	L	Winter parking	Overfilling of tank	Contaminated material was removed and adequately disposed of.
April 22, 2021	Diesel Fuel	20	L	MBK Fuel Farm	Fuel hose detached	Contaminated material was removed and adequately disposed of.
June 1, 2021	Transmission Oil	55	L	AWAR KM 111	Equipment Failure	Equipment was turned off. Spill kit was used to contain as much as possible. Equipment repaired. Contaminated material was removed and adequately disposed of
June 3, 2021	Diesel	20	L	Near East Dike Garage	Equipment Failure	Contaminated material was removed and adequately disposed of.
June 4, 2021	Contaminated Water	90	L	Baker Lake Seacan	Punctured Tote	Contaminated Water was contained in Seacan using Absorbent Pads. Contaminated Absorbent Pads were disposed in drums
June 8, 2021	Diesel Fuel	2	L	Meadowbank Heavy Equipment Fuel Farm	Equipment malfunction	Contaminated soil picked up and disposed in the landfarm

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
June 10, 2021	Diesel Fuel	50	L	Sana crusher (vault laydown)	Nozzle malfunction on fuel truck.	The contaminated soil was collected and disposed properly
June 13, 2021	Sulfur Condensation	0.1	L	SO2 plant beside garage door	Sulfur condensation came out of the sulfur melter vent	Contaminated soil pick up and dispose in the process plant
June 13, 2021	Fine ground silica	0.02	Kg	Behind Assay Lab near Mill door A	Ripped Bag	Called environment to assess situation and spill properly disposed of.
June 17, 2021	Coolant	0.5	L	Winter parking	Equipment failure	Contaminated material was removed and adequately disposed of properly
June 19, 2021	Waste Oil	60	L	Oil Trailer	Punctured tote	Absorbent pads were put in place. Contaminated soil was removed and adequately disposed of in the landfarm
June 20, 2021	Coolant	70	L	Transit laydown	Broken tote	Environment was called to assess the situation. Absorbent were used to contain the spill. Coolant was transferred to another tote. Contaminated material was disposed of adequately
July 4, 2021	Hydraulic Oil	5	L	E&I office parking MBK	Cracked hydraulic hose	Absorbent pads were put in place. Contaminated soil was removed and adequately disposed of.
July 5, 2021	Hydraulic Oil	80	L	Meadowbank Winter Parking	Unknown leak was discovered on Komatsu 08	Contaminated soil was removed and adequately disposed of
August 4, 2021	Contaminated Water	40	L	Secondary containment	Equipment leak	Containment was pumped out and contaminated soil was removed and adequately disposed of.
August 23, 2021	Diesel Fuel	20	L	Baker Lake Fuel Tank	Fueling procedure not properly followed	Contaminated soil was pushed up and removed by a loader. The contaminated soil was adequately disposed of
August 26, 2021	Hydraulic Oil	15	L	Construction Office	Broken hydraulic hose	Spill pads were placed immediately on ground to absorb the spill. Contaminated rags disposed of at the Hazmat area and contaminated solid was picked up and disposed of in the appropriate area. The zoom boom has been parked and a locked out until will be repaired.

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
August 27, 2021	Sulphur Prills	0.3	Kg	Meadowbank Landfill	Improper disposal of sulphur prills	The sulphur prills were disposed of in the tailings sump pump of the process plant. Reagent operators and other workers of the Process Plant were advised to not dispose of sulphur pills in the garbage.
September 1, 2021	Coolant	40	L	Laydown Row 3	Leak from broken tote	The zoom boom operator immediately flipped the tote onto its side to stop the leak. The remaining coolant was switched to a new tote and the contaminated soil was adequately disposed of.
September 18, 2021	Emulsifier N-59	20	L	Baker Lake Spud Barge	Improper storage. Drum of emulsifier flipped on its side and burst inside sea-can.	The sea-can was emptied, and the burst drum was isolated and brought to the end user. Spill pads were used, and the contaminated soil was disposed of in a drum.
September 20, 2021	Emulsifier N-59	20	L	Baker Lake Spud Barge	Improper storage. Drum flipped over during sea-can transportation causing a leak from the cap.	Sea-can was emptied, and the drum was placed into the proper position. Spill pads were used, and the contaminated soil was disposed of in a drum.
September 30, 2021	Diesel Fuel	15	L	Baker Lake fuel farm	Equipment damage on fuel system	Fuel pipes were fixed. Absorbent pads were used and adequately disposed of in yellow bins.
October 2, 2021	Transmission Oil	35	L	Meadowbank Lube Station	Leak from broken tote	Delineators were set up to mark the area. Environment team was called. Contaminated material was collected and brought to the yellow bins for disposal.
October 9, 2021	Diesel Fuel	90	L	Exploration Camp	Equipment failure	Contaminated soil was picked up and disposed of at the Meadowbank landfarm.
October 15, 2021	Diesel Fuel	80	L	Leach Tanks	Leak during fueling	Absorbent pads used to control the spill and contaminated soil was adequately disposed of in a yellow bin.
October 23, 2021	Transmission Oil	20	L	Winter Parking	Equipment leak	Contaminated material was collected and brought to the yellow bins for disposal.
October 28, 2021	Sulfur Prills	0.5	Kg	Meadowbank Landfill	Improper disposal	An email was sent to Process Plant supervisors to reiterate the need to segregate all garbage not allowed at the landfill before putting into roll off container. The spill was cleaned up and adequately disposed of at the tailings facility.
November 7, 2021	Glycol	17.5	L	LHT Winter Parking	Equipment malfunction	Leaking valve was closed. Contaminated material was collected and brought to the yellow bin for disposal.

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
November 18, 2021	Furnace Oil	10	L	Meadowbank CAT Dome	Overfilling of tank	Sea-can was barricaded to prevent oil from spilling outside. Absorbent pads and vacuum truck were used to collect the spill. Oil from vacuum truck was disposed of at the Meadowbank Landfarm and used absorbent pads were disposed of in a Quatrex bag and brought to the Hazmat seacan for appropriate disposal.
November 19, 2021	Motor Oil	20	L	AWAR KM 15	Procedure not followed	Contaminated snow and material was removed and brought to yellow bin for disposal.
November 22, 2021	Engine Oil	20	L	Mill - between Pebble Crusher & HPGR	Equipment malfunction	Contaminated material was collected and brought to the yellow bins for disposal.
November 24, 2021	Waste Oil	30	L	Meadowbank CAT Dome	Overfilling of tank	Spill kit was used to absorb oil. Contaminated absorbent pads were brought to the yellow bins.
December 4, 2021	Diesel Fuel	50	L	HPGR	Equipment Failure	The spill was controlled and the contaminated material was collected by a loader and disposed of appropriately within a yellow bin.
December 6, 2021	Coolant	50	L	Airstrip	Broken adaptor on coolant system	The engine was stopped and the spill was cleaned up. Contaminated material was adequately disposed of in the yellow bins.
December 11, 2021	Diesel Fuel	25	L	North side of HPGR	Broken gas line	Absorbent pads were used to soak up spill. Contaminated material was collected and brought to the yellow bins for disposal.
December 19, 2021	Diesel Fuel	5	L	Meadowbank Fuel Station	Leak from top loading arm	A plumber inspected the leak. Absorbent pads were put around the loading arm sections that were leaking. Contaminated material was adequately disposed of in a yellow bin.

7.1.2 Whale Tail Site

As per NWB Water License 2AM-WTP1830 Schedule B, Item 16: ***A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.***

A summary of all unauthorized discharges that were reported to the GN Spill hotline in 2021 is presented in Table 7-4. A summary of all non-reportable spills can be found in Table 7-5. This data was also included in monthly monitoring reports submitted to the NWB 2AM-WTP1830 and also reported quarterly via the KivIA Production Lease Report. GN Spill Reporting Forms and the follow up report as requested by the Water License 2AM-WTP1830 Part H, Item 8 for reported spills are included in Appendix 29. The spills presented in Table 7-4 and Table 7-5 below only include spills related to the Whale Tail Site and Whale Tail Haul Road.

In 2021, fourteen (14) spills were reported to the GN Spill hotline and 148 non-reportable spills occurred on site which represents a significant decrease from 2019 and 2020. Table 7-1 above provides a summary of the reportable and non-reportable spills from 2016 -2021.

As per the Spill Contingency Plan, spills are contained and cleaned, contaminated material is disposed to the appropriate area, such as the Meadowbank landfarm and the clean-up actions are monitored by the Environment team. All non-petroleum hydrocarbon and hydrocarbon material from Whale Tail site are shipped to Meadowbank for adequate disposal.

Table 7-4 Whale Tail 2021 spills reported to the GN 24Hr spill HotLine

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken	Spill Number
January 1, 2021	Diesel Fuel	92	L	Service dome fuel tank	Fuel nozzle was left unattended resulting in overfilling the tank.	The spill was contained and cleaned using spill pads. The spill pads were disposed of in a Quatrex bag.	2021-003
January 8, 2021	Coolant	375	L	WTHR Km 132	Radiator hose failure.	The contaminated material was removed and properly disposed of.	2021-008
January 15, 2021	Hydraulic Oil/Engine Oil	250	L	Whale Tail Pit	BAC09 excavator was scaling in IVR pit, on top of a catch bench. As he was working to bring down the loose material, the tracks of BAC09 went off the pad causing the operator to lose control and flip the shovel off the catch bench	Contaminated material was removed and adequately disposed of.	2021-013
February 19, 2021	Hydraulic Oil	150	L	Whale Tail Pit	Hydraulic hose failure	Contaminated material was removed and adequately disposed of in the yellow bin.	2021-045
March 1, 2021	Waste Oil	150	L	Hazmat	Fork from equipment punctured waste oil tote.	Tote was placed in the yellow bin to contain the spill. Contaminated material was cleaned and disposed of in the MBK Landfarm.	2021-050
March 14, 2021	Hydraulic Oil	140	L	Whale Tail Pit	Equipment failure, loose fitting on hydraulic pump	Contaminated material disposed of in yellow bin.	2021-094
April 18, 2021	Diesel Fuel	20	L	WTHR Km 177	Tanker accident on side of road causing fuel to leak.	Contaminated material was removed and adequately disposed of.	2021-128
May 4, 2021	Diesel Fuel	40	L	Mammoth Lake	Fuel pump fitting failure	Spill pads, and spill booms were immediately placed around the fuel tank. The area was scraped clean, and additional spill pads were placed on the ice to collect any residue.	2021-150
May 7, 2021	Diesel Fuel	55	L	Mammoth Lake	During operations at Whale Tail Pit, after refueling equipment around SH92 Drill 4, the fuel nozzle was placed incorrectly on the overpack tank. While storing it, the ball valve on the nozzle remained open and fuel spilled into the tanker sloop and onto the ice.	Spill pads, booms and a snow fence was built to contain the area. The area was scraped clean and contaminated material was disposed of adequately.	2021-159

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken	Spill Number
May 27, 2021	Diesel	150	L	Orbit Garant IVR dill pad	A refueling error during night shift is the most probable cause of this occurrence	Environment has advised the operation supervisor to assess and start recovering the contaminated material. The area was cleaned up with a backhoe and contaminated material was brought to MBK landfarm.	2021-212
July 11, 2021	Hydraulic Oil	400	L	IVR Pit Ramp	Hoist cylinder on HTR32 broke	Operator shut down the equipment once it was noticed and called mechanics to have the equipment fix. Contaminated material was collected and sent to the Meadowbank Landfarm.	2021-296
July 22, 2021	Glycol	450	L	Pad Q	Coolant totes were being transported for storage to a shipping container on Pad Q. During transportation of a tote, the operator had noticed it was pierced, and leaking on the pad.	The operator placed the tote on its side to stop the leak. Spill pads were used to control the spill. The contaminated material was collected and brought to the tailings area at Meadowbank	2021-317
September 11, 2021	Diesel Fuel	250	L	IVR pit main ramp	Rock contacted the gas cap on Haul Truck, damaging the fuel cap along with the top portion of the fuel tank and spilling diesel fuel on the IVR pit ramp.	The operator turned off the equipment and called maintenance. The spill was contained by placing a half-cut drum under the leak, a small berm, along with spill pads. Contaminated material was collected in a haul truck and brought to the Meadowbank landfarm.	2021-393
October 21, 2021	Hydraulic Oil	250	L	Whale Tail Pit	O-ring failure	The contaminated material was collected and adequately disposed of at the Meadowbank landfarm.	2021-453

Table 7-5 Whale Tail 2021 non-reportable spills

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
January 9, 2021	Coolant	80	L	Maintenance pad	Coolant hose failure.	Spill pads were used to contain the spill, Contaminated material was removed and adequately disposed of in the yellow bin.
January 9, 2021	Antifreeze	15	L	WTHR Km 130	Equipment failure.	The contaminated material was removed and adequately disposed of.
January 14, 2021	Hydraulic Oil	55	L	Whale Tail Pit	Broken O-ring	Equipment was turned off. Contaminated material was removed and adequately disposed of in the yellow bin.
January 15, 2021	Coolant	5	L	WHTR Km 169	Equipment failure.	Contaminated material was removed and adequately disposed of.
January 16, 2021	Hydraulic Oil	50	L	Whale Tail Pit	Hydraulic hose failure	Contaminated material was removed and adequately disposed of in the yellow bin
January 16, 2021	Coolant	75	L	Whale Tail Pit	Coolant hose failure.	Contaminated material was removed and adequately disposed of in the yellow bin
January 16, 2021	Hydraulic Oil	20	L	Whale Tail Pit	Hydraulic hose failure	Contaminated material was removed and adequately disposed of in the yellow bin
January 19, 2021	Hydraulic Oil	80	L	Fusion shack	Hydraulic tank rupture	Contaminated material was removed and adequately disposed of
January 23, 2021	Hydraulic Oil	20	L	Whale Tail Pit	Broken tractor motor	Contaminated material was adequately disposed of.
January 23, 2021	Hydraulic Oil	30	L	IVR Pit	Broken rear differential bearing	Contaminated material was removed and disposed of in yellow bin beside shop.
January 24, 2021	Coolant	4	L	WTHR Km 115	Broken fan belt, causing coolant leak	Spill pads were used to clean the spill. Pads adequately were disposed of.
February 1, 2021	Hydraulic Oil	20	L	IVR Pit	Motor leak	Contaminated material was cleaned and disposed of in the yellow bin.
February 5, 2021	Hydraulic Oil	20	L	Whale Tail Pit	Hydraulic block failure	Contaminated material was cleaned and adequately disposed of.
February 10, 2021	Hydraulic Oil	5	L	Whale Tail Pit	Hydraulic hose failure	Stopped equipment to contain spill and also pick up the spill brought to yellow bin UG shop
February 11, 2021	Hydraulic Oil	3.5	L	Whale Tail Pit	Hydraulic hose was pinched between the bucket and the bucket attachment.	Contaminated material was removed and adequately disposed of in the yellow bin.
February 13, 2021	Diesel Fuel	2	L	In front of service building	Fuel truck overfilled, fuel spilled from top of tank.	Contaminated material was removed and adequately disposed of.
February 14, 2021	Coolant	20	L	WTHR Km 122	Broken radiator	Contaminated material was removed and adequately disposed of.
February 14, 2021	Hydraulic Oil	30	L	UG Dump	Equipment failure	Stop equipment to contain the spill and pick up spill and brought to yellow bin at UG shop

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
February 15, 2021	Hydraulic Oil	15	L	Whale Tail Pit	Hydraulic pump failed, during repair hydraulic oil was spilled.	Contaminated material was removed and adequately disposed of.
February 17, 2021	Lubricant	5	L	IVR Pit	Line failure	Contaminated material was removed and adequately disposed of.
February 18, 2021	Coolant	60	L	Whale Tail Pit	Coolant hose failure.	Contaminated material was removed and adequately disposed of in yellow bin by UG shop.
February 23, 2021	Coolant	60	L	Whale Tail Pit	Radiator hose failure.	Spill was contained and cleaned using spill pads. Contaminated material was adequately disposed of in the Hazmat area.
February 23, 2021	Hydraulic Oil	72	L	WRSF	Hydraulic hose failure	Contaminated material was removed and adequately disposed of.
February 24, 2021	Hydraulic Oil	35	L	IVR Dike 1 west entrance	Hydraulic hose failure	Machine was stopped. Leak was contained and absorbent sheets were placed on the spill.
February 25, 2021	Hydraulic Oil	52	L	IVR Dump	Hose failure	Spill was contained and cleaned using spill pads. Contaminated material was adequately disposed of.
March 3, 2021	Hydraulic Oil	80	L	Whale Tail Pit	Hydraulic hose failure	Spill was contained and cleaned. Contaminated material was removed and put in yellow bin
March 5, 2021	Hydraulic Oil	25	L	WRSF	Mechanical failure of hydraulic cylinder	Haul truck was shut down as soon as the leak started
March 9, 2021	Hydraulic Oil	25	L	IVR Pit	Rear differential failure	Contaminated material was removed and adequately disposed of
March 11, 2021	Hydraulic Oil	40	L	WT Pit	Hydraulic hose failure	Contaminated material removed and disposed of in yellow bin.
March 11, 2021	Hydraulic Oil	25	L	Parking area	Hydraulic hose failure	Contaminated material removed and disposed of in yellow bin.
March 18, 2021	Hydraulic Oil	70	L	Whale Tail Pit	Hydraulic hose failure	Contaminated material disposed of in the yellow bin.
March 22, 2021	Hydraulic Oil	20	L	Whale Tail Pit	Broken hydraulic hose	Spill pads used to clean up spill.
March 23, 2021	Compressor Oil	40	L	Whale Tail Pit	Broken radiator	Spill pads used to absorb oil, contaminated material removed and disposed of in yellow bin.
March 29, 2021	Hydraulic Oil	4	L	Emulsion road	Cap not properly on causing oil to leak.	Contaminated material was removed and adequately disposed of.
April 1, 2021	Diesel Fuel	50	L	Whale Tail Pit	Broken fuel tank	Spill pads used, contaminated material was removed and disposed of adequately.
April 2, 2021	Hydraulic Oil	3	L	Washroom laydown	Broken wheel bearing seal	Contaminated material was removed and disposed of in the yellow bin.

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
April 4, 2021	Transmission Oil	20	L	IVR Pit	Broken transmission line	Contaminated material removed and disposed of in the yellow bin.
April 7, 2021	Hydraulic Oil	30	L	Pit Phase 2 ramp	Hydraulic hose failure	Contaminated material was removed and brought to yellow bin for disposal.
April 9, 2021	Coolant	25	L	Washroom Parking	Hose failure	Contaminated material was removed and brought to yellow bin for disposal.
April 9, 2021	Hydraulic Oil	40	L	Whale Tail Pit	Hydraulic cylinder fitting failure	Contaminated material was removed and brought to yellow bin for disposal.
April 9, 2021	Hydraulic Oil	5	L	IVR Ring Road - East end	Hydraulic fitting failure	Contaminated material was removed and brought to yellow bin for disposal.
April 10, 2021	Coolant	10	L	Whale Tail Pit	Coolant hose failure.	Contaminated material was removed and brought to yellow bin for disposal.
April 12, 2021	Coolant	60	L	Whale Tail Pit	Radiator leak	Contaminated snow and material was removed and brought to yellow bin for disposal.
April 12, 2021	Coolant	90	L	Camp Parking	Radiator leak	Contaminated material was removed and brought to yellow bin for disposal.
April 15, 2021	Diesel Fuel	20	L	Maintenance Shop	Cracked fuel tank on loader	Contaminated material was removed and adequately disposed of.
April 15, 2021	Grease	2	L	Maintenance Shop	Snow and grease accumulation on boom melted onto ground	Contaminated material was removed and adequately disposed of.
April 17, 2021	Hydraulic Oil	20	L	South of Dyno Road	Hydraulic hose failure	Contaminated material was removed and adequately disposed of.
April 17, 2021	Coolant	30	L	WTHR Km 152	Coolant hose failure.	Contaminated material was removed and adequately disposed of.
April 19, 2021	Engine Oil	40	L	Whale Tail Pit	Engine failure	Contaminated material was removed and adequately disposed of.
April 21, 2021	Hydraulic Oil	60	L	WRSF	Hydraulic hose failure	Contaminated material was removed and adequately disposed of.
May 1, 2021	Hydraulic Oil	50	L	Phase 2 (5102MSL80)	Hydraulic hose failure	Contaminated soil picked up and disposed in the yellow bin.
May 3, 2021	Hydraulic Oil	30	L	WTHR Km 152 East side	Blade cylinder hose failure	Operator shut off equipment immediately. Contaminated excavated and disposed of accordingly in the yellow contaminated bin at Meadowbank.
May 4, 2021	Hydraulic Oil	30	L	Phase 2 Pit	Equipment failure	Contaminated material was removed and adequately disposed of.
May 6, 2021	Hydraulic Oil	80	L	5067PSK27 Preshear	Hydraulic hose failure	Drill was shut down and mechanic was call to assess and repair the hose. Contaminated material will be dumped in the yellow bin behind the U/G shop

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
May 6, 2021	Hydraulic Oil	20	L	Pad K close to fuel farm	Equipment failure	Equipment was stopped right away. Contaminated material was removed and adequately disposed of.
May 7, 2021	Diesel Fuel	3	L	Fuel Farm	Worker had hit the fuel tank with a rock on the floor of the pit	Absorbent pads were put in place and disposed of appropriately in the seacan behind the shop
May 11, 2021	Engine Oil/Antifreeze	35	L	Phase 2 Ramp	Equipment failure	Contaminated material was removed and adequately disposed of.
May 12, 2021	Hydraulic Oil	35	L	Outside UD service building	Hydraulic hose failure	Equipment stopped and contain with spill kit. Contaminated material was removed and adequately disposed of.
May 13, 2021	Hydraulic Oil	10	L	Pattern5081MSK 27	Hydraulic hose failure	Equipment stopped and contain. Contaminated material was removed and adequately disposed of in the yellow Bin on Pad on top of Phase 2 Ramp
May 13, 2021	Hydraulic Oil	10	L	IVR pit pattern 5123MSI05	Hydraulic hose failure	Equipment stopped and contain. Contaminated material was removed and adequately disposed of.
May 14, 2021	Diesel Fuel	1	L	WT Light Vehicle Fuel Station	While fueling PCK28 the operator noticed a puddle forming under the gas tank of the pickup	Operator stopped fueling the pickup and contained spill. Contaminated material was removed and adequately disposed of in the yellow bin.
May 15, 2021	Hydraulic Oil	30	L	5081-MSK27	Hydraulic hose failure	Drill and blast stemming loader was dispatched and contaminated material was picked up and disposed of in the proper bin at the top of Phase 2 ramp.
May 19, 2021	Hydraulic Oil	20	L	Qamanittuaq Sana yard	Hydraulic hose leak	Stop the leak. Contaminated material was removed and adequately disposed of.
May 23, 2021	Hydraulic Oil	70	L	IVR Waste dump 5180 level	Hydraulic hose failure	Stop the leak. Contaminated material was removed and adequately disposed of.
May 24, 2021	Hydraulic Oil	15	L	Auxiliary Camp Parking	Equipment failure	Contaminated material was removed and adequately disposed of the yellow bin
May 27, 2021	Hydraulic Oil	35	L	IVR PIT pattern 5130MSI24	Hydraulic hose failure	Contaminated material was removed and adequately disposed of the yellow bin
May 29, 2021	Transmission Oil	35	L	Washroom Parking	Transmission Oil Hose failure	Contaminated soil picked up and disposed on the yellow bin.
May 29, 2021	Engine Oil	15	L	Phase 1	A rock rolled up into the oil pan puncturing it.	Contaminated material was removed and adequately disposed of the yellow bin
June 5, 2021	Hydraulic Oil	60	L	IVR PIT 5130MSI36	Hydraulic hose failure	Equipment was turned off. Contaminated material was removed and adequately disposed of in the yellow bin

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
June 5, 2021	Hydraulic Oil	45	L	IVR Pit	Hydraulic hose failure	Contaminated soil picked up and disposed of in the yellow bin
June 6, 2021	Power Steering Fluid	2	L	Environment Office Parking	Power steering hose failure	Clean up area with shovel and dispose of the contaminated material in the appropriate bin
June 6, 2021	Hydraulic Oil	25	L	Phase 1	Hydraulic hose failure	Contaminated soil picked up and disposed in the yellow bin
June 12, 2021	Waste Oil	20	L	Hazmat Area	The employee push a tote of waste oil in the hazmat sea can, the tote in front was damage and a piece of metal was sticking out and did a hole in the tote causing a spill of 20L.	The contaminated soil was collected and disposed properly in the yellow bin
June 12, 2021	Hydraulic Oil	60	L	Pad B	Hydraulic hose failure	Equipment was turned off. Contaminated material was removed and adequately disposed of in the yellow bin
June 12, 2021	Transmission Oil	40	L	WTHR Km 148	Operator hit the transfer case cap	Put some spill pads on the top of the spill. Contaminated material was removed and adequately disposed of
June 24, 2021	Diesel	15	L	Truck parking	Equipment failure	Contaminated material was removed and adequately disposed of in the yellow bin
June 24, 2021	Hydraulic Oil	60	L	Pad Q near Sana shop	Hydraulic Hose failure	Absorbent pads were put in place. Contaminated soil was removed and adequately disposed of in the yellow bin
June 25, 2021	Coolant	55	L	Whale Tail WRSF	Coolant hose failure.	Contaminated soil was removed and adequately disposed of in the yellow bin
June 26, 2021	Hydraulic Oil	85	L	IVR pit, Pattern 5130MSI34.	Hydraulic hose failure	Contaminated soil was removed and adequately disposed of in the yellow bin
June 26, 2021	Hydraulic Oil	10	L	5067MSK07	Hydraulic hose failure	Absorbent pads were put in place. Contaminated soil was removed and adequately disposed of
June 28, 2021	Hydraulic Oil	70	L	Pattern 5123MSI19 in IVR	Hydraulic hose failure	Absorbent pads were put in place. Contaminated soil was removed and adequately disposed of
June 30, 2021	Diesel	20	L	Stand by parking lot.	Fuel cap was broken.	Contaminated soil was removed and adequately disposed of
June 30, 2021	Waste Oil	10	L	Behind U/G shop	O-ring failure	Absorbent pads were put in place. Contaminated soil was removed and adequately disposed of in the contaminated soil bin
July 2, 2021	Diesel Fuel	5	L	WT WRSF	Fuel tank leakage	Contaminated soil was removed and adequately disposed of in the yellow bin

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
July 2, 2021	Hydraulic Oil	10	L	Whale Tail Pit	Loose fitting	Contaminated soil was removed and adequately disposed of in the yellow bin
July 2, 2021	Hydraulic Oil	5	L	Whale Tail Pit	O-ring failure	Stopped equipment to contain spill. Contaminated material was removed and adequately disposed of in the yellow bin
July 2, 2021	Diesel Fuel	20	L	Km 138 AMQ road	Malfunction of equipment and diesel fuel spilled from the valve.	Contaminated material was removed and adequately disposed in the contaminated bin at Meadowbank.
July 2, 2021	Hydraulic Oil	78	L	Road 3 end of new ramp.	Track cylinder went off.	Mechanic was called to fix the cylinder. Contaminated material was removed and adequately disposed of.
July 3, 2021	Hydraulic Oil	21	L	260-VT-N	Broken hydraulic hose	Spill was contained, spill pads were used and disposed of in Quatrex bin on surface. Contaminated material was removed and adequately disposed of
July 5, 2021	Hydraulic Oil	45	L	Pad K	Broken brake line	Contaminated soil picked up and disposed in the yellow bin
July 5, 2021	Hydraulic Oil	TBD	L	WT	Cracked line	Contaminated soil picked up and disposed in the yellow bin
July 5, 2021	Hydraulic Oil	50	L	Pattern 5067MSK05	Broken hydraulic hose	Contaminated soil picked up and disposed of in the yellow bin
July 11, 2021	Diesel Fuel	20	L	Whale Tail Pit	Fuel leak from the breather	Used absorbent pads and removed contaminated soil with the loader. Contaminated soil picked up and adequately disposed of in the yellow bin.
July 21, 2021	Oil	30	L	Truck parking	Lube station totes waste oil overflow from containment.	Oil was absorbed with pads and they were disposed of in proper waste containment drums. Area was cleaned up and contaminated soil picked up and disposed of in the yellow bin.
July 23, 2021	Coolant	25	L	WRSF	Equipment failure	Spill kit was use to contain the spill. Contaminated material was removed and adequately disposed of
July 25, 2021	Coolant	30	L	Whale Tail Pit	Radiator fan motor broken	Mechanic was called to assess the damage. Absorbent pads were put in place to contain the spill. Contaminated material was removed and adequately disposed of
July 30, 2021	Engine Oil	40	L	Underground	Broken oil pan	Spill was contained. Absorbent pads were disposed in the Quatrex bin. Contaminated soil picked up and adequately disposed of
August 7, 2021	Hydraulic Oil	10	L	Underground	Equipment failure	Contaminated area was picked up and disposed of appropriately

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
August 7, 2021	Hydraulic Oil	55	L	Whale Tail Pit	Broken cylinder cap	Spill was contained. Absorbent pads were disposed in the Quatrex bin. Contaminated soil picked up and adequately disposed of
August 8, 2021	Coolant	10	L	Whale Tail Pit	Equipment damage	Spill was contained. Absorbent pads were disposed in the Quatrex bin. Contaminated soil picked up and adequately disposed of
August 14, 2021	Coolant	20	L	Whale Tail Pit	Coolant hose failure.	Loader stopped mucking and headed to the shop. Spill was contained. Absorbent pads were disposed in the Quatrex bin. Contaminated soil picked up and adequately disposed of
August 14, 2021	Hydraulic Oil	25	L	Whale Tail Pit	Broken hydraulic hose	Haul truck was stopping at the parking lot and the leak was contained using a pail. Contaminated soil picked up and adequately disposed of
August 16, 2021	Hydraulic Oil	17	L	Whale Tail Pit	Broken hydraulic hose	Maintenance was call right away to fix the hose. Spill was picked up and disposed of in the yellow bin for contaminated material.
August 25, 2021	Diesel Fuel	20	L	Amaruq Sana laydown	Broken fuel valve	The spill was immediately stopped and contained. Absorbent pads were used and the contaminated soil was disposed of adequately at the landfarm.
August 29, 2021	Diesel Fuel	15	L	IVR Pit	Fuel truck was filling the drill, and the fuel tank vent did not work properly and spill occurred	Spill was picked up by IT-14 loader and disposed of in yellow bin at top of phase 2 ramp.
August 30, 2021	Hydraulic Oil	30	L	Whale Tail Pit	Broken hydraulic hose	The drill was immediately stopped and a mechanic was called to check the equipment. Absorbent pads were used and the oil was removed using a vacuum truck. Contaminated soil and pads were disposed of adequately in a yellow bin.
September 1, 2021	Diesel Fuel	60	L	Genset 1	Fuel nozzle got stuck causing an overfill	Contaminated material was collected and brought to the yellow bins for disposal.
September 2, 2021	Diesel Fuel	15	L	Auxiliary Camp Parking	Fuel leak on equipment.	Contaminated material was collected and brought to the yellow bins for disposal.
September 11, 2021	Hydraulic Oil	40	L	WT Pit Phase 2	Broken hydraulic hose	Absorbent pads were used to sponge up spill. Contaminated material disposed of in yellow bins for disposal.
September 11, 2021	Hydraulic Oil	80	L	WT Extension	Broken hydraulic hose	Contaminated material was collected and brought to the yellow bins for disposal.

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
September 12, 2021	Coolant	20	L	Auxiliary Camp Parking	Broken coolant line	A mechanic was called and the contaminated soil was collected and disposed of in the yellow bins.
September 23, 2021	Hydraulic Oil	40	L	WT Pit Phase 1	Broken hydraulic hose.	Grader was stopped and the maintenance shop was called. Contaminated soil was picked up and disposed of in yellow bin.
September 28, 2021	Hydraulic Oil	80	L	Washroom Parking	Broken hydraulic hose.	A mechanic was called right away. The spill was cleaned up and contaminated soil was adequately disposed of.
October 5, 2021	Hydraulic Oil	85	L	IVR Waste Dump	Broken hydraulic cylinder	Berm was pushed up to contain spill and contaminated soil was picked up and disposed in the yellow bin.
October 9, 2021	Hydraulic Oil	50	L	Whale Tail Pit	Broken hydraulic hose	Absorbent pads were put in place and contaminated soil was picked up and disposed of in the yellow bin.
October 10, 2021	Engine Oil	45	L	Whale Tail Pit	Equipment failure	Absorbent pads used and contaminated soil was scraped up and collected with a loader. Contaminated soil was adequately disposed of in a yellow bin.
October 13, 2021	Hydraulic Oil	53	L	Whale Tail Pit	Broken hydraulic hose	Contaminated soil was scraped up and adequately disposed of in a yellow bin.
October 13, 2021	Hydraulic Oil	20	L	Amaruq Sana Laydown	Hydraulic hose disconnected too rapidly	Hydraulic hose was plugged and absorbent pads were used. Contaminated soil was adequately disposed of in a yellow bin.
October 14, 2021	Transmission Oil	40	L	Whale Tail Pit	Broken transmission line	Contaminated soil was scraped up and adequately disposed of in a yellow bin.
October 15, 2021	Diesel Fuel	40	L	Truck Parking	Spill noticed during inspection	Spill was cleaned up by 980 loader and contaminated soil adequately disposed of in a yellow bin.
October 16, 2021	Coolant	15	L	Whale Tail Pit	Broken coolant line	Engine was stopped. Contaminated soil was picked up and adequately disposed of a yellow bin.
October 17, 2021	Hydraulic Oil	10	L	Washroom Parking	Broken hydraulic hose	Engine was stopped. Contaminated soil was picked up and adequately disposed of a yellow bin.
October 19, 2021	Coolant and Hydraulic Oil	80	L	Washroom parking	Broken hydraulic and coolant hose	Mechanic was called to fix the hose. Contaminated soil has been adequately disposed of in a yellow bin.

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
October 19, 2021	Diesel	20	L	Washroom Parking	Fuel leak	Contaminated soil was scraped up and adequately disposed of in a yellow bin.
October 20, 2021	Hydraulic Oil	50	L	Fountain Tire Yard	Broken hydraulic hose	Haul truck was brought to the mechanic shop to fix the hose. Contaminated soil was picked up brought to a yellow bin for disposal.
October 20, 2021	Hydraulic Oil	10	L	Washroom Parking	Broken hydraulic hose	Contaminated soil was scraped up and adequately disposed of in a yellow bin.
October 21, 2021	Hydraulic Oil	10	L	Whale Tail Pit	Broken hydraulic hose	Mechanic was called to fix the hose. Contaminated soil was collected and adequately disposed of in a yellow bin.
October 22, 2021	Diesel Fuel	20	L	Whale Tail	Leak from improperly joined hoses	Hose was tightened to stop the leak. Excavator was used to remove the contaminated soil which was adequately disposed of in a yellow bin.
November 8, 2021	Coolant	30	L	Washroom Parking	Broken coolant line	Leaking valve was closed. Contaminated material was collected and brought to the yellow bin for disposal.
November 9, 2021	Compressor Oil	40	L	IVR Pit	Equipment failure	Contaminated soil and snow was picked up and disposed of appropriately in a yellow bin.
November 10, 2021	Hydraulic Oil	70	L	Transit Pad	Broken hydraulic hose	Contaminated material was collected and brought to the yellow bins for disposal.
November 11, 2021	Coolant	2	L	Behind Underground Truck Shop	Broken coolant line	The contaminated soil and snow was removed and disposed of properly in a yellow bin.
November 12, 2021	Diesel Fuel	60	L	Whale Tail Pit	Fuel tank overfilled	Absorbent pads were used to pick up spill and were dropped off at the Hazmat seacan for adequate disposal.
November 17, 2021	Hydraulic Oil	55	L	Washroom Parking	Broken hydraulic hose	Contaminated soil and snow was picked up and disposed of appropriately in a yellow bin.
November 18, 2021	Hydraulic Oil	15	L	IVR Pit	Broken hydraulic hose	Contaminated soil and snow was picked up and disposed of appropriately at Pad K.
November 19, 2021	Hydraulic Oil	15	L	Whale Tail Pit	Broken hydraulic hose	The contaminated soil and snow was removed and disposed of properly in a yellow bin.
November 20, 2021	Hydraulic Oil	50	L	Whale Tail Pil	Broken hydraulic hose	Mechanic was called to fix the hose. Contaminated soil was brought to the yellow bin for disposal.
November 20, 2021	Hydraulic and Differential Oil	40	L	Washroom Parking	Containment not large enough	Absorbent pads were used to sponge up spill. Contaminated material disposed of in yellow bins for disposal.
November 27, 2021	Coolant	50	L	IVR Pit	Broken coolant line	Spill was contained, and contaminated snow picked up and disposed appropriately at the Hazmat disposal area.

Date of Spill	Hazardous Material	Quantity	Units	Location	Cause of spill	Clean-up action taken
November 30, 2021	Coolant	30	L	IVR Pit	Broken coolant line	Absorbent pads were used to sponge up spill. Contaminated material disposed of in yellow bins.
December 5, 2021	Hydraulic Oil	63	L	IVR Pit	Broken bucket cylinder cap	Contaminated material was collected and brought to the yellow bins for disposal.
December 8, 2021	Motor Oil	30	L	Surface Maintenance Shop	Disconnected pipe	Worker took some absorbent pads and pails and used them below the truck side doors to soak up the spill. The contaminated absorbent pads and soil were brought to the yellow bin for disposal.
December 11, 2021	Hydraulic Oil	20	L	Underground Vent Raise	Broken hydraulic hose	Contaminated material was collected and brought to the yellow bins for disposal.
December 13, 2021	Hydraulic Oil	30	L	Whale Tail Pit	Broken O-Ring	Contaminated material was collected and brought to the yellow bins for disposal.
December 15, 2021	Hydraulic Oil	20	L	Whale Tail WRSF	Equipment Failure	Contaminated material was collected and brought to the yellow bins for disposal.
December 16, 2021	Hydraulic Oil	35	L	Whale Tail Pit	Broken O-Ring	Contaminated material was collected and brought to the yellow bins for disposal.
December 17, 2021	Hydraulic Oil	70	L	Whale Tail Pit	Broken hydraulic cylinder	Contaminated material was collected and brought to the yellow bins for disposal.
December 20, 2021	Coolant	15	L	WTHR near Vault Pit	Broken coolant line	Absorbent pads were used to soak up spill. Contaminated material was collected and brought to the yellow bins for disposal.

7.2 LANDFARM MEADOWBANK

The complete 2021 Landfarm Report is provided in Appendix 30. A summary of activities is provided here.

As per the Meadowbank Landfarm Design and Management Plan (LDMP; March, 2017), this document presents the 2021 landfarm activities indicating the volume of material added to the facility, amount of material removed and disposal or re-use location, all analysis results, volume and type of nutrient addition, visual inspection and volume of contact water pumped.

There was no landfarm at Whale Tail site in 2021. All petroleum-contaminated material was brought to the Meadowbank landfarm. The construction of the landfarm at Whale Tail was approved by the NWB on October 27th, 2021. Construction of the landfarm at Whale Tail is schedule for 2022. Once constructed, no more contaminated material should be disposed in the Meadowbank Landfarm. This report discusses only of the activities performed at the Meadowbank Landfarm in 2021.

Meadowbank's first landfarm (landfarm 1) was constructed in 2012 and located on the north-west side of the South Tailings Cell within the Tailings Storage Facility. Since this area was planned to eventually become flooded with reclaim water, Agnico Eagle constructed a new landfarm (landfarm 2) in 2016, in order to continue the treatment of contaminated soil. In 2019 the Landfarm 1 area became flooded with reclaim water, and it is thus no longer in operation.

Based on surveys conducted by Meadowbank's Engineering Department the volume of the landfarm 2 in December 2021 was 5,081 m^3. It is estimated that between January 2021 and the end of December 2021, 378.5 m^3 of soil were added to landfarm 2 from material collected from spill events around the Meadowbank and Whale Tail sites. The remaining capacity of the landfarm 2 is estimated at 6,364 m^3.

A landfarm soil sampling event was conducted in 2021. Petroleum hydrocarbons Fraction 3 exceeded the Government of Nunavut Tier 1 soil remediation criteria for industrial land uses (refer to Table 1 of the 2021 Landfarm Report in Appendix 30). Some material was displaced by an excavator within the landfarm to aerate and reorganize usage of the landfarm.

Nutrient additions in the form of sewage sludge occurred in August, as detailed in the LDMP. Total volume of sludge added to the landfarm in 2021 is 13.6 m^3. No aeration of the material by the construction of windrow was performed due to a mechanical failure of the Extec screener. Some material was displaced by an excavator within the landfarm to aerate and reorganize usage of the landfarm.

Surface runoff, due to snow melt and rain, was identified from the landfarm and sampled on July 9th and August 4th, 2021, as per the Water Licence requirements. Water was naturally flowing towards the adjacent Tailing Storage Facilities. No other runoff water outside the landfarm was observed.

Visual inspections (46) indicated that the landfarm berm and pad appear to be structurally intact, and no maintenance was required.

7.3 POSSIBLE ACCIDENT AND MALFUCTIONS AT MEADOWBANK SITE

As required by NIRB Project Certificate No.004 Condition 75: ***provide a complete list of possible accidents and malfunctions for the Project; it must consider the all-weather road, shipping spills, cyanide and other hazardous material spills, and pitwall/dikes /dam failure, and include an assessment of the accident risk and mitigation developed in consultation with Elders and potentially affected communities***

A list of possible accidents and malfunctions are included in the following Meadowbank Gold Project management plans:

- Hazardous Materials Management Plan, Version 7, March 2022 (Appendix 55);
- Spill Contingency Plan, Version 16, April 2022 (Appendix 27);
- Emergency Response Plan, Version 17, October 2021 (Appendix 31);
- Oil Pollution Emergency Plan and Oil Pollution Prevention, Version 15, March 2022 (Appendix 32);
- Meadowbank OMS Manual for Tailing Management, Version 10, July 2021 (Appendix 67);
- Meadowbank OMS Manual for the dewatering dikes, Version 9; November 2021 (Appendix 68);
- Whale Tail OMS Manual for Water Management Infrastructure, Version 2, November 2021 (Appendix 68).

Agnico Eagle complied with this condition, including the provision of a list of possible accidents and malfunctions. These Plans were originally reviewed as part of the NIRB and NWB License application process. As such there was extensive public review which included elders' participation at the associated hearings.

Road Spills

Table 7-2 to 7-4 show all spills related to the Meadowbank Complex Project, including the AWAR/WTHR, and other spills related to mine activities.

International Cyanide Management Code (ICMC)

As part of the International Cyanide Management Code (ICMC), Agnico Eagle discussed with the community the cyanide shipping and transportation along the AWAR. A teleconference was held on August 5th, 2021 with Baker Lake Hamlet and August 17th, 2021 with Rankin Inlet Hamlet to present the 2021 Cyanide Transportation program. Due to COVID-19 exceptional circumstances, Agnico Eagle was not able to hold the usual community information meetings in person. The Baker Lake HTO, Royal Canadian Mounted Police (RCMP) and Government of Nunavut representatives joined the call. During the teleconference, the 2021 Cyanide Transportation safety and monitoring procedures were presented as well as the communication plans. In addition, Agnico Eagle presented the COVID-19 measures undertaken during the transportation to ensure minimal impact on the surrounding community.

COVID-19

COVID-19 protocols on the AWAR was maintained during 2021. The information was communicated through the local radio, various Facebook posts, Nunavut-page photo banner and during virtual meetings with the mayors and Senior Administrative Officers (SAO).

Community information meetings

A teleconference was held on May 25th, 2021 with Baker Lake Hamlet representatives, May 26th, 2021 with Chesterfield Inlet Hamlet and June 15th, 2021 with Rankin Inlet Hamlet representatives to present the 2021 Sealift Season schedule. Due to COVID-19 exceptional circumstances, Agnico Eagle was not able to hold the usual community information meetings in person. During the teleconference, the following topics were presented:

- Vessel routing from Quebec to Nunavut and routing to Baker Lake and Rankin Inlet;
- Monitoring of marine mammals and seabirds;
- All Weather Access Road (AWAR) closure process;
- Caribou Monitoring;
- Process to find live information about the vessel routing
- Process to ask questions and raise concerns via Tusaajugut 'We are Listening'

In 2022, depending on how COVID-19 pandemic evolves, Agnico Eagle will resume Sealift Season in consultation with DFO and affected communities via teleconference with Community Liaison Officers (CLOs) support or host in-person information meetings.

Accidents and malfunctions

To prevent and ensure accidents and malfunctions are dealt appropriately the following activities were held in 2021:

- Emergency Plans and crisis management training to all superintendent
- Implemented in 2021, any personal on a role of "Acting Manager" will need to complete the Emergency Response Plan / Crisis Management Plan (ERP/CMP) management induction training, followed by the training management system
- Underground evacuation mock scenario was held in November
- Various training to the rescue teams member combined with active scenarios: Incident command system (ICS), confine space, explosive risk, etc.
- Debriefing were held after each emergency calls to learn from every events

- A mock spill exercise was completed on October 9th, 2021 at the Baker Lake Marshalling Facility. The scenario was that while inspecting the diesel fuel line from the offloading vessel to the Oil Handling Facility (OHF), a leak was noticed coming from a perforation in the pipe near the shore of Baker Lake. The mock spill exercise report can by found in Appendix K of the Spill Contingency Plan (Appendix 27).

- A table top exercise was performed on August 18th, 2021. The scenario analyzed involved a tractor trailer containing two sea cans that roll over the AWAR and a code one was initiated. The exercise allowed to review the spill management procedure, gain experience on spill intervention and awareness of spill management gear.

SECTION 8. MONITORING

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 16: ***The results of monitoring under the Aquatic Effects Management Plan (AEMP) including:***

- ***Core Receiving Monitoring Program (CREMP);***
- ***Metal Mining Effluent Regulation (MMER) Monitoring;***
- ***Mine Site Water Quality and Flow Monitoring (and evaluation of NP-2);***
- ***Visual AWAR water quality monitoring;***
- ***Blast Monitoring;***
- ***Groundwater Monitoring.***

And

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 19: ***The results of monitoring related to the Aquatic Effects Monitoring Program (AEMP) including:***

- ***Core Receiving Environment Monitoring Program (CREMP);***
- ***Metal Mining Effluent Regulation (MMER) Monitoring;***
- ***Water Quality and Flow Monitoring;***
- ***Visual Whale Tail Haul Road water quality monitoring;***
- ***Blast Monitoring; and***
- ***Groundwater Monitoring.***

And

As required by NIRB Project Certificate No.008 Item 8: ***All monitoring information collected pursuant to the Project Certificate and various regulatory requirements for the Project shall, if appropriate, given the type of monitoring conducted, contain the following information:***

a) The name of the person(s) who performed the sampling or took the measurements including any relevant accreditations;
b) The date, time and place of sampling or measurement, and weather conditions;
c) The date of analysis;
d) The name of the person(s) who performed the analysis including any relevant accreditations;
e) A description of the analytical methods or techniques used; and
f) A discussion of the results of any analysis.

And

As required by NIRB Project Certificate No 008 Condition 18: ***The Proponent shall, reflecting any direction from the Nunavut Water Board, maintain a Site Water Monitoring and Management Plan designed to:***

- ***Minimize the amount of water that contacts mine ore and wastes;***
- ***Appropriately manage all contact water and discharges to protect local aquatic resources; and***
- ***Implement water conservation and recycling to maximize water reuse and minimize the use of natural waters.***

- ***The Plan should include monitoring that demonstrates contact water (runoff and shallow groundwater) from the ore storage and waste rock storage areas is captured and managed, as per the Waste Rock Facility Management Plan. The plan should be submitted to the NIRB at least 60 days prior to the start of construction, with results submitted annually thereafter.***

Following sections describe the water monitoring as required by the Meadowbank and Whale Tail Water Quality and Flow Monitoring Plan and AEMP. These plans were both approved by the NWB.

Given the elevated number of certificates of analysis related to both Meadowbank and Whale Tail projects in 2021, Agnico Eagle will provide them on request. The certificates of analysis is detailed as follow:

- name of the person(s) who performed the sampling;
- date, time and place of sampling or measurement;
- date of analysis;
- name of the person(s) who performed the analysis including any relevant accreditations;
- description of the analytical methods or techniques used; and.
- sample and QAQC results.

For all samples collected under the Meadowbank Water Quality and Flow Monitoring Plan, trending was added starting in 2013 up to 2021. The same is also compiled for Whale Tail starting in 2018 up to 2021.

8.1 CORE RECEIVING ENVIRONMENT MONITORING PROGRAM (CREMP)

8.1.1 Meadowbank Site*

The Core Receiving Environment Monitoring Program (CREMP) can be found in Appendix 33. Please take note that the following is just a summary of the CREMP report and Agnico Eagle will refer the reader to the whole report in Appendix 33 for an exhaustive comprehension of the program and results for 2021. Agnico Eagle will also refer the reader to Table ES-1 of the 2021 CREMP report for a summary of key finding with temporal and spatial trend assessment and annual CREMP results compared to FEIS prediction.

The Core Receiving Environment Monitoring Program for the Meadowbank Complex focuses on identifying changes in water quality, sediment chemistry, and aquatic communities—both primary producers (phytoplankton) and secondary producers (benthic invertebrate community)—that may be associated with mining activities. Changes are identified using a temporal/spatial trend assessment. The trend assessment includes the use of early warning triggers and action thresholds to support management decisions within the Aquatic Effects Management Program (AEMP). The AEMP is the overarching ‘umbrella’ program that integrates results of individual, but related, monitoring programs for the purpose of implementing management actions before unacceptable adverse impacts occur to aquatic life.

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The 2021 CREMP summarized results for the Meadowbank and Baker Lake study areas are presented below.

Meadowbank Study Area

There are 9 sampling areas included in the Meadowbank CREMP. Third Portage Lake East Basin and North Basin (TPE and TPN), Second Portage Lake (SP), and Wally Lake (WAL) are the NF areas monitored annually for changes related to operations at the Meadowbank mine and mill. Tehek (TE), the South Basin of Third Portage Lake (TPS), and Tehek far-field (TEFF) are monitored only if changes are detected upstream at the NF locations consistent with the strategy outline in Section 2.2.3 of the report in Appendix 33. Two reference areas are shared for the Meadowbank and Whale Tail Pit programs: Inuggugayualik Lake (INUG) and Tasirjuaraajuk Lake (aka Pipedream Lake [PDL]). INUG has been the core reference area since formal monitoring began in 2006. PDL was added to the Meadowbank CREMP in 2009. Refer to map provided in the 2021 CREMP Report for location.

Water Quality (Limnology & Water Chemistry)

Water quality monitoring for limnology and chemistry was completed in March, May, July, August, and September 2021 according to the CREMP study design. Limnology profiles were taken at the Near-Field (NF) areas—Third Portage Lake sampling areas, (TPN, TPE), Second Portage Lake (SP), and Wally Lake (WAL)—in the winter months when ice conditions were safe (January, February, April, November, and December), to verify the absence of anomalous changes in water quality (e.g., conductivity) attributable to site-related activities.

The NF areas close to the mine have higher concentrations of dissolved solids and constituent major ions such as calcium and magnesium compared to baseline/reference conditions. This observation is consistent with previous findings. While these changes to water quality are mine-related, the observed concentrations are still relatively low and there is no evidence to suggest concentrations are increasing year-over-year or that the observed concentrations would result in adverse ecological effects. Consistent with previous reporting cycles, there were no trigger exceedances in 2021 for any water quality parameters with CCME water quality guidelines, including metals. In the context of the assessment framework outlined in the Final Environmental Impact Statement (FEIS), the magnitude of potential effect on water quality in each of the near-field lakes in 2021 was considered low (i.e., less than 1X the CCME WQGs) and consistent with the original predictions. Routine water quality monitoring is recommended for 2022.

Long-term Trend Analysis – In addition to the routine assessment of water quality at Meadowbank summarized above, a more detailed assessment of temporal changes for a subset of major ions in NF areas was completed in 2021 using a mixed-effects model approach. The purpose of the assessment was to better understand the pattern of change for key water chemistry parameters in the period after mining. Physical/ionic parameters were the focus of this analysis since they have consistently increased over time relative to control and exceeded triggers and/or FEIS predictions. These parameters included conductivity, water hardness, calcium, magnesium, total alkalinity, and TDS. The BACI analysis used in the routine assessment provides a useful and robust measure of changes in parameters relative to control during a given year. The mixed-effects trend analysis was developed in 2021 to complement the BACI analysis and provide a statistically supported understanding of long-term trends in key water chemistry parameters. The trend analysis showed that there is strong evidence that differences in physical/ionic parameters relative to INUG have been stable since 2014 at TPN, TPE and SP, though there was more variability in year-to-year differences at SP between 2014 and 2021.

Phytoplankton Community

Phytoplankton community sampling was completed at the same time as the water chemistry sampling program in 2021. The phytoplankton community at TPN had higher biomass (47%; p=0.022) and richness (26% increase; p=0.011) in 2021 compared to reference/baseline conditions. The apparent increase in biomass and richness is not associated with higher nutrient concentrations, which implies the increase observed in 2021 may be natural. Ultimately, the long-term phytoplankton monitoring data demonstrates that mining operations have not contributed to pervasive changes in primary productivity among the NF areas. The trends in phytoplankton biomass and richness will be reviewed again in 2022.

Sediment Chemistry

Sediment grab sampling was conducted at the NF and reference areas to support the benthic invertebrate community monitoring component of the CREMP. An oversight by staff at the analytical laboratory during sample receipt resulted in some of the samples being discarded prior to analysis. Chemistry results for samples that were analyzed showed concentrations have not increased. Sediment grab samples will be conducted in 2022 to replace the discarded samples from 2021 and to support the benthic invertebrate community sampling program. The next sediment coring program is scheduled for August 2023.

Benthos Community

There were no statistically significant changes to the benthic invertebrate community at Meadowbank relative to baseline/reference conditions identified by the 2021 BACI assessment. The trends in benthos abundance and richness will be reviewed again in 2022.

Baker Lake Study Area

CREMP monitoring at Baker Lake started in 2008. Important mine-related activities in Baker Lake include barge/shipping traffic and general land-based activities associated with the tank farm area. The highest number of barge shipments were reported in 2021 since monitoring began in 2008. In 2021, there were three spills reported; two in-water spills and one in which it is uncertain whether the spill reached Baker Lake.

Water Quality and Sediment Quality

Water quality sampling was conducted at two NF areas (BBD, BPJ) and one FF area (BAP) in Baker Lake in July, August, and September 2021. The mean concentrations for total silicon and total titanium in water exceeded their respective triggers in 2021 at BBD and the BACI showed a statistically significant increase above baseline/reference. These increases were associated with spikes in other parameters (e.g., TSS), likely representing a natural isolated episodic event (e.g., river sediment plume, wave action etc.) rather than anthropogenic influence.

Sediment quality sampling was conducted at two NF areas (BBD, BPJ) and two FF areas (BAP, BES) in August 2021. Sediment grab samples were collected in 2021, however as previously mentioned, the laboratory discarded the samples prior to analysis. Sediment grab samples will be collected again in 2022, as part of the CREMP plan and to replace the discarded samples. Changes in sediment chemistry data are evaluated on a 3-year cycle as part of the sediment coring program (coinciding with the EEM cycle). The next sediment coring program is planned for 2023. There was no evidence of any barge-related impacts to water quality at impact areas in Baker Lake.

With the exception of the isolated increase in parameters at BBD where there are no mine-related activities, concentrations measured in water at Baker Lake in 2021 were comparable to results reported in previous annual monitoring reports Monitoring in 2022 will follow the scope and schedule of the CREMP Plan.

Biological Communities

The phytoplankton and benthos communities in Baker Lake have not exhibited any changes attributable to Agnico Eagle's activities in Baker Lake. No follow-up management actions are required for 2022 beyond routine monitoring.

8.1.2 Whale Tail Site*

As required by NIRB Project Certificate No.008, Condition 19*: The Proponent shall, reflecting any direction from responsible authorities such as the Nunavut Water Board, Fisheries and Oceans Canada and Environment and Climate Change Canada, maintain a Core Receiving Environment Monitoring Program (CREMP) designed to:*

- ***Determine the short and long-term effects in the aquatic environment resulting from the Project;***
- ***Evaluate the accuracy of Project effect predictions;***
- ***Assess the effectiveness of mitigation and management measures on Project effects;***
- ***Identify additional mitigation measures to avert or reduce environmental effects due to Project activities;***
- ***Comply with Metal Mining Effluent Regulations requirements, should an Environmental Effects***
- ***Monitoring program be triggered;***
- ***Reflect site-specific water quality conditions;***
- ***Include details comparing the watershed features in the Whale Tail watershed to those watersheds used as reference lakes; and***
- ***Evaluate the mixing and non-mixing portion of the pit.***

The CREMP should include sufficient sampling and monitoring programs to appropriately characterize the receiving environment to ensure that adequate data is available to assess impact predictions made within the Environmental Impact Statement for the Whale Tail Pit Project. The updated plan should be submitted to the NIRB at least 60 days prior to the start of construction, with results submitted annually thereafter.

And

As required by NIRB Project Certificate No.008 Condition 17: ***The plan should be submitted to the NIRB at least 30 days prior to the start of construction, with results submitted annually thereafter. The Proponent shall:***

a) Monitor the effects of project activities and infrastructure on surface water quality conditions;
b) Ensure the monitoring data is sufficient to compare the impact predictions in the Environmental Impact Statement (EIS) for the Project with actual monitoring results;
c) Ensure that the sampling locations and frequency of monitoring is consistent with and reflects the requirements of the Water Quality and Flow Plan and the Core Receiving Environmental Monitoring Program; and

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d) On an annual basis, the Proponent will compare monitoring results with the impact assessment predictions in the EIS and will identify any significant discrepancies between impact predictions and monitoring results.

The Core Receiving Environment Monitoring Program (CREMP) can be found in Appendix 33. Please take note that the following is just a summary of the CREMP report and Agnico Eagle will refer the reader to the whole report in Appendix 33 for an exhaustive comprehension of the program and results for 2021. Agnico Eagle will also refer the reader to Table ES-2 of the 2021 CREMP report for a summary of key finding with temporal and spatial trend assessment and annual CREMP results compared to FEIS prediction.

Data analysis for Whale Tail study areas follows the same methods and framework as Meadowbank. 2021 was the third full year where most Whale Tail study area lakes were classified as impact. Whale Tail South (WTS) and Mammoth Lake (MAM) switched from control to impact in 2018 coinciding with construction of the Whale Tail Dike. The status of Lake A20, Lake A76, and Lake DS1 switched to impact in January 2019. Nemo Lake (NEM) transitioned after July 2019.

The Core Receiving Environment Monitoring Program for the Meadowbank Complex focuses on identifying changes in water quality, sediment chemistry, and aquatic communities—both primary producers (phytoplankton) and secondary producers (benthic invertebrate community)—that may be associated with mining activities. Changes are identified using a temporal/spatial trend assessment. The trend assessment includes the use of early warning triggers and action thresholds to support management decisions within the Aquatic Effects Management Program (AEMP). The AEMP is the overarching ‘umbrella’ program that integrates results of individual, but related, monitoring programs for the purpose of implementing management actions before unacceptable adverse impacts occur to aquatic life.

The 2021 CREMP summarized results for the Whale Tail study area are presented below.

Whale Tail Study Area

There are 6 lakes currently included in the Whale Tail Pit CREMP study design. Whale Tail Lake South Basin (WTS) and Mammoth Lake (MAM) are NF areas designed to detect changes related to dike construction in Whale Tail Lake and Mammoth Lake and discharge of treated water during operations. Nemo Lake (NEM) is also considered a NF area because of its proximity to the site, even though it is situated in a different watershed. MF areas are Lake A20 (upstream from WTS, but joined to WTS after flooding) and Lake A76 (downstream from MAM). Lake A76 is situated at the junction of the two flow paths leading to Lake DS1. Given its morphology and location, it represents an ideal MF exposure area for both flow paths. Lake DS1 is the FF location to provide additional context for characterizing spatial extent of effects. Refer to map provided in the 2021 CREMP Report for location.

Water Quality

Surface water monitoring for limnology and water chemistry were completed in March, May, July, August, and September according to the CREMP study design for the Whale Tail Pit study area. Supplemental limnology profiles were taken at Whale Tail South (WTS), Mammoth Lake (MAM), Nemo Lake (NEM) and Lake A20 in select winter months to verify that water quality is broadly within the range of expected values, particularly for conductivity and dissolved oxygen.

Changes in water quality in lakes downstream from the mine were predicted to occur during construction and operations. Water quality within the Whale Tail study area lakes exhibited fairly stable conditions during the baseline period. Consequently, when interpreting time series plots to examine spatial-temporal trends in water quality, the signal of development-related inputs was expected to be easily observed relative to the low noise levels of the baseline period. The following parameters have increased relative to baseline/reference conditions:

- Ionic Compounds – total dissolved solids (TDS) and constituent ions such as calcium, magnesium and potassium were elevated in the NF lakes and downstream of MAM to Lake A76.

- Nutrients – total Kjeldahl nitrogen (TKN) was elevated at NF areas WTS, MAM, and A20. Total phosphorous (TP) was elevated at WTS, A20, and A76. Total organic carbon (TOC) and dissolved organic carbon (DOC) were elevated at WTS and Lake A20. TOC was also elevated at MAM and NEM. The elevated parameters are likely the result of inputs from flooded terrestrial habitats following impoundment, dewatering inputs from WTN, and the joining of WTS to A20.

- Metals/metalloids – lithium was elevated at WTS and MAM and silicon was elevated at MAM. Neither of these parameters have effects-based guidelines for protection of freshwater aquatic life.

Of the parameters with trigger exceedances, FEIS predictions were exceeded for total phosphorous at WTS and total alkalinity, TDS, total lithium, and several ionic compounds at WTS and MAM in one or more sampling events. Importantly, the absolute concentrations of these parameters remain low. For WTS, the adaptive management Level 1 is in effect for total phosphorus and Level 0 is in effect for arsenic based on the results of the September sampling event. MAM is within the normal operating range and Level 0 water management strategy is in effect in 2022. Routine water quality monitoring will continue in 2022 to track emerging spatial and temporal trends.

Phytoplankton Community

Phytoplankton community sampling was completed at the same time as the water chemistry sampling program in 2021. Phytoplankton communities vary naturally throughout the year in total biomass (and density) and community composition (taxa richness). The primary stressors for the phytoplankton community include nutrients and metals in surface contact water discharged to MAM and WTS. Nutrient loading can manifest as an increase in total biomass or a change in community structure, while increasing metals concentrations would be expected to cause lower biomass and taxa diversity.

Increased total biomass was reported at WTS (10%), MAM (78%), A20 (222% increase), and A76 (119%) and NEM (95% increase) relative to control/baseline conditions. Only changes in total biomass at Lake A20 were statistically significant ($p=0.029$). The increase in biomass is consistent with higher concentrations of phosphorous and nitrogen in the NF and MF attributed to mining-related activities; however, some of the change in biomass may be natural.

No significant changes in the taxonomic richness of the phytoplankton community were observed in 2021. Phytoplankton community monitoring is scheduled for 2022 according to the CREMP Plan.

Sediment Chemistry

As previously mentioned, some of the sediment samples collected in August 2021 were discarded by the lab prior to being analyzed. Sediment samples from WTS, A76 and NEM were analyzed. Concentrations of metals were similar to results from the baseline period and early operations. Sediment grab samples will be conducted in 2022 to replace the discarded samples from 2021 and to support the benthic invertebrate community sampling program. The next sediment coring program is scheduled for August 2023.

Benthos Community

Benthic invertebrate (benthos) community structure (taxa richness) and function (abundance) in the Whale Tail study area lakes is typical of northern headwaters lakes in the region (i.e., relatively low abundance and few taxa). Although total abundance tends to be low, within-area variability can be substantial. Taxa richness, unlike abundance, is considerably less variable, both temporally (i.e., inter-annually) and spatially (i.e., among the different lakes). The typical number of taxa identified among the various study areas is 10 to 15. The range observed in 2021 was slightly higher in NEM than 2020 and slightly higher than the range of baseline conditions at NEM. All other study areas were comparable with baseline conditions. The comparatively high taxa richness, combined with no statistically significant changes in abundance at NF areas, implies that the changes in water quality observed in the NF and MF areas are not impacting the health of the benthos community. Benthos community monitoring will be conducted in 2022 according to the scope and schedule of the CREMP Plan.

8.2 METHYLMERCURY STUDIES WHALE TAIL SITE*

As required by NIRB Project Certificate No.008, Condition 63*: The Proponent shall conduct additional studies as part of its freshwater aquatic effects analyses to ensure that methylmercury concentrations anticipated to increase during operations in the aquatic environment (including in fish tissue) do not exceed regulatory requirements. In addition, the Proponent shall consider assessing potential risks from consumption of fish containing methylmercury by using Health Canada's hazard quotients as a descriptive tool. A summary of the results of these additional studies, including the assessment of the potential risk to people from consumption of fish, shall be included in the Proponent's annual report to the Nunavut Impact Review Board.*

The 2021 Mercury Monitoring Program (MMP) was completed according to the study design outlined in the Mercury Monitoring Plan (Version 2, March 2019). The purpose of the MMP is to assess changes in concentrations of mercury in the Whale Tail Lake south basin and sub-watershed lakes (i.e., Lake A20 and Lake A65) as a result of Project-related flooding. The scope of the 2021 program included water and sediment sampling and fish collections (small-bodied species) at various locations within the Impoundment, downstream of the Mine, and local reference lakes. This report also includes the 2020 fish tissue chemistry data, which were not available in time for reporting due to COVID-related delays.

Mercury is a naturally occurring element that is found in low levels everywhere- in air, water, soil, plants, animals, and humans. In aquatic environments, bacteria turn naturally occurring inorganic mercury into methylmercury, a highly bioavailable form of mercury. Methylmercury is readily bioaccumulated and biomagnified through the food chain, meaning it is found in the highest concentrations in long-lived animals near the top of the food chain. The flooding of terrestrial habitat, such is the case for the Whale Tail Lake south basin and sub-watershed lakes, can lead to elevated production of methylmercury

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associated with the decomposition of organic matter within the flood zone. The elevated production of methylmercury results in increases in methylmercury in all components of the ecosystem. Concentrations are highest in the tissue of long-lived, predatory fish species, such as Lake Trout, and peak anywhere from four to 11 years after flooding. The increase is temporary, however, and as flooded carbon sources for bacterial decomposition are exhausted, methylmercury concentrations gradually decline throughout the ecosystem.

Below is a summary of the major findings. Complete review and results interpretation of the Mercury Monitoring Program Report can be found in (Appendix 53).

The 2021 Mercury Monitoring Program key findings are presented below.

Water

Mercury concentrations in Whale Tail Lake were below predicted concentrations in the Final Environmental Impact Statement (FEIS) and well below water quality guidelines for the protection of aquatic life. As expected, mercury concentrations were still elevated in the Impoundment in 2021 compared to pre-flooding conditions (2016–2018) but may have peaked in 2020.

Sediment

In 2021, the laboratory discarded a batch of sediment samples collected for the MMP prior to analysis. This included most of the CREMP samples and all of the inundation zone samples collected from Whale Tail Lake; the discarded samples will be re-collected in 2022. For the results received, sediment mercury concentrations in 2021 were similar to baseline conditions at areas sampled within the Impoundment and downstream from the Mine. Total mercury concentrations were below the CCME sediment quality guidelines at both Whale Tail (South Basin) and mid-field area Lake A76.

Fish

COVID-19 health restrictions in the fall and winter 2020 resulted in delays in fish tissue sample processing and analysis. Therefore, 2020 fish mercury concentrations for Lake Trout and small-bodied fish are included in this year's report. The 2021 small-bodied fish mercury results were subject to similar delays and will be included in the 2022 report.

Lake Trout – average total mercury concentration (0.59 mg/kg ww) in a 550-mm Lake Trout from Whale Tail Lake in 2020 was similar to concentrations reported in Lake Trout from the baseline period (2015) and fishout (2018). This result is not surprising considering the slow growth rates of Arctic fish. While methylmercury has increased in small-bodied fish within the Impoundment, it will take a number of years to cascade up the food chain to measurable changes in Lake Trout tissue. Lake Trout tissue concentrations were predicted to eventually peak at 1.55 mg/kg ww before returning to a new baseline. The next large-bodied fish sampling event is planned for 2023, coinciding with the next Environmental Effects Monitoring (EEM) program.

Small-bodied fish – mercury concentrations were higher in Slimy Sculpin and Ninespine Stickleback from the Impoundment in 2020 compared to 2018 (baseline) and 2019 (flood year) and compared to areas downstream of the Mine and local reference lakes. The increase in mercury concentrations in the Impoundment were expected. Small-bodied fish sampled in 2021 will help confirm whether mercury concentrations in fish have reached their peak or are still increasing. Stable isotope analysis demonstrated how slight changes in feeding strategies from benthic to more pelagic feeding and feeding

higher up on the food chain occurred in the Impoundment in 2020 compared to earlier years and areas downstream of the Mine and reference areas. The changes in feeding strategies may affect the rate of mercury bioaccumulation in small-bodied fish in the Impoundment.

The 2022 monitoring program will continue monitoring changes in mercury concentrations in water, as well as sediment sampling within the flood zone to allow spatial comparison between flooded and original substrates within the Impoundment. The 2022 MMP will be completed as per the scope and schedule outlined in the latest version of the Mercury Monitoring Plan (Azimuth, 2022 [in prep]).

Finally, the current Mercury Monitoring Plan (Version 2, 2019) does not specifically propose to assess risk to human health from consumption of fish residing in the Project-area lakes on an ongoing basis. Azimuth (2017) modeled expected concentrations in fish tissue, and addressed impacts of increased mercury concentrations in fish on Health Canada's recommended consumption rates. Further risk-based analyses will be implemented in the event that monitoring results exceed model predictions for fish tissue concentrations. This approach is supported by the low rates of fishing by local residents in the Project area (see FEIS Volume 7, Section 7.3), and a no-fishing policy for workers while onsite.

8.3 MDMER AND EEM SAMPLING

8.3.1 Meadowbank Site

This section includes the results of the monitoring programs conducted under the Metal and Diamond Mining Effluent Regulations (MDMER) and its Schedule 5 Environmental Effects Monitoring (EEM) Studies. Figures 1, 2, 3 and 6 illustrate the location of sampling stations at the Meadowbank mine site, EEM receiving environment monitoring program, the Vault Site, and Baker Lake marshalling facilities, respectively.

8.3.1.1 *Portage Attenuation Pond Discharge*

On November 19th, 2014 tailings deposition commenced in the South Cell (Portage Attenuation Pond) and this represented the end of use of the Portage Attenuation Pond. There has been no further effluent discharge to Third Portage Lake since July 5th, 2014. In 2019, Agnico Eagle have officially informed ECCC that the final discharge point Water Treatment Plant (ST-MMER-1 / ST-9) will no longer be used and is permanently dismantled. For this reason, Agnico Eagle is not reporting MDMER and EEM results since 2019.

8.3.1.2 *Vault Attenuation Pond Discharge*

The Vault Discharge became subject to the MDMER on June 27th, 2013 during the dewatering of Vault Lake. There has been no further effluent discharge from the Vault Attenuation Pond to Wally Lake since October 2017. Therefore, sampling station ST-10, also named ST-MMER-2 were not used in 2021. There is currently no plans to have a discharge in 2022.

8.3.1.3 *East Dike Discharge*

The East Dike Seepage Discharge became subject to the MDMER on January 6th, 2014. In 2020, Agnico Eagle continued to pump water from the two collection points, South and North seepage and discharged through a common header through a diffuser into Second Portage Lake. The seepage water was released into the environment, prior to contact with mining activity, without treatment as it is compliant with section 4 (1) of the regulation.

Agnico Eagle sent a request to ECCC in February 2016 to reduce the testing frequency of the Ra226 to once per quarter. On March 15th, 2016, the request was approved by ECCC. Agnico Eagle sent a second request in August 2016 to ECCC to reduce the sampling frequency of Item 1 to 6 in column 1 of the Schedule 4 and to reduce acute lethality and Daphnia magna testing to not less than once per quarter. On September 15th, 2016, ECCC approved the Agnico Eagle's request. The reduced frequency has started on October 1st, 2016. Starting July 1st, 2021, when the MDMER amendment came in force, Daphnia magna return to a normal monthly frequency and un-ionized ammonia started to be tested on a weekly basis. Discharge monitoring samples are provided in Table 8-1.

East Dike Seepage (sampling station ST-8, also named ST-MMER-3) was discharged into the receiving environment, Second Portage Lake (SPL), January 1st to April 5th, April 26th to May 6th, and December 9th to December 31st. Due to increased TSS levels in April and May, the discharge to Second Portage Lake was stopped. All water was diverted to the pits, as done in the past. Agnico Eagle continued to monitor TSS and restarted the discharge to Second Portage Lake on December 9th. The total volume discharged in 2021 was 35,927 m^3. There were two (2) exceedance of the TSS MDMER/Water License limit in 2021:

- In April, two regulatory samples were taken as per MDMER requirement Section 12 on April 5th (TSS 5 mg/L) and April 29th (TSS 30 mg/L). Based on these two samples, the monthly average is 17.5 mg/L, thus exceeding the MDMER monthly average of 15 mg/L. Agnico Eagle didn't suspect the April 29th result will be at the limit of the grab concentration limit set out in Schedule 4 of the regulation as the internal result for this day was determined to be at 10 mg/L and thus didn't suspected any potential non-compliance to the maximum allowable monthly mean concentration. The ECCC inspector was advised on May 20th, 2021.

- In May, two regulatory samples were taken as per MDMER requirement Section 12 on May 3rd (TSS 29 mg/L) and May 5th (TSS 3 mg/L). Based on these two samples, the monthly average is 16 mg/L, thus exceeding the MDMER monthly average of 15 mg/L. Historically, the East Discharge effluent has been stopped prior to freshet each spring to prevent any TSS exceedances. As a precautionary measure, the East Dike Discharge was stopped on May 6th, 2021. An exceedance notification was submitted to ECCC on May 20th, 2021.

The volume of water discharged to the environment was reported on a weekly basis pursuant to the MDMER monitoring program requirements. Table 8-2 provides a daily breakdown of volumes of water pumped.

Sublethal toxicity samples are collected directly after the effluent characterization samples, from the same location (ST-MMER-3-EEM, East Dike Discharge). In 2021, there was only one discharge to the receiving environment. For this reason, the East Dike discharge (ST-MMER-3-EEM) is the mine's final discharge point that has potentially the most adverse environmental impact on the environment as per Schedule 5 Section 5. In 2021, three (3) sub-lethal toxicity samples were collected from the East Dike Discharge in compliance with Schedule 5 Section 6. The sub-lethal toxicity samples were collected on January 18th, May 3rd, and December 13th. The water quality samples were taken from the discharge location (ST-MMER-3), the receiving environment exposure area (SPLE or ST-MMER-3-EEM-SPLE) and reference area (TPS or ST-MMER-1-EEM-TPS). These sampling locations are highlighted on Figures 1 and 2. Results of the EEM water quality monitoring program are presented in Tables 8-3. This data was previously reported to Environment Canada via the MERS electronic database reporting system.

Table 8-1 Meadowbank 2021 East Dike MDMER Monitoring

Month	As	Cu	CN	Pb	Ni	NH_3	Zn	TSS	Ra 226	pH	Results for Rainbow Trout Acute Lethality Tests	Results for Daphnia magna Monitoring Tests
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		(mean percentage mortality in 100% effluent test concentration)	(mean percentage mortality in 100% effluent test concentration)
January												
4-Jan-21	0.00091	0.00111	< 0.005	0.00033	< 0.001	NMR	< 0.005	7	< 0.005	7.64	0	0
11-Jan-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	6	NMR	8.73	NMR	NMR
18-Jan-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	6	NMR	8.01	NMR	NMR
25-Jan-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	4	NMR	8.54	NMR	NMR
February												
1-Feb-21	0.00086	0.00109	< 0.005	< 0.0002	< 0.001	NMR	< 0.005	5	< 0.005	7.42	NMR	NMR
8-Feb-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	10	NMR	7.68	NMR	NMR
15-Feb-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	6	NMR	7.76	NMR	NMR
22-Feb-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	6	NMR	8.63	NMR	NMR
March												
1-Mar-21	0.00063	0.00095	< 0.005	< 0.0002	< 0.001	NMR	< 0.005	8	< 0.005	6.66	NMR	NMR
8-Mar-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	8	NMR	7.96	NMR	NMR
15-Mar-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	6	NMR	7.91	NMR	NMR
23-Mar-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	9	NMR	7.56	NMR	NMR
29-Mar-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	7	NMR	7.94	NMR	NMR
April												
5-Apr-21	0.00075	0.0012	< 0.005	0.00022	< 0.001	NMR	< 0.005	5	< 0.005	8.2	0	0
29-Apr-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	30	NMR	7.56	NMR	NMR
May												

Month	As	Cu	CN	Pb	Ni	NH_3	Zn	TSS	Ra 226	pH	Results for Rainbow Trout Acute Lethality Tests (mean percentage mortality in 100% effluent test concentration)	Results for Daphnia magna Monitoring Tests (mean percentage mortality in 100% effluent test concentration)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
3-May-21	NMR	NMR	NMR	NMR	NMR	NMR	NMR	29	NMR	8.28	NMR	NMR
5-May-21	0.00041	0.00092	< 0.005	< 0.0002	0.0152	NMR	< 0.005	3	< 0.005	7.87	0	0
June												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
July												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
August												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
September												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
October												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
November												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
December												
11-Dec-21	NMR	NMR	NMR	NMR	NMR	< 0.01	NMR	15	NMR	7.51	NMR	NMR
13-Dec-21	0.001	0.001	0.001	< 0.00017	0.0006	< 0.01	< 0.001	13	< 0.005	8.36	0	0
20-Dec-21	NMR	NMR	NMR	NMR	NMR	< 0.01	NMR	13	NMR	7.11	NMR	NMR
28-Dec-21	NMR	NMR	NMR	NMR	NMR	< 0.01	NMR	12	NMR	7.04	NMR	NMR

NDEP :No Deposit

NMR: No Measurement Required

Table 8-2 Meadowbank 2021 East Dike MDMER Volume

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
1	286	269	161	329	260	0	0	0	0	0	0	0	
2	288	277	232	417	263	0	0	0	0	0	0	0	
3	275	270	270	453	193	0	0	0	0	0	0	0	
4	290	437	267	473	192	0	0	0	0	0	0	0	
5	291	266	270	203	179	0	0	0	0	0	0	0	
6	240	267	270	0	134	0	0	0	0	0	0	0	
7	270	270	272	0	0	0	0	0	0	0	0	0	
8	298	275	270	0	0	0	0	0	0	0	0	0	
9	296	281	272	0	0	0	0	0	0	0	0	973	
10	302	278	290	0	0	0	0	0	0	0	0	596	
11	282	270	272	0	0	0	0	0	0	0	0	297	
12	290	277	270	0	0	0	0	0	0	0	0	296	
13	286	272	269	0	0	0	0	0	0	0	0	295	
14	279	271	267	0	0	0	0	0	0	0	0	294	
15	280	270	294	0	0	0	0	0	0	0	0	294	
16	287	267	282	0	0	0	0	0	0	0	0	293	
17	287	270	168	0	0	0	0	0	0	0	0	273	
18	282	257	170	0	0	0	0	0	0	0	0	286	
19	279	256	170	0	0	0	0	0	0	0	0	291	
20	279	253	170	0	0	0	0	0	0	0	0	290	
21	286	268	170	0	0	0	0	0	0	0	0	290	
22	280	336	291	0	0	0	0	0	0	0	0	289	
23	278	226	302	0	0	0	0	0	0	0	0	289	
24	272	320	288	0	0	0	0	0	0	0	0	289	
25	275	288	278	0	0	0	0	0	0	0	0	289	
26	274	171	283	167	0	0	0	0	0	0	0	288	
27	278	170	283	184	0	0	0	0	0	0	0	288	
28	270	161	275	227	0	0	0	0	0	0	0	288	
29	273		280	284	0	0	0	0	0	0	0	287	
30	283		274	182	0	0	0	0	0	0	0	285	
31	282		298		0		0	0		0		283	
Total (m^3)	**8,720**	**7,493**	**7,928**	**2,920**	**1,221**	**0**	**0**	**0**	**0**	**0**	**0**	**7,645**	**35,927**

Table 8-3 Meadowbank 2021 East Dike EEM Monitoring (ST-MMER-3)

	Ammonia**	Alkalinity	Aluminum	Cadmium	Chloride	Chromium	Cobalt	Hardness	Iron	Manganese	Mercury	Molybdenum	Nitrate	Phosphorus	Selenium	Sulphate	Thallium	Uranium	Conductivity	T°	Sub-Lethal Toxicity			
	mg N/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	°C	*Ceriodaphia dubia*	*Fathead minnow*	*Lemna minor*	*Pseudokirchneriella subcapitata*
Effluent characterization (65°01'11.21"N 96°02'32.00" W) (ST-MMER-3-EEM)																								
18-Jan-21	< 0.05	27	0.082	< 0.00001	< 1.0	< 0.001	< 0.0002	NA	0.111	0.0028	< 0.00001	< 0.001	< 0.1	0.28	< 0.0001	6.7	< 0.00001	0.0004	67.2	1.40	without SE or AL	without SE or AL	without SE or AL	without SE or AL
3-May-21	< 0.05	32	0.643	< 0.00001	1.1	0.0144	0.00099	35.2	1.170	0.0215	< 0.00001	0.0068	< 0.10	0.024	< 0.0001	7.0	< 0.00001	0.0004	72.4	2.90	without SE or AL	without SE or AL	without SE or AL	without SE or AL
13-Dec-21	< 0.01	27	0.094	0.00006	0.9	< 0.0006	< 0.0005	21.0	0.120	0.0026	< 0.00001	< 0.0005	0.05	0.04	< 0.0005	5.6	< 0.0002	< 0.001	64.8	0.70	without SE or AL	without SE or AL	without SE or AL	without SE or AL
***Annual Average**											***0.000005***				***0.00012***									

**Annual average calculated using half the detection limit*
***Ammonia is not required on or after June 1st, 2021. Results expressed as Ammonia-N.*
SE: Sub-Lethal effects
AL: Acute Lethality
NMR: No measure requirement
NA: No measurement recorded

	Ammonia**	Alkalinity	Aluminum	Cadmium	Chloride	Chromium	Cobalt	Hardness	Iron	Manganese	Mercury	Molybdenum	Nitrate	Phosphorus	Selenium	Sulphate	Thallium	Uranium	Conductivity	T°	pH	O_2	O_2
	mg N/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	°C		%	mg/L
Water Quality Monitoring Exposure Area (65°01'10.81" N 96°02'22.64"W) (ST-MMER-3-EEM-SPLE)																							
3-Jan-21	0.054	11	0.00376	< 0.000005	1.0	< 0.0001	0.0000092	14.6	0.0059	0.000707	< 0.00001	0.000135	< 0.1	< 0.0010	< 0.00004	5.3	< 0.000002	0.0000402	39.3	0.53	6.75	122.5	17.43
5-May-21	0.077	12	0.00415	< 0.000005	1.0	< 0.0001	0.0000118	16.4	0.0045	0.000749	< 0.00001	0.000178	< 0.1	0.0013	< 0.00004	6.5	< 0.000002	0.000051	42.0	1.40	6.91	126.3	14.95
13-Dec-21	0.000012	13	< 0.005	< 0.000020	0.7	< 0.0006	< 0.0005	13.0	0.010	< 0.0005	0.00001	< 0.0005	< 0.01	< 0.04	< 0.0005	4.6	< 0.0002	< 0.001	35.2	0.34	6.66	98.5	13.90
Water Quality Monitoring Reference Area (65°58'10.90" N 96°09'51.37" W) (ST-MMER-1-EEM-TPS)																							
3-Jan-21	< 0.05	8.3	0.00314	< 0.000005	< 1.0	< 0.0001	0.00001	9.1	0.0025	0.000657	< 0.00001	0.000115	< 0.1	< 0.001	< 0.000040	4.3	< 0.0000020	0.000034	28.2	0.48	6.88	118.4	16.91
29-Mar-21	< 0.05	5.9	0.0027	< 0.000005	1.4	< 0.0001	0.0000064	9.7	0.0017	0.000511	< 0.00001	0.000103	< 0.1	< 0.001	< 0.000040	4.3	< 0.0000020	0.000031	27.9	0.74	7.07	99.3	14.21
14-Dec-21	0.000009	9.0	< 0.005	< 0.000020	0.5	< 0.0006	< 0.0005	10.0	< 0.0100	0.0005	0.00002	< 0.0005	< 0.01	< 0.010	0.001000	4.3	< 0.0002	< 0.001	28.3	0.44	6.74	111.2	15.66

	Arsenic	Copper	Cyanide	Lead	Nickel	Ra226	TSS	Zinc
	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L	mg/L	mg/L
Water Quality Monitoring Exposure Area (65°01'10.81" N 96°02'22.64"W) (ST-MMER-3-EEM-SPLE)								
3-Jan-21	0.000241	0.000621	< 0.005	0.0000091	0.0003	< 0.005	< 1	0.0004
5-May-21	0.00039	0.000625	< 0.005	0.0000066	0.0006	< 0.005	< 1	0.0003
13-Dec-21	< 0.0005	0.0007	0.002	< 0.00017	< 0.0005	NA	< 1	0.001
Water Quality Monitoring Reference Area (65°58'10.90" N 96°09'51.37" W) (ST-MMER-1-EEM-TPS)								
3-Jan-21	0.000143	0.000386	< 0.005	0.0000164	0.0003	< 0.005	< 1	0.00041
29-Mar-21	0.000145	0.000356	< 0.005	0.0000057	0.0004	< 0.005	< 1	0.00060
14-Dec-21	< 0.0005	0.0006	0.002	< 0.00017	0.0006	< 0.005	< 1	< 0.001

***Ammonia-N reported for samples collected prior to June 1st, Un-ionized Ammonia-N reported on or after June 1st*

8.3.2 Whale Tail Site

8.3.2.1 *ST-MDMER-4*

During the in-water portion of the Whale Tail Dike Construction, Agnico Eagle had discharged an effluent from the construction dewatering activities. The Whale Tail Site became subject to the MDMER on July 27th, 2018. The sample was taken from the Water Treatment Plant prior to the release on the tundra, which flowed onto a natural boulder field at the edge of the Whale Tail Lake North Basin (receiving environment). In 2019, Agnico Eagle has officially informed ECCC that the final discharge point Whale Tail North Basin (ST-MDMER-4) will no longer be used and was permanently dismantled.

8.3.2.2 *ST-MDMER-5*

During the dewatering of the Whale Tail North Basin, a FDP was created in 2019 - ST-MDMER-5 WT North Basin Dewatering Phase 1. The dewatering of Whale Tail North was completed on May 20th, 2020 however, the FDP name will remain the same in MERS. This FDP was subject to MDMER on March 5th, 2019. In 2020, ST-MDMER-5 was pumped and discharged to Whale Tail Lake South Basin with or without water treatment to be compliant with Section 4 (1) of the regulation. During 2020, different intakes were associated with this FDP and notification was sent to ECCC before proceeding with the modification. As per previous discussions with ECCC, these modifications related to internal water management and the changes to the intake/source would not effect the requirements laid out in Section 9 and 10 of the MDMER. The effluent was discharged via a submerged diffuser to control erosion and disturbance to bottom sediments. In 2021, this FDP was used as a temporary diffuser to discharge the water from the Whale Tail Attenuation pond to Whale Tail South until the completion of the permanent diffuser. The total volume of water pumped from was 472,563 m^3. The final discharge point (FDP) is located near the shore of Whale Tail South Basin. The FDP ST-MDMER-5 was in operation from March 1st to 7th, March 11th to 14th, March 20th to 23rd, March 30th to April 2nd, April 8th to 11th, April 15th to 22nd, April 25th to May 3rd, May 14th to 22nd, May 26th to June 8th. The results are provided in Table 8-4. The volume of water discharged to the environment was reported on a weekly basis pursuant to the MDMER monitoring program requirements. There were no MDMER non-compliance. Table 8-5 provides a daily breakdown of volumes of water pumped.

Water quality samples were taken from the discharge location (ST-MDMER-5), the receiving environment exposure area (ST-MDMER-5-EEM-WTSE) and reference area (TPS or ST-MMER-1-EEM-TPS). These sampling locations are highlighted on Figures 2 and 4. Results of the EEM water quality monitoring program are presented in Tables 8-6. This data was previously reported to Environment Canada via the MERS electronic database reporting system.

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Table 8-4 2021 MDMER Monitoring (ST-MDMER-5)

Month	As	Cu	CN	Pb	Ni	NH_3	Zn	TSS	Ra 226	pH	Results for Rainbow Trout Acute Lethality Tests (mean percentage mortality in 100% effluent test concentration)	Results for Daphnia magna Monitoring Tests (mean percentage mortality in 100% effluent test concentration)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
January												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
February												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
March												
2-Mar-21	0.00153	0.00157	0.0067	< 0.0002	0.0041	NMR	0.0057	1	< 0.005	6.76	0	0
11-Mar-21	0.00193	0.00127	< 0.005	0.00035	0.0017	NMR	0.0068	1	0.035	6.98	NMR	NMR
14-Mar-21	0.00267	0.00353	0.045	< 0.0002	0.0049	NMR	< 0.005	< 1	0.015	7.11	NMR	NMR
22-Mar-21	0.00196	0.00103	0.0057	< 0.0002	0.0026	NMR	0.0111	< 1	0.008	6.82	NMR	NMR
April												
1-Apr-21	0.00284	0.00262	0.0093	< 0.0002	0.0027	NMR	0.007	1	0.015	7.01	NMR	NMR
9-Apr-21	0.00198	0.00114	0.0051	< 0.0002	0.0024	NMR	< 0.005	2	< 0.005	7.11	NMR	NMR
16-Apr-21	0.00156	0.001	0.0058	< 0.0002	0.0021	NMR	< 0.005	< 1	< 0.005	7.04	NMR	NMR
19-Apr-21	0.00204	0.00477	0.057	< 0.0002	0.0056	NMR	< 0.005	< 1	0.012	7.12	0	0
26-Apr-21	0.002	0.00262	0.023	< 0.0002	0.0058	NMR	< 0.005	< 1	0.013	7.08	NMR	NMR
May												
2-May-21	0.00196	0.0011	< 0.005	< 0.0002	0.0028	NMR	< 0.005	< 1	0.012	7.13	0	0
15-May-21	0.00241	0.00222	0.014	< 0.0002	0.0053	NMR	0.0215	2	0.01	7.21	NMR	NMR
17-May-21	0.00299	0.00207	0.019	< 0.0002	0.0052	NMR	0.0142	1	0.009	7.21	10	0
27-May-21	0.00135	0.00208	0.017	< 0.0002	0.0051	NMR	0.0073	1	0.013	7.34	NMR	NMR

Month	As	Cu	CN	Pb	Ni	NH_3	Zn	TSS	Ra 226	pH	Results for Rainbow Trout Acute Lethality Tests (mean percentage mortality in 100% effluent test concentration)	Results for Daphnia magna Monitoring Tests (mean percentage mortality in 100% effluent test concentration)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
31-May-21	0.00266	0.00117	0.011	< 0.0002	0.006	NMR	0.0058	1	0.013	7.27	NMR	NMR
June												
7-Jun-21	0.00564	0.00198	0.024	< 0.0002	0.0103	0.0018	< 0.005	2	< 0.005	7.08	0	0
July												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
August												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
September												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
October												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
November												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
December												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP

NDEP :No Deposit

NMR: No Measurement Required

Table 8-5 ST-MDMER-5 2021 Volume

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
1	0	0	3468	12178	5565	14459	0	0	0	0	0	0	
2	0	0	11312	4280	4896	10293	0	0	0	0	0	0	
3	0	0	10977	0	306	10253	0	0	0	0	0	0	
4	0	0	12148	0	0	10430	0	0	0	0	0	0	
5	0	0	14382	0	0	11865	0	0	0	0	0	0	
6	0	0	13224	0	0	10444	0	0	0	0	0	0	
7	0	0	1233	0	0	12613	0	0	0	0	0	0	
8	0	0	0	5264	0	4556	0	0	0	0	0	0	
9	0	0	0	8797	0	0	0	0	0	0	0	0	
10	0	0	0	8957	0	0	0	0	0	0	0	0	
11	0	0	5522	8375	0	0	0	0	0	0	0	0	
12	0	0	12940	0	0	0	0	0	0	0	0	0	
13	0	0	11334	0	0	0	0	0	0	0	0	0	
14	0	0	4140	0	2422	0	0	0	0	0	0	0	
15	0	0	0	1379	8179	0	0	0	0	0	0	0	
16	0	0	0	6995	8451	0	0	0	0	0	0	0	
17	0	0	0	6575	6727	0	0	0	0	0	0	0	
18	0	0	0	6633	6610	0	0	0	0	0	0	0	
19	0	0	0	6437	6475	0	0	0	0	0	0	0	
20	0	0	4989	6337	6406	0	0	0	0	0	0	0	
21	0	0	9204	6387	5896	0	0	0	0	0	0	0	
22	0	0	10482	5665	3656	0	0	0	0	0	0	0	
23	0	0	7772	0	0	0	0	0	0	0	0	0	
24	0	0	0	0	0	0	0	0	0	0	0	0	
25	0	0	0	1999	0	0	0	0	0	0	0	0	
26	0	0	0	5042	1690	0	0	0	0	0	0	0	
27	0	0	0	5648	7141	0	0	0	0	0	0	0	
28	0	0	0	5001	9578	0	0	0	0	0	0	0	
29	0		0	5632	15694	0	0	0	0	0	0	0	
30	0		631	6570	10783	0	0	0	0	0	0	0	
31	0		12093		7172		0	0		0		0	
Total (m^3)	**0**	**0**	**145,851**	**124,152**	**117,645**	**84,915**	**0**	**0**	**0**	**0**	**0**	**0**	**472,563**

Table 8-6 2021 EEM Monitoring (ST-MDMER-5)

	Ammonia**	Alkalinity	Aluminum	Cadmium	Chloride	Chromium	Cobalt	Hardness	Iron	Manganese	Mercury	Molybdenum	Nitrate	Phosphorus	Selenium	Sulphate	Thallium	Uranium	Conductivity	T°
	mg N/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	°C
Effluent characterization (65°23'51.30"N 96°40'49.00" W) (ST-MDMER-5-EEM)																				
2-Mar-21	0.53	41	0.0083	< 0.00001	35	< 0.001	0.00093	100.0	0.123	0.278	< 0.00001	0.0042	0.44	< 0.0010	0.00010	36	0.000016	0.00078	269.0	0.50
26-Apr-21	1.10	46	0.0093	< 0.00001	33	< 0.001	0.00063	94.8	0.052	0.196	< 0.00001	0.0067	1.45	< 0.0010	0.00029	27	0.000022	0.00087	262.0	1.00
17-May-21	0.85	48	0.0065	< 0.00001	28	< 0.001	0.00080	94.6	0.054	0.208	< 0.00001	0.0042	1.35	< 0.0010	0.00017	28	0.000024	0.00145	306.0	1.10
31-May-21	0.43	42	0.0070	< 0.00001	26	< 0.001	0.00092	81.6	0.071	0.201	< 0.00001	0.0034	0.89	0.0026	0.00013	27	0.000023	0.00096	219.3	0.20
***Annual Average**											***0.000005***				***0.00017***					

**Half the detection limit was used when calculating the average*
***Ammonia is not required on or after June 1st, 2021. Results expressed as Ammonia-N.*

	Ammonia**	Alkalinity	Aluminum	Cadmium	Chloride	Chromium	Cobalt	Hardness	Iron	Manganese	Mercury	Molybdenum	Nitrate	Phosphorus	Selenium	Sulphate	Thallium	Uranium	Conductivity	T°	pH	O_2	O_2
	mg N/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	°C		%	mg/L
Water Quality Monitoring Exposure Area (65°23'49.08" N 96°40'58.00"W) (ST-MDMER-5-EEM-WTSE)																							
31-Mar-21	< 0.050	17	0.00697	< 0.0000050	19	0.00018	0.000117	42.7	0.1040	0.04850	< 0.00001	0.000715	0.46	0.0021	0.000043	8.8	0.0000039	0.000150	119.3	0.50	7.20	91.4	11.01
17-May-21	0.052	21	0.00825	0.0000061	21	0.00018	0.000105	47.9	0.1000	0.05350	< 0.00001	0.000774	0.53	< 0.001	0.000041	9.6	0.0000062	0.000166	124.3	1.00	7.03	97.9	11.69
Water Quality Monitoring Reference Area (65°58'10.90" N 96°09'51.37" W) (ST-MMER-1-EEM-TPS)																							
29-Mar-21	< 0.050	5.9	0.00274	< 0.0000050	1.4	< 0.00010	0.0000064	9.7	0.0017	0.000511	< 0.00001	0.000103	< 0.1	< 0.001	< 0.000040	4.3	< 0.0000020	0.000031	27.9	0.74	7.07	99.3	14.21
18-May-21	< 0.050	6.8	0.00144	< 0.0000050	< 1.0	< 0.00010	0.0000096	10.1	0.0019	0.000441	< 0.00001	0.000114	NA	< 0.001	< 0.000040	4.7	< 0.0000020	0.000034	32.5	5.90	6.63	107.5	12.60

	Arsenic	Copper	Cyanide	Lead	Nickel	Ra226	TSS	Zinc
	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L	mg/L	mg/L
Water Quality Monitoring Exposure Area (65°23'49.08" N 96°40'58.00"W) (ST-MDMER-5-EEM-WTSE)								
31-Mar-21	0.000801	0.000717	< 0.005	0.0000284	0.00256	< 0.005	< 1	0.00209
17-May-21	0.000896	0.001500	< 0.005	0.0000322	0.00291	< 0.005	< 1	0.00224
Water Quality Monitoring Reference Area (65°58'10.90" N 96°09'51.37" W) (ST-MMER-1-EEM-TPS)								
29-Mar-21	0.000145	0.0003560	< 0.005	0.0000057	0.000378	< 0.005	< 1	0.00060
18-May-21	0.000188	0.0003490	< 0.005	0.0000116	0.000363	< 0.005	< 1	0.00097

***Ammonia-N reported for samples collected prior to June 1st, Un-ionized Ammonia-N reported on or after June 1st*

8.3.2.3 *ST-MDMER-6*

During the Phase 2 dewatering of the Whale Tail North Basin, the ST-MDMER-6 FDP was created in 2019. This FDP was subject to MDMER on June 17th, 2019. When water from the Whale Tail North Basin dewatering required treatment for TSS, the water was pumped and treated via the Water Treatment Plant and discharged back in Mammoth Lake via a submerged diffuser to control erosion and disturbance to bottom sediments. This final discharge point was not used in 2021 but remains active on MERS . There are no discharge monitoring results for 2021.

8.3.2.4 *ST-MDMER-7*

The third FDP was the Attenuation Ponds water discharged to Mammoth Lake via a submerged diffuser to control erosion and disturbance to bottom sediments – ST MDMER-7. ST-MDMER-7 intake was originally planned to be the Whale Tail Attenuation Pond and the sampling point of the FDP at the Water Treatment Plant. Since the Attenuation Ponds were not yet operational due to ongoing dewatering, Agnico Eagle sent a notification of modification to ECCC on September 19th, 2019 to move the intake from Attenuation Ponds to Quarry 1. The sampling point of the FDP moved from after the WTP to the intake of the pump in Quarry 1. On March 20th, 2020, Agnico Eagle sent a notification to ECCC to modify this FDP and move the intake to the Whale Tail Attenuation Pond. In 2021, discharge from the Attenuation Pond to Mammoth Lake via ST-MDMER-7 occurred from June 9th to July 5th, July 18th to August 26th, August 29th to September 11th, and September 16th to 28th. The total Volume of water discharged from the Whale Tail Attenuation Pond from this FDP was 916,198 m^3 in 2021. Discharge monitoring samples are provided in Table 8-7. The volume of water discharged to the environment was reported on a weekly basis pursuant to the MDMER monitoring program requirements. Table 8-8 provides a daily breakdown of volumes of water pumped. No MDMER non-compliance occurred in 2021.

The water quality samples were taken from the discharge location (ST-MDMER-7), the receiving environment exposure area (EEM-7-MAME-2) and reference area (TPS or ST-MMER-1-EEM-TPS). These sampling locations are highlighted on Figures 2 and 4. Results of the EEM water quality monitoring program are presented in Tables 8-9. This data was previously reported to Environment Canada via the MERS electronic database reporting system.

Table 8-7 ST-MDMER-7 2021 MDMER Monitoring

Month	As	Cu	CN	Pb	Ni	NH_3	Zn	TSS	Ra 226	pH	Results for Rainbow Trout Acute Lethality Tests (mean percentage mortality in 100% effluent test concentration)	Results for Daphnia magna Monitoring Tests (mean percentage mortality in 100% effluent test concentration)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
January												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
February												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
March												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
April												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
May												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
June												
10-Jun-21	0.0115	0.00195	0.008	0.00063	0.0124	0.0014	0.0082	19	< 0.005	7.21	NMR	NMR
14-Jun-21	0.00319	0.00105	0.01	< 0.0002	0.0109	0.0013	0.0064	1	< 0.005	7.11	0	0
21-Jun-21	0.00382	0.00102	0.0065	< 0.0002	0.0075	0.0021	0.0055	1	0.008	7.38	NMR	NMR
28-Jun-21	0.00594	0.00196	0.011	< 0.0002	0.0076	0.00082	0.0056	1	< 0.005	6.94	NMR	NMR
July												
5-Jul-21	0.00395	0.00089	0.0088	< 0.0002	0.0115	0.0027	< 0.005	< 1	< 0.005	7.22	0	0
19-Jul-21	0.00529	0.00125	0.0071	< 0.0002	0.0096	0.0021	0.0052	< 1	< 0.005	7.05	NMR	NMR
26-Jul-21	0.00353	0.00067	0.0065	< 0.0002	0.0092	0.0012	< 0.005	< 1	< 0.005	6.91	NMR	NMR
August												
2-Aug-21	0.00561	0.00115	0.0099	< 0.0002	0.0138	0.0078	< 0.005	1	< 0.005	7.44	0	0
9-Aug-21	0.00532	0.00113	0.01	< 0.0002	0.0121	0.0041	0.0065	< 1	0.012	7.41	NMR	NMR

Month	As	Cu	CN	Pb	Ni	NH_3	Zn	TSS	Ra 226	pH	Results for Rainbow Trout Acute Lethality Tests	Results for Daphnia magna Monitoring Tests
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		(mean percentage mortality in 100% effluent test concentration)	(mean percentage mortality in 100% effluent test concentration)
16-Aug-21	0.0273	0.00196	0.02	< 0.0002	0.0722	0.0016	0.0092	< 1	0.014	6.78	NMR	NMR
23-Aug-21	0.0146	0.00212	0.012	0.00028	0.035	0.002	0.0115	1	0.021	7.04	NMR	NMR
31-Aug-21	0.00693	0.0041	0.0052	< 0.0002	0.0133	0.0019	0.0061	2	< 0.005	7.28	NMR	NMR
September												
6-Sep-21	0.013	0.00116	0.032	< 0.0002	0.0214	0.005	0.0078	1	0.013	7.34	0	0
18-Sep-21	0.0122	0.00142	0.011	< 0.0002	0.0411	0.003	0.0081	2	0.011	7.32	NMR	NMR
20-Sep-21	0.00898	0.00219	0.011	< 0.0002	0.0413	0.0012	0.0074	2	< 0.005	7	NMR	NMR
27-Sep-21	0.00627	0.00112	< 0.005	< 0.0002	0.0251	< 0.00061	0.0082	2	0.01	6.75	NMR	NMR
October												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
November												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
December												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP

NDEP :No Deposit

NMR: No Measurement Required

Table 8-8 ST-MDMER-7 2021 Volume

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
1	0	0	0	0	0	0	8973	12984	11912	0	0	0	
2	0	0	0	0	0	0	8600	9931	11857	0	0	0	
3	0	0	0	0	0	0	8549	14597	11913	0	0	0	
4	0	0	0	0	0	0	8540	11341	11419	0	0	0	
5	0	0	0	0	0	0	4443	9994	11868	0	0	0	
6	0	0	0	0	0	0	0	9823	11666	0	0	0	
7	0	0	0	0	0	0	0	9879	11787	0	0	0	
8	0	0	0	0	0	0	0	8382	11919	0	0	0	
9	0	0	0	0	0	4468	0	8502	11931	0	0	0	
10	0	0	0	0	0	9078	0	10198	11928	0	0	0	
11	0	0	0	0	0	7895	0	11133	2210	0	0	0	
12	0	0	0	0	0	7013	0	10354	0	0	0	0	
13	0	0	0	0	0	9810	0	9306	0	0	0	0	
14	0	0	0	0	0	9884	0	11161	0	0	0	0	
15	0	0	0	0	0	7364	0	10556	0	0	0	0	
16	0	0	0	0	0	13039	0	8248	10505	0	0	0	
17	0	0	0	0	0	12956	0	7084	12810	0	0	0	
18	0	0	0	0	0	5150	1714	6871	13034	0	0	0	
19	0	0	0	0	0	8918	6885	7067	13030	0	0	0	
20	0	0	0	0	0	9025	7107	7905	13021	0	0	0	
21	0	0	0	0	0	9155	7267	8610	12924	0	0	0	
22	0	0	0	0	0	9123	7816	8387	14799	0	0	0	
23	0	0	0	0	0	9074	8440	8305	13926	0	0	0	
24	0	0	0	0	0	8975	10248	8477	14555	0	0	0	
25	0	0	0	0	0	9236	10298	9168	15164	0	0	0	
26	0	0	0	0	0	12605	10389	2891	16358	0	0	0	
27	0	0	0	0	0	12198	8904	0	10427	0	0	0	
28	0	0	0	0	0	12941	10425	0	6499	0	0	0	
29	0		0	0	0	10813	10339	5560	0	0	0	0	
30	0		0	0	0	8956	7633	12601	0	0	0	0	
31	0		0		0		10152	5026		0		0	
Total (m^3)	**0**	**0**	**0**	**0**	**0**	**207,675**	**156,722**	**264,341**	**287,460**	**0**	**0**	**0**	**916,198**

Table 8-9 ST-MDMER-7 1 2021 EEM Monitoring

	Ammonia**	Alkalinity	Aluminum	Cadmium	Chloride	Chromium	Cobalt	Hardness	Iron	Manganese	Mercury	Molybdenum	Nitrate	Phosphorus	Selenium	Sulphate	Thallium	Uranium	Conductivity	T°	Sub-Lethal Toxicity			
	mg N/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	°C	*Ceriodaphia dubia*	*Fathead minnow*	*Lemna minor*	*Pseudokirchneriella subcapitata*
Effluent characterization (65°23'50.03"N 96°44'15.48"W) (ST-MDMER-7-EEM)																								
14-Jun-21	0.65	33	0.0124	0.000013	24	< 0.001	0.00155	74.4	0.159	0.222	< 0.00001	0.0019	1.12	0.041	0.00020	37	0.000013	0.00042	222	4.70	NMR	NMR	NMR	NMR
19-Jul-21	0.82	35	0.0043	0.000012	33	< 0.001	0.00099	108.0	0.061	0.156	< 0.00001	0.0026	1.57	< 0.0010	0.00036	46	< 0.000010	0.00083	304	9.30	***NA	without SE or AL	without SE or AL	without SE or AL
31-Aug-21	0.44	41	0.0137	0.000031	45	< 0.001	0.00121	140.0	0.190	0.273	NA	0.0030	1.95	0.0017	0.00032	49	0.000020	0.00119	383	10.50	without SE or AL	without SE or AL	without SE or AL	without SE or AL
***Annual Average**											***0.000005***				***0.00029***									

**Half the detection limit was used when calculating the average*
***Ammonia is not required on or after June 1st, 2021. Results expressed as Ammonia-N.*
****No results for July 19th Ceriodaphia dubia testing due to lab issue*
NMR: No measure requirement
SE: Sub-Lethal effects
AL: Acute Lethality

	Ammonia**	Alkalinity	Aluminum	Cadmium	Chloride	Chromium	Cobalt	Hardness	Iron	Manganese	Mercury	Molybdenum	Nitrate	Phosphorus	Selenium	Sulphate	Thallium	Uranium	Conductivity	T°	pH	O_2	O_2
	mg N/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	°C		%	mg/L
Water Quality Monitoring Exposure Area (65°23'54.4" N 96°44'21.6"W) (EEM-7-MAME-2)																							
3-Aug-21	0.000283	15.0	0.01260	< 0.000005	21	0.00018	0.000139	52.0	0.1020	0.0177	< 0.00001	0.000787	0.62	< 0.001	0.000094	18	0.0000045	0.000245	150.9	9.30	7.23	102.30	9.7
5-Sep-21	0.000519	18.0	0.00803	< 0.000005	21	< 0.0001	0.000206	56.7	0.0372	0.0234	< 0.00001	0.000844	0.85	< 0.001	0.000110	23	0.0000042	0.000257	157.3	10.80	7.53	96.60	9.9
Water Quality Monitoring Reference Area (65°58'10.90" N 96°09'51.37" W) (ST-MMER-1-EEM-TPS)																							
3-Aug-21	0.000048	6.5	0.0116	< 0.00001	< 1.0	< 0.001	< 0.0002	8.6	0.0150	0.0017	< 0.00001	< 0.001	NA	< 0.001	< 0.0001	4.2	< 0.00001	< 0.0001	25.7	6.52	6.83	108.0	12.94
5-Sep-21	0.000030	7.5	0.0102	< 0.00001	1.1	< 0.001	< 0.0002	9.8	0.0130	0.0014	< 0.00001	< 0.001	NA	0.0011	< 0.0001	4.2	< 0.00001	< 0.0001	26.3	9.09	6.54	104.2	11.72

	Arsenic	Copper	Cyanide	Lead	Nickel	Ra226	TSS	Zinc
	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L	mg/L	mg/L
Water Quality Monitoring Exposure Area (65°23'54.4" N 96°44'21.6"W) (EEM-7-MAME-2)								
3-Aug-21	0.00307	0.000534	< 0.005	0.00003	0.00207	< 0.005	< 1	0.00088
5-Sep-21	0.00297	0.000638	< 0.005	0.0000313	0.00378	< 0.005	1	0.00104
Water Quality Monitoring Reference Area (65°58'10.90" N 96°09'51.37" W) (ST-MMER-1-EEM-TPS)								
3-Aug-21	0.00013	< 0.0005	0.014	< 0.0002	< 0.001	< 0.005	< 1	< 0.005
5-Sep-21	0.00017	< 0.0005	< 0.005	< 0.0002	< 0.001	< 0.005	< 1	< 0.005

***Ammonia-N reported for samples collected prior to June 1st, Un-ionized Ammonia-N reported on or after June 1st*

8.3.2.5 *ST-MDMER-8*

The fourth FDP is the Whale Tail Attenuation Pond discharged to Mammoth Lake via the submerged East Diffuser to control erosion and disturbance to bottom sediments – ST-MDMER-8. ST-MDMER-8 intake is in the Attenuation pond and the FPD is at the shore of Mammoth Lake. This FDP was in operation on June 18th to July 5th, July 18th to 30th, August 1st to 26th. The results are presented in Table 8-10 below. There were no non compliance associated with this discharge in 2021. The total volume of water discharge via this diffuser in 2021 was 513,859 m^3. Table 8-11 presents the daily discharge volumes.

The water quality samples were taken from the discharge location (ST-MDMER-8), the receiving environment exposure area (EEM-7-MAME-2) and reference area (TPS or ST-MMER-1-EEM-TPS). These sampling locations are highlighted on Figures 2 and 4. Results of the EEM water quality monitoring program are presented in Tables 8-12. This data was previously reported to Environment Canada via the MERS electronic database reporting system

8.3.2.6 *ST-MDMER-10*

No effluent was discharged in 2021 from this FDP. This FDP is still active on MERS.

8.3.2.7 *ST-MDMER-11*

The seventh FDP is ST-MDMER-11 which represents the discharge from the Whale Tail Attenuation Pond to Whale Tail South via the permanent diffuser to control erosion and disturbance to bottom sediments. The sampling point for this FDP is at the header after the WTP. Discharge from this FDP occurred from January 1st to 5th, January 9th to 13th, January 16th to January 18th, January 21st to 26th, February 1st to 4th, February 9th to 13th, June 6th to 17th, October 2nd to 26th, and November 18th to 23rd. The results are presented in Table 8-13. There were no non-compliance associated with this discharge in 2021. The total volume of water discharge from the FDP in 2021 was 785,410 m^3, the daily discharge volumes are presented in Table 8-14.

The water quality samples were taken from the discharge location (ST-MDMER-11), the receiving environment exposure area (WTSE-1) and reference area (TPS or ST-MMER-1-EEM-TPS). These sampling locations are highlighted on Figures 2 and 4. Results of the EEM water quality monitoring program are presented in Tables 8-15. This data was previously reported to Environment Canada via the MERS electronic database reporting system.

Table 8-10 ST-MDMER-8 2021 MDMER Monitoring

Month	As	Cu	CN	Pb	Ni	NH_3	Zn	TSS	Ra 226	pH	Results for Rainbow Trout Acute Lethality Tests (mean percentage mortality in 100% effluent test concentration)	Results for Daphnia magna Monitoring Tests (mean percentage mortality in 100% effluent test concentration)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
January												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
February												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
March												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
April												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
May												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
June												
19-Jun-21	0.00358	0.00072	0.0057	< 0.0002	0.0084	0.0016	0.0079	1	0.01	7.15	NMR	NMR
21-Jun-21	0.00369	0.00071	0.0063	< 0.0002	0.0074	0.0034	0.0067	2	< 0.005	7.56	0	0
28-Jun-21	0.00641	0.00364	0.012	0.00023	0.0078	< 0.00061	0.0115	11	< 0.005	6.8	NMR	NMR
July												
5-Jul-21	0.00383	0.00091	0.0089	< 0.0002	0.0115	0.0025	< 0.005	< 1	< 0.005	7.22	0	0
19-Jul-21	0.00525	0.00199	0.0069	< 0.0002	0.0093	0.0019	0.0092	< 1	< 0.005	6.98	NMR	NMR
26-Jul-21	0.00374	0.00067	0.0068	< 0.0002	0.0093	0.0014	0.0051	< 1	0.005	6.96	NMR	NMR
August												
2-Aug-21	0.00502	0.00142	0.0094	< 0.0002	0.0136	0.0086	0.0056	1	< 0.005	7.44	0	0

Month	As	Cu	CN	Pb	Ni	NH_3	Zn	TSS	Ra 226	pH	Results for Rainbow Trout Acute Lethality Tests (mean percentage mortality in 100% effluent test concentration)	Results for Daphnia magna Monitoring Tests (mean percentage mortality in 100% effluent test concentration)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
9-Aug-21	0.00514	0.00137	0.0099	< 0.0002	0.0119	0.0027	0.0092	< 1	0.015	7.25	NMR	NMR
16-Aug-21	0.0274	0.002	0.02	< 0.0002	0.0715	0.0012	0.0089	5	0.015	6.62	NMR	NMR
23-Aug-21	0.0197	0.00114	0.01	< 0.0002	0.0353	0.0024	0.006	6	0.012	7.16	NMR	NMR
September												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
October												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
November												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
December												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP

NDEP :No Deposit

NMR: No Measurement Required

Table 8-11 ST-MDMER-8 2021 Volume

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
1	0	0	0	0	0	0	9879	12610	0	0	0	0	
2	0	0	0	0	0	0	9571	9257	0	0	0	0	
3	0	0	0	0	0	0	9436	13349	0	0	0	0	
4	0	0	0	0	0	0	9492	10911	0	0	0	0	
5	0	0	0	0	0	0	4965	9857	0	0	0	0	
6	0	0	0	0	0	0	0	9561	0	0	0	0	
7	0	0	0	0	0	0	0	9676	0	0	0	0	
8	0	0	0	0	0	0	0	8477	0	0	0	0	
9	0	0	0	0	0	0	0	8425	0	0	0	0	
10	0	0	0	0	0	0	0	10241	0	0	0	0	
11	0	0	0	0	0	0	0	10778	0	0	0	0	
12	0	0	0	0	0	0	0	10103	0	0	0	0	
13	0	0	0	0	0	0	0	8920	0	0	0	0	
14	0	0	0	0	0	0	0	10328	0	0	0	0	
15	0	0	0	0	0	0	0	9906	0	0	0	0	
16	0	0	0	0	0	0	0	8281	0	0	0	0	
17	0	0	0	0	0	0	0	7354	0	0	0	0	
18	0	0	0	0	0	5405	2016	7093	0	0	0	0	
19	0	0	0	0	0	9886	8062	7344	0	0	0	0	
20	0	0	0	0	0	9985	7682	7096	0	0	0	0	
21	0	0	0	0	0	10180	4599	7554	0	0	0	0	
22	0	0	0	0	0	10225	5867	8326	0	0	0	0	
23	0	0	0	0	0	10214	8380	8334	0	0	0	0	
24	0	0	0	0	0	9607	10213	8052	0	0	0	0	
25	0	0	0	0	0	10311	10233	4484	0	0	0	0	
26	0	0	0	0	0	13625	10212	2085	0	0	0	0	
27	0	0	0	0	0	12596	8705	0	0	0	0	0	
28	0	0	0	0	0	13849	10495	0	0	0	0	0	
29	0		0	0	0	11752	10452	0	0	0	0	0	
30	0		0	0	0	9890	7674	0	0	0	0	0	
31	0		0		0		0	0		0		0	
Total (m^3)	**0**	**0**	**0**	**0**	**0**	**137,526**	**147,932**	**228,400**	**0**	**0**	**0**	**0**	**513,859**

Table 8-12 ST-MDMER-8 2021 EEM Monitoring

	Ammonia**	Alkalinity	Aluminum	Cadmium	Chloride	Chromium	Cobalt	Hardness	Iron	Manganese	Mercury	Molybdenum	Nitrate	Phosphorus	Selenium	Sulphate	Thallium	Uranium	Conductivity	T°
	mg N/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	°C
Effluent characterization (65°23'51.44'' N 96°44'06.13'' W) (ST-MDMER-8-EEM)																				
21-Jun-21	0.66	32	0.0073	0.000012	24	< 0.001	0.00095	75	0.247	0.140	< 0.00001	0.0017	0.80	0.0018	0.00017	31	0.000017	0.00044	206.1	5.40
19-Jul-21	0.81	37	0.0089	0.000013	33	< 0.001	0.00101	109	0.082	0.156	< 0.00001	0.0026	1.59	0.0036	0.00037	47	0.000019	0.00085	45.7	9.30
***2-Aug-21	1.20	38	0.0046	0.000024	48	< 0.001	NA	151	0.148	0.176	< 0.00001	0.0032	3.44	< 0.0010	0.00056	65	0.000014	0.00150	441.0	10.90
***Annual Average**											***0.000005***				***0.00037***					

** Half the detection limit was used when calculating the average*
***Ammonia-N reported for samples collected prior to June 1st, un-ionized ammonia reported on or after June 1st*
*** Used sample results for ST-WT-2a Water Licence sample*

	Ammonia**	Alkalinity	Aluminum	Cadmium	Chloride	Chromium	Cobalt	Hardness	Iron	Manganese	Mercury	Molybdenum	Nitrate	Phosphorus	Selenium	Sulphate	Thallium	Uranium	Conductivity	T°	pH	O_2	O_2
	mg N/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	°C		%	mg/L
Water Quality Monitoring Exposure Area (65°23'54.4'' N 96°44'21.6''W) (EEM-7-MAME-2)																							
3-Aug-21	0.000283	15.0	0.01260	< 0.000005	21	0.00018	0.000139	52.0	0.1020	0.0177	< 0.00001	0.000787	0.62	< 0.001	0.000094	18	0.0000045	0.000245	150.9	9.30	7.23	102.30	9.7
Water Quality Monitoring Reference Area (65°58'10.90'' N 96°09'51.37'' W) (ST-MMER-1-EEM-TPS)																							
3-Aug-21	0.000048	6.5	0.0116	< 0.00001	< 1.0	< 0.001	< 0.0002	8.6	0.0150	0.0017	< 0.00001	< 0.001	NA	< 0.001	< 0.0001	4.2	< 0.00001	< 0.0001	25.7	6.52	6.83	108.0	12.94

	Arsenic	Copper	Cyanide	Lead	Nickel	Ra226	TSS	Zinc
	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L	mg/L	mg/L
Water Quality Monitoring Exposure Area (65°23'54.4'' N 96°44'21.6''W) (EEM-7-MAME-2)								
3-Aug-21	0.00307	0.000534	< 0.005	0.00003	0.00207	< 0.005	< 1	0.00088
Water Quality Monitoring Reference Area (65°58'10.90'' N 96°09'51.37'' W) (ST-MMER-1-EEM-TPS)								
3-Aug-21	0.01160	< 0.0005	0.014	< 0.0002	< 0.001	< 0.005	< 1	< 0.005

***Ammonia-N reported for samples collected prior to June 1st, Un-ionized Ammonia-N reported on or after June 1st*

Table 8-13 ST-MDMER-11 2021 MDMER Monitoring

Month	As	Cu	CN	Pb	Ni	NH_3	Zn	TSS	Ra 226	pH	Results for Rainbow Trout Acute Lethality Tests (mean percentage mortality in 100% effluent test concentration)	Results for Daphnia magna Monitoring Tests (mean percentage mortality in 100% effluent test concentration)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
January												
4-Jan-21	0.00229	0.00152	0.016	< 0.0002	0.0025	NMR	< 0.005	1	0.014	7.12	0	0
11-Jan-21	0.0022	0.00275	0.027	< 0.0002	0.0044	NMR	0.0054	1	0.023	7.41	NMR	NMR
18-Jan-21	0.00184	0.00176	0.005	< 0.0002	0.0024	NMR	< 0.005	2	0.008	7.2	NMR	NMR
25-Jan-21	0.0023	0.00147	0.03	< 0.0002	0.0046	NMR	< 0.005	< 1	0.02	6.95	NMR	NMR
February												
1-Feb-21	0.00147	0.00105	0.011	< 0.0002	0.0033	NMR	0.0127	1	< 0.005	7.02	0	0
10-Feb-21	0.00141	0.00074	< 0.005	< 0.0002	0.0034	NMR	0.0052	2	0.007	7.09	NMR	NMR
March												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
April												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
May												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
June												
7-Jun-21	0.00761	0.00231	0.025	< 0.0002	0.0111	0.0022	0.0155	6	< 0.005	7.16	0	0
14-Jun-21	0.00333	0.00172	0.011	0.00075	0.0109	0.0015	0.0119	2	< 0.005	7.13	NMR	NMR
July												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
August												

Month	As	Cu	CN	Pb	Ni	NH_3	Zn	TSS	Ra 226	pH	Results for Rainbow Trout Acute Lethality Tests (mean percentage mortality in 100% effluent test concentration)	Results for Daphnia magna Monitoring Tests (mean percentage mortality in 100% effluent test concentration)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
September												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
October												
2-Oct-21	0.00657	0.00107	0.0051	< 0.0002	0.019	< 0.00061	0.0146	2	< 0.005	6.46	NMR	NMR
4-Oct-21	0.00547	0.00082	0.0063	< 0.0002	0.0219	0.001	0.0055	2	< 0.005	7.23	0	0
11-Oct-21	0.0025	0.00144	0.0061	< 0.0002	0.022	0.0044	0.0056	2	< 0.005	7.85	NMR	NMR
18-Oct-21	0.00349	0.00258	0.007	< 0.0002	0.0236	0.00064	0.0097	2	< 0.005	6.66	NMR	NMR
25-Oct-21	0.00309	0.00069	< 0.005	< 0.0002	0.0171	< 0.00061	0.0078	2	0.013	6.53	NMR	NMR
November												
19-Nov-21	0.0119	0.0017	0.028	< 0.00017	0.044	< 0.01	0.01	2	< 0.005	6.77	NMR	NMR
22-Nov-21	0.0077	0.003	0.022	< 0.00017	0.061	< 0.01	0.012	< 1	0.015	6.88	0	0
December												
NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP

NDEP :No Deposit

NMR: No Measurement Required

Table 8-14 ST-MDMER-11 2021 Volume

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
1	9223	8471	0	0	0	0	0	0	0	0	0	0	
2	8980	9698	0	0	0	0	0	0	0	4642	0	0	
3	8855	7873	0	0	0	0	0	0	0	12459	0	0	
4	8188	6223	0	0	0	0	0	0	0	13444	0	0	
5	2828	0	0	0	0	0	0	0	0	17934	0	0	
6	0	0	0	0	0	7934	0	0	0	16042	0	0	
7	0	0	0	0	0	15018	0	0	0	17837	0	0	
8	0	0	0	0	0	15645	0	0	0	16952	0	0	
9	2305	5243	0	0	0	12847	0	0	0	13784	0	0	
10	10006	9959	0	0	0	11960	0	0	0	13072	0	0	
11	9936	10646	0	0	0	10886	0	0	0	14239	0	0	
12	9174	10283	0	0	0	9884	0	0	0	14760	0	0	
13	5527	475	0	0	0	14641	0	0	0	14828	0	0	
14	0	0	0	0	0	15234	0	0	0	15440	0	0	
15	0	0	0	0	0	9900	0	0	0	15428	0	0	
16	5097	0	0	0	0	14111	0	0	0	15371	0	0	
17	9004	0	0	0	0	14022	0	0	0	15381	0	0	
18	7056	0	0	0	0	0	0	0	0	13642	2290	0	
19	0	0	0	0	0	0	0	0	0	15666	16660	0	
20	0	0	0	0	0	0	0	0	0	15348	16016	0	
21	5054	0	0	0	0	0	0	0	0	15578	17953	0	
22	7962	0	0	0	0	0	0	0	0	13845	14630	0	
23	7791	0	0	0	0	0	0	0	0	13491	5418	0	
24	9096	0	0	0	0	0	0	0	0	13173	0	0	
25	7765	0	0	0	0	0	0	0	0	13144	0	0	
26	7263	0	0	0	0	0	0	0	0	4884	0	0	
27	0	0	0	0	0	0	0	0	0	0	0	0	
28	0	0	0	0	0	0	0	0	0	0	0	0	
29	0		0	0	0	0	0	0	0	0	0	0	
30	0		0	0	0	0	0	0	0	0	0	0	
31	0		0		0		0	0		0		0	
Total (m^3)	**141,107**	**68,871**	**0**	**0**	**0**	**152,080**	**0**	**0**	**0**	**350,384**	**72,967**	**0**	**785,410**

Table 8-15 ST-MDMER-11 2021 EEM Monitoring

	Ammonia**	Alkalinity	Aluminum	Cadmium	Chloride	Chromium	Cobalt	Hardness	Iron	Manganese	Mercury	Molybdenum	Nitrate	Phosphorus	Selenium	Sulphate	Thallium	Uranium	Conductivity	T°
	mg N/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	°C
Effluent characterization (65°23'51.30"N 96°40'49.00" W) (ST-MDMER-11-EEM)																				
18-Jan-21	0.37	37	0.0060	< 0.000010	26	< 0.001	0.00058	NA	0.091	0.224	< 0.00001	0.0033	0.38	< 0.0010	< 0.0001	22	< 0.000010	0.00064	198.7	0.20
14-Jun-21	0.69	31	0.0115	0.000012	24	< 0.001	0.00155	76.7	0.179	0.229	< 0.00001	0.0019	1.12	0.0036	0.0002	37	0.000014	0.00044	221.0	4.20
25-Oct-21	0.19	34	0.0080	0.000023	31	< 0.001	0.00325	122	0.349	0.327	< 0.00001	0.0022	1.06	< 0.0010	0.0002	68	< 0.000010	0.00056	320.0	0.40
***Annual Average**											***0.000005***				***0.00015***					

** Half the detection limit was used in calculating the average*
***Ammonia is not required on or after June 1st, 2021. Results expressed as Ammonia-N.*

	Ammonia**	Alkalinity	Aluminum	Cadmium	Chloride	Chromium	Cobalt	Hardness	Iron	Manganese	Mercury	Molybdenum	Nitrate	Phosphorus	Selenium	Sulphate	Thallium	Uranium	Conductivity	T°	pH	O_2	O_2
	mg N/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg $CaCO_3$/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	°C		%	mg/L
Water Quality Monitoring Exposure Area (65°23'45.88" N 96°41'16.21"W) (WTSE-1)																							
3-Jan-21	0.11	16.0	0.0073	< 0.000005	16.0	0.00017	0.000107	37.6	0.1080	0.0354	< 0.00001	0.00058	0.22	0.0016	< 0.00004	7.6	0.0000045	0.000124	117.5	0.44	7.52	109.1	15.34
3-Oct-21	0.000061	13.0	0.0175	< 0.000005	10.0	0.00020	0.000073	27.4	0.0836	0.0111	< 0.00001	0.000314	0.17	0.0031	< 0.00004	6.2	0.0000035	0.0000798	75.7	4.40	7.01	103.1	11.93
21-Nov-21	0.000004	14.0	< 0.0050	< 0.000020	11.7	< 0.0006	< 0.0005	59.0	0.0900	0.0191	< 0.00001	0.001	0.34	0.030	< 0.00050	10.6	0.0004	< 0.001	105.3	0.10	6.73	98.2	13.31
Water Quality Monitoring Reference Area (65°58'10.90" N 96°09'51.37" W) (ST-MMER-1-EEM-TPS)																							
3-Jan-21	< 0.05	8.3	0.0031	< 0.000005	< 1.0	< 0.0001	0.00001	9.1	0.0025	0.000657	< 0.00001	0.000115	< 0.1	< 0.001	< 0.00004	4.3	< 0.000002	0.000034	28.2	0.48	6.88	118.4	16.91
3-Oct-21	0.000589	6.9	0.0085	< 0.000010	1.5	< 0.0010	< 0.0002	9.1	0.0130	0.001300	< 0.00001	< 0.001	NA	0.0011	< 0.00010	4.6	< 0.000010	< 0.000100	26.3	5.6	7.96	104.4	11.64
21-Nov-21	0.000018	8.0	< 0.0050	< 0.000020	0.8	< 0.0006	< 0.0005	15.0	0.1100	0.001400	< 0.00001	< 0.0005	< 0.01	0.030	< 0.00050	4.4	< 0.0002	< 0.001	27	0.41	7.32	105.5	14.86

	Arsenic	Copper	Cyanide	Lead	Nickel	Ra226	TSS	Zinc
	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L	mg/L	mg/L
Water Quality Monitoring Exposure Area (65°23'45.88" N 96°41'16.21"W) (WTSE-1)								
3-Jan-21	0.000703	0.000657	< 0.005	0.000023	0.00211	< 0.005	1	0.00072
3-Oct-21	0.000847	0.000595	< 0.005	0.0000255	0.00169	< 0.005	1	0.0003
21-Nov-21	0.0037	0.0012	0.002	< 0.00017	0.0033	< 0.005	< 1	0.001
Water Quality Monitoring Reference Area (65°58'10.90" N 96°09'51.37" W) (ST-MMER-1-EEM-TPS)								
3-Jan-21	0.000143	0.0003860	< 0.005	0.0000164	0.000345	< 0.005	< 1	0.00041
3-Oct-21	0.000190	< 0.0005	< 0.005	< 0.0002	< 0.001	< 0.005	1	< 0.005
21-Nov-21	0.001800	0.0008	0.001	< 0.00017	0.0005	< 0.005	1	0.001

***Ammonia-N reported for samples collected prior to June 1st, Un-ionized Ammonia-N reported on or after June 1st*

8.4 ENVIRONMENTAL BIOLOGICAL STUDY

8.4.1 Meadowbank Site - EEM Study Design Cycle 4

Seepage water is collected along the East Dike and discharged to Second Portage Lake via outfall MDMER 3, but during Cycles 1, 2 and 3, this FDP has been determined as not being the effluent with the greatest potential to have an adverse effect on the receiving environment than discharges to Third Portage or Wally Lakes, and so EEMs focused on those other discharges. Since the effluent discharge to Wally Lake and Third Portage Lake ceased, the seepage water discharged to Second Portage Lake is the only final discharge point and is, by default, the Cycle 4 EEM exposure area under the MDMER. As per the regulation, field work for the EEM Cycle 4th was to be conducted in 2020. EEM Cycle 4 Study Design was submitted to ECCC on March 2nd, 2020 and more details regarding the design submitted can be found in Appendix 35 of the 2020 Annual Report.. Comments on the study design were received on May 5th, 2020 and Agnico Eagle's response was submitted on June 1st, 2020 (Appendix 36 of the 2020 Annual Report). ECCC's approval for this EEM Cycle 4 Study Design was received on June 15th, 2020. The Cycle 4 Interpretative Report was submitted on June 30th, 2021 and his pending ECCC approval. The full data of the study has been processed and results are presented in Appendix 34. As required under the Metal and Diamond Mining Effluent Regulations, the next interpretive report and biological monitoring data are due on July 1st, 2024.

Agnico Eagle will continue to provide KivIA and other regulators copies of reports and data submitted to ECCC via the Annual Report.

8.4.2 Whale Tail Site - EEM Study Design Cycle 1

During the Whale Tail dike construction, water was pumped from the area enclosed by sediment curtains to create an inflow and thus minimize dispersal of water from within the enclosed area, with increased suspended sediment concentrations, into the rest of Whale Tail Lake. That pumping began on July 27th , 2018, at which time Whale Tail Project was deemed by Environment and Climate Change Canada to be subject to the Metal and Diamond Mining Effluent Regulations (MDMER) under the Fisheries Act. The MDMER requires that a first study design for the biological studies be submitted to the Minister of the Environment not later than 12 months after the day on which a mine becomes subject to section 7 of the MDMER. On July 26th, 2019, Agnico Eagle have provided to ECCC the First EEM Biological Study Design. More details regarding the design submitted can be found in Appendix 39 of the 2019 Annual Report. Comments on the study design was received on February 10th, 2020 and Agnico Eagle's response was submitted on June 19th, 2020 (Appendix 37 of the 2020 Annual Report). ECCC approval for this EEM Cycle 1 Study Design was received on July 3rd, 2020. The Cycle 1 Interpretative Report was submitted on July 26th, 2021 and his pending ECCC approval. The full data of the study has been processed and results are presented in Appendix 35. As required under the Metal and Diamond Mining Effluent Regulations, the next interpretive report and biological monitoring data are due on July 27th, 2024.

Agnico Eagle will continue to provide KivIA and other regulators copies of reports and data submitted to ECCC via the Annual Report.

8.5 MINE SITE WATER QUALITY AND FLOW MONITORING

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 15: ***The results and interpretation of the Monitoring Program in accordance with Part I and Schedule I.***

And

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 18: ***The results and interpretation of the Monitoring Program in accordance with Part I and Schedule I.***

And

As required by DFO Authorizations NU-03-0191.3 Condition 3.1 (Second and Third Portage Lakes), NU-03-0191.4 (Vault Lake) Condition 3.1; NU-03-0190 Condition 5 (AWPAR), NU-14-1046 (Phaser Lake) Condition 3; ***Submit written report summarizing monitoring results and photographic record of works and undertakings.***

This section includes the aquatic monitoring requirements as detailed under the Meadowbank Water Quality and Flow Monitoring Plan and the Whale Tail Water Quality and Flow Monitoring Plan. Summaries of associated aquatic monitoring reports are presented in the following section of this report and supporting documents are located in the listed appendices. Figures 1, 2, 3, 4 and 6 illustrate the location of sampling stations at the Meadowbank and Whale Tail mine site, EEM receiving environment monitoring program, Vault Site, and Baker Lake marshalling facilities respectively. Certificates of Analysis will be made available on request for Meadowbank and Whale Tail. All tables from this section included historical data since 2013, if available.

8.5.1 Construction Activities

8.5.1.1 *Meadowbank Site*

As required by DFO Authorization NU-03-0191.3 Condition 3.1: ***The Proponent shall undertake monitoring and report to DFO annually, by March 31st, whether works, undertakings, activities or operations for the mitigation of potential impacts to fish and fish habitat were conducted according to the conditions of this Authorization.***

And

As required by DFO Authorization NU-03-0191.4 Condition 3.1: ***The Proponent shall undertake monitoring and report to DFO annually, by December 31st, whether works, undertakings, activities or operations for the mitigation of potential impacts to fish and fish habitat were conducted according to the conditions of this Authorization.***

And

As required by DFO Authorization 14-HCAA-01046 Condition 3.1: ***The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization and report to DFO, by March 31 annually and indicate whether the measures and standards to avoid and mitigate serious harm to fish were conducted according to the conditions of this authorization.***

In 2021, there were no occurrences where runoff water from any work, undertaking, activity or operation would flow directly or indirectly into a water body at the Meadowbank site. No mitigation action was necessary.

8.5.1.2 *Whale Tail Site*

As required by DFO Authorization 16HCAA-00370 Condition 3.1: ***The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization, and provide a stand-alone report to DFO, by March 31, annually and indicate whether the measures and standards to avoid and mitigate serious harm to fish were conducted according to the conditions of this authorization.***

And

As required by DFO Authorization 20HCAA-00275 Condition 3.1: ***The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization, and provide a stand-alone report to DFO, by March 31, annually and indicate whether the measures and standards to avoid and mitigate serious harm to fish were conducted according to the conditions of this authorization.***

And

As required by DFO Authorization 16HCAA-00370 Condition 3.1.1: ***The report in addition to the above shall summarizes the monitoring results related to fish and fish habitat contained in the documents listed in section 2.3. The report shall include a description of the implementation as well as an evaluation of the effectiveness of those monitoring programs in validating the changes to fish and fish habitat predicted in the Proponent's Environmental Impact Statement.***

And

As required by DFO Authorization 20HCAA-00275 Condition 3.1.1: ***Demonstration of effective implementation and functioning: Providing dated photographs and inspection reports to demonstrate effective implementation and functioning of mitigation measures and standards described above to limit the impacts to fish and fish habitat to what is covered by this authorization.***

And

As required by DFO Authorization 20HCAA-00275 Condition 3.1.2: ***Contingency measures: Providing details of any contingency measures that were followed, to prevent impacts greater than those covered by this authorization in the event that mitigation measures did not function as described.***

And

As required by DFO Authorization 16HCAA-00370 Condition 3.1.2: ***Each year, following the submission of the annual monitoring report to DFO, the Proponent shall arrange to meet with DFO and interested parties (e.g. Kivalliq Inuit Association) to review the results of the previous year's monitoring programs. The results of the meetings and any mutually agreed upon modifications aimed at improving the effectiveness of the monitoring programs shall be incorporated into the upcoming year of the monitoring programs. The Proponent shall update the monitoring programs/plans to reflect the changes, and the programs/plans shall be approved in writing by DFO prior to implementation.***

And

As required by DFO Authorization 20HCAA-00275 Condition 3.2.1: ***Each year, following the submission of the annual monitoring report to DFO, the Proponent shall arrange to meet with DFO and interested parties (e.g. Kivalliq Inuit Association) to review the results of the previous year's monitoring programs. The results of the meetings and any mutually agreed upon modifications aimed at improving the effectiveness of the monitoring programs shall be incorporated into the upcoming year of the monitoring programs. The Proponent shall update the monitoring programs/plans to reflect the changes, and the programs/plans shall be approved in writing by DFO prior to implementation.***

And

As required by DFO Authorization 16HCAA-00370 Condition 3.1.3: ***The annual monitoring report shall provide dated photographs with GPS coordinates and description of locations and inspection reports to demonstrate effective implementation and functioning of mitigation measures and standards described above to limit the serious harm to fish to what is covered by this authorization.***

And

As required by DFO Authorization 16HCAA-00370 Condition 3.1.4: ***The annual monitoring report shall also provided details of any contingency measures that were followed to prevent impacts greater than those covered by this authorization in the event that mitigation measures did not function as described.***

Agnico Eagle has provided to DFO on April 15th, 2022 the 2021 Report on the Implementation of Measures to Avoid and Mitigate Serious Harm to address the above Conditions of the Whale Tail Fisheries Act Authorization 16HCAA-00370 and 20HCAA-00275. The complete report is provided as Appendix 38.

This report was developed in fulfillment of Condition 3 of these FAAs, which relates to the monitoring and reporting of measures and standards to avoid and mitigate serious harm to fish.

In fulfillment of Condition 3.1, Section 2 of the report in Appendix 38 summarizes the implementation of the specified measures and standards to avoid and mitigate serious harm to fish. Photos and/or figures of the mitigation measures are included, as applicable (according to Condition 3.1.3 of 16-HCAA-00370 and Condition 3.1.1 of 20-HCAA-00275), along with a commentary on effectiveness based on relevant monitoring results, and any required contingency measures in the event that the mitigation did not function successfully (according to Condition 3.1.4/3.1.2).

As required by FAA 16HCAA-00370 Condition 3.1.1, an evaluation of the effectiveness of the FAA-listed monitoring programs (and other relevant monitoring programs) in validating changes to fish and fish habitat predicted in the Project FEIS is provided in Section 12.5.1.3 below as a component of the Post-Environmental Assessment Monitoring Program. This approach was proposed to DFO in October 2021, in an effort to reduce redundancy in reporting and better focus this report on the implementation and effectiveness of the avoidance and mitigation measures.

In summary, all measures and standards to avoid and mitigate serious harm to fish identified in Condition 2 of FAAs 16HCAA-00370 and 20HCAA-00275 were implemented as required in 2021. Based on the results of associated monitoring programs, no contingency mitigation measures were required for the protection of fish and fish habitat. These and other listed mitigation measures and standards were therefore considered effective in limiting impacts of construction activities to fish and fish habitat to those authorized.

In fulfillment of 16HCAA-00370 Condition 3.1.2 and 20HCAA-00275 Condition 3.2.1, Agnico Eagle organized a conference call with DFO and the Kivalliq Inuit Association (absentees) on October 13th, 2021, to review the results of the previous year's program (2020 Report on the Implementation of Measures to Avoid and Mitigate Serious Harm – Whale Tail Project). Minutes were recorded and circulated for comment. One recommendation was made by DFO to improve the effectiveness of monitoring programs regarding potential effects of reductions in water levels in Mammoth Lake and downstream water bodies. Agnico Eagle responded to this comment with an emailed memo (Re. *Water level monitoring in Mammoth Lake and downstream lakes*), dated January, 20th, 2022. In summary, this memo indicated that under the existing water management strategy and as described in the Project FEIS Addendum – Whale Tail Pit Expansion Project (December, 2018; Section 6.3.3.1.4, Table 6.3-3), no flow reduction is predicted for Mammoth Lake and downstream lakes under the current operational phase of the Project (2020 – 2026). Nevertheless, Agnico Eagle monitors water levels in Mammoth Lake year-round, and results of that reporting are provided and reviewed in the context of fish habitat in Section 12.5.1.3 below.

8.5.2 Dewatering Activities

8.5.2.1 *Meadowbank Site*

No dewatering activities occurred in 2021.

8.5.2.2 *Whale Tail Site*

No dewatering activities occurred in 2021.

8.5.3 Mine Site Water Collection System

8.5.3.1 *Meadowbank Site*

A water collection system comprised of the Stormwater Management Pond, attenuation ponds, tailings storage facilities, diversion ditches and sumps has been developed to control surface and groundwater at the Meadowbank project. The following section reviews the water quality monitoring conducted around the mine site. Specific details regarding water transfers can be found in the 2021 Water Management Plan and Report (Appendix 12).

8.5.3.1.1 Stormwater Management Pond

The Stormwater Management Pond collects runoff water as well as the STP treated effluent. A total of 11,597 m^3 of water was transferred from the Stormwater Management Pond to the TSF South Cell in July, August, and September. No water was released into the environment.

8.5.3.1.2 East and West Diversion Ditches (ST-5 / ST-6)

The East and West Diversion ditches were constructed in 2012 around the North Cell TSF and the Portage RSF. The diversion ditches are designed to redirect the fresh water from the northern area watershed away from the tailings pond and RSF and direct it to Second (via NP2) and Third Portage Lakes. Water from the East diversion ditch (sampling station ST-5) and the West diversion ditch (sampling station ST-6) were sampled monthly during open water as per the requirements in the NWB

Water License. Results are presented in Table 8-16 and Table 8-17 respectively; the sampling location is illustrated on Figure 1.

Results did not exceed the maximum average concentration (15 mg/L) and maximum allowable grab sample concentration (30 mg/L) permitted by the Water License, Part F, Item 6 for the ST-5 and ST-6 station.

Table 8-16 Meadowbank 2021 Non-Contact Water Diversion Ditch Water Quality Monitoring (ST-5)

ST-5	MAX GRAB	MAX MEAN	Unit	*Annual Average*									6/21/2021	7/6/2021	8/2/2021	9/19/2021	10/3/2021
Parameter				***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Field Measured																	
Temperature			°C	-	-	*16.0*	*12.4*	*12.8*	*7.3*	10.6	*12.0*	*5.5*	2.2	7.1	8.8	4.8	4.7
pH			pH units	*7.45*	*7.47*	*7.08*	*7.83*	*8.00*	*6.97*	7.48	*7.67*	*7.87*	7.79	7.36	8.13	8.05	8.01
Conductivity			uS/cm	-	-	*200*	*201.1*	*237*	*127.4*	181.6	*193.1*	*120.9*	51.7	80.3	151	157.4	164.3
Turbidity			NTU	*11.13*	*3.99*	*5.37*	*10.69*	*2.79*	*3.31*	11.27	*5.36*	*2.94*	5.93	1.5	1.48	2.81	3
Conventional Parameters																	
TSS	30	15	mg/L	*6*	*3*	*4*	*3*	*2*	*3*	*8*	*6*	*2*	3	1	2	1	1
Major Ions																	
Cyanide			mg/L	*0.011*	*0.009*	*0.005*	*0.007*	*0.001*	*0.005*	*0.001*	*0.003*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Sulfate			mg/L	*49.2*	*168.2*	*55.5*	*49.1*	*40.1*	*27.5*	*19.4*	*23.6*	*20.1*	6.6	28	24	21	21
Total Metals																	
Aluminum			mg/L	*0.1604*	*0.1002*	*0.1284*	*0.0688*	*0.0365*	*0.0590*	*0.2343*	*0.1064*	*0.0633*	0.117	0.0241	0.0307	0.0659	0.0787
Arsenic			mg/L	*0.0015*	*0.0015*	*0.0013*	*0.0010*	*0.0013*	*0.0005*	*0.0028*	*0.0018*	*0.0023*	0.0032	0.0010	0.0022	0.0029	0.0025
Copper			mg/L	*0.0143*	*0.0059*	*0.0056*	*0.0043*	*0.0021*	*0.0037*	*0.0079*	*0.0040*	*0.0040*	0.0044	0.0028	0.0030	0.0052	0.0047
Lead			mg/L	*0.0069*	*0.0003*	*0.0009*	*0.0010*	*0.0060*	*0.0030*	*0.0003*	*0.0003*	*0.0003*	0.0005	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Nickel			mg/L	*0.0180*	*0.0085*	*0.0038*	*0.0040*	*0.0047*	*0.0045*	*0.0047*	*0.0084*	*0.0052*	0.0034	0.0056	0.0063	0.0055	0.0053
Zinc			mg/L	*0.006*	*0.003*	*0.001*	*0.001*	*0.001*	*0.001*	*0.008*	*0.004*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Radionuclides																	
Radium-226			Bq/l	*0.016*	*0.004*	*0.002*	*0.002*	*0.002*	*0.004*	*0.003*	*0.004*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

Table 8-17 Meadowbank 2021 Non-Contact Water Diversion Ditch Water Quality Monitoring (ST-6)

ST-6	MAX GRAB	MAX MEAN	Sample date	*Annual Average*									6/21/2021	7/5/2021	8/2/2021	9/19/2021	10/3/2021
Parameter			**Unit**	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Field Measured																	
Temperature			°C	-	-	*19.8*	*14.3*	*11.3*	*7.3*	*12*	*7.5*	*5.8*	1.7	4.8	10.9	5.4	6.1
pH			pH units	*7.48*	*7.15*	*6.91*	*7.66*	*7.92*	*7.59*	*7.17*	*7.47*	*7.62*	7.4	6.89	7.67	7.81	8.34
Conductivity			uS/cm	*41.0*	-	*59.6*	*48.5*	*38.8*	*41.2*	*582.1*	*33*	*51.1*	18.6	16.7	38.2	148	33.9
Turbidity			NTU	*14.56*	*2.93*	*9.46*	*15.94*	*1.95*	*2.39*	*10.42*	*8*	*2.50*	1.25	1.13	0.76	7.51	1.86
Conventional Parameters																	
TSS	30	15	mg/L	*3*	*4*	*11*	*2*	*1*	*1*	*13*	*7*	*1*	< 1	< 1	1	3	1
Major Ions																	
Cyanide			mg/L	*0.007*	*0.005*	*0.005*	*0.006*	*0.002*	*0.001*	*0.003*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Sulfate			mg/L	*6.9*	*7.1*	*5.4*	*5.7*	*6.1*	*5.6*	*29.9*	*5.5*	*9.4*	3.4	5.4	6.7	26	5.5
Total Metals																	
Aluminum			mg/L	*0.0842*	*0.1075*	*0.1140*	*0.0490*	*0.0118*	*0.0120*	*0.1374*	*0.236*	*0.0352*	0.0113	0.0197	0.0135	0.122	0.0093
Arsenic			mg/L	*0.0010*	*0.0005*	*0.0088*	*0.0006*	*0.0005*	*0.0005*	*0.0009*	*0.0009*	*0.0005*	0.0003	0.0003	0.0004	0.0011	0.0002
Copper			mg/L	*0.0043*	*0.0016*	*0.0023*	*0.0008*	*0.0005*	*0.0009*	*0.0024*	*0.0016*	0.0011	< 0.0005	0.0007	0.0006	0.0033	< 0.0005
Lead			mg/L	*0.0018*	*0.0003*	*0.0003*	*0.0061*	*0.0012*	*0.0005*	*0.0003*	*0.0002*	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Nickel			mg/L	*0.0010*	*0.0018*	*0.0025*	*0.0011*	*0.0006*	*0.0005*	*0.0030*	*0.0025*	*0.0016*	< 0.001	< 0.001	< 0.001	0.0038	< 0.001
Zinc			mg/L	*0.002*	*0.004*	*0.001*	*0.002*	*0.001*	*0.001*	*0.002*	*0.004*	*0.005*	< 0.005	< 0.005	< 0.005	0.007	< 0.005
Radionuclides																	
Radium-226			Bq/l	*0.002*	*0.002*	*0.002*	*0.002*	*0.002*	*0.002*	*0.004*	*0.002*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

8.5.3.1.3 East Dike Discharge (ST-8, ST-MMER-3)

In 2021, water was discharged from January 1st to April 5th, April 26th to May 6th and December 9th to December 31st. A total of 35,927m^3 of water collected from the seepage at the East dike was pumped to Second Portage Lake through the diffuser.

Agnico Eagle noticed internal TSS results were trending up and therefore the discharge to Second Portage Lake was preventively stopped on April 5th. All water was diverted to the pits, as done in the past. Discharge restarted on April 26th, then was stopped on May 6th as the TSS results were trending up again. Agnico Eagle continued to monitor TSS and restarted the discharge to Second Portage Lake on December 9th.

Results from samples collected in 2021 at the final discharge point (ST-8) can be found in Table 8-18. Effluent water is analyzed as per NWB Water License Schedule I. The sampling location is illustrated on Figure 1. In 2021, there were two non-compliances with the Water License Part E Item 7 or with MDMER regulations. Refer to previous Section 8.3.1.3 East Dike Discharge for the complete information.

8.5.3.1.4 East Dike Seepage (ST-S-1)

As mentioned in Section 8.5.3.1.3, East Dike Seepage was discharged into the receiving environment, Second Portage Lake (SPL) January 1st to April 5th, April 26th to May 6th and December 9th to December 31st. As done in the past, when the discharge was stopped water was directed to the Portage Pit sumps. A total of 198,557 m^3 were transferred to the Portage Pits in 2021. During that period of time, samples were taking on a monthly basis as per the requirements of the NWB Water License. The ST-S-1 location is presented on Figure 1. Results are presented in Table 8-19. There are no applicable license limits.

8.5.3.1.5 Portage Attenuation Pond (ST-9, ST-MMER-1)

As of November 19th, 2014 when tailings deposition began in the South Cell TSF, the Portage Attenuation Pond ceased operation as an effluent discharge pond. There was no discharge from ST-9 into Third Portage Lake in 2021. The location of sampling station ST-9 is illustrated on Figure 1.

Channel crossing inspections were not undertaken in 2021 as no further discharge occurred from the Portage Attenuation Pond into Third Portage Lake.

8.5.3.1.6 Vault Discharge (ST-10, ST-MMER-2)

There was no discharge (sampling station ST-10, also named ST-MMER-2) from the Vault Attenuation Pond to Wally Lake in 2021. There is currently no plans to have a discharge in 2022. The location of sampling station is illustrated on Figure 3.

Table 8-18 Meadowbank 2021 East Dike Discharge Water Quality Monitoring (ST-8)

ST-8	MAX GRAB	MAX MONTHLY MEAN	Sample date	*Annual Average*								1/4/2021	2/1/2021	3/1/2021	4/5/2021	5/5/2021	12/13/2021
Parameter			**Unit**	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***						
Field Measured																	
Temperature			°C	-	*12.57*	*11.70*	*10.54*	-	-	*4.7*	*1.73*	2.9	0.7	1.8	1.6	2.7	0.7
pH			pH units	*7.29*	*7.37*	*7.65*	*7.82*	*7.66*	*7.53*	*7.82*	*7.69*	7.64	7.42	6.66	8.2	7.87	8.36
Conductivity			uS/cm	-	*81.51*	*83.76*	*105.05*	-	-	*79.93*	*82.55*	66.8	139.1	72.1	79.8	72.7	64.8
Turbidity			NTU	*1.92*	*4.88*	*3.48*	*6.11*	*6.01*	*2.13*	*2.24*	*3.98*	3.04	3.88	9.72	2.27	1.5	3.47
Conventional Parameters																	
TSS	30	15	mg/L	*8*	*7*	*4*	*10*	*1*	*3*	*2*	*7*	7	5	8	5	3	13
Major Ions																	
Cyanide			mg/L	*0.013*	*0.005*	*0.005*	*0.002*	*0.001*	*0.002*	*0.001*	*0.004*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.001
Sulfate			mg/L	*6.9*	*21.6*	*8.0*	*9.2*	*7.5*	*8.9*	*11.3*	*7.0*	6.1	6.2	6.3	8.8	6.7	7.7
Total Metals																	
Aluminum			mg/L	*0.068*	*0.040*	*0.047*	*0.043*	*0.046*	*0.032*	*0.031*	*0.089*	0.084	0.088	0.123	0.059	0.045	0.135
Arsenic			mg/L	*0.0011*	*0.0038*	*0.0007*	*0.0011*	*0.0005*	*0.0010*	*0.0040*	*0.0008*	0.0009	0.0009	0.0006	0.0008	0.0004	0.0010
Copper			mg/L	*0.0013*	*0.0016*	*0.0017*	*0.0012*	*0.0005*	*0.0013*	*0.0016*	*0.0010*	0.0011	0.0011	0.0010	0.0012	0.0009	0.0010
Lead			mg/L	*0.0011*	*0.0014*	*0.0003*	*0.0008*	*0.0003*	*0.0003*	*0.0007*	*0.0002*	0.0003	< 0.0002	< 0.0002	0.0002	< 0.0002	< 0.00017
Nickel			mg/L	*0.0011*	*0.0016*	*0.0011*	*0.0007*	*0.0005*	*0.0006*	*0.0018*	*0.0033*	< 0.001	< 0.001	< 0.001	< 0.001	0.0152	0.0006
Zinc			mg/L	*0.003*	*0.005*	*0.004*	*0.003*	*0.001*	*0.003*	*0.004*	*0.004*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001
Radionuclides																	
Radium-226			mg/L	*0.003*	*0.002*	*0.002*	*0.002*	*0.003*	*0.002*	*0.006*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

Table 8-19 Meadowbank 2021 East Dike Seepage Water Quality Monitoring (ST-S-1)

ST-S-1	Sample date	*Annual Average*							6/7/2021	6/28/2021	7/5/2021	7/25/2021	8/2/2021	9/7/2021	10/4/2021	10/14/2021	10/31/2021
Parameter	**Unit**	***2013***	***2014***	***2015***	***2018***	***2019***	***2020***	***2021***									
Field Measured																	
Temperature	°C			*19.6*	*10.6*		*7.6*	*5.8*	2.2	3.5	8.0	4.4	6.3	9.0	5.9	8.2	4.4
pH	pH units	*7.73*	*7.45*	*7.07*	*7.54*	*7.825*	*8.11*	*7.65*	6.92	7.95	7.65	7.55	7.82	7.67	7.78	7.69	7.79
Conductivity	uS/cm			*116.3*	*105.1*		*118.53*	*426.6*	138.9	38.6	39	229	126.1	126.6	103.1	127.4	2911
Turbidity	NTU	*6.26*	*4.35*	*2.51*	*5.22*	*28.79*	*1.73*	*7.04*	5.47	7.81	10.5	16.7	2.61	1.34	0.8	0.93	17.2
Conventional Parameters																	
Hardness, as CaCO3	mg/L	*30.00*	*24.00*	*40*	*32.3*	*38.8*	*60*	*50.79*	34.3	36.3	35.6	108	56.2	53.8	45.5	55.9	31.5
Total alkalinity, as CaCO3	mg/L	*50.29*	*37.00*	*29.5*	*31*	*42.77*	*44*	*31.11*	30	29	29	40	33	33	30	31	25
TDS	mg/L				*58*	*59.77*	*77*	*63.33*	30	55	40	130	105	50	80	45	35
TSS	mg/L			*1*	*6*	*46.85*	*2*	*9.38*	11	13	15	28	4	2	1	< 1	1
Major Ions																	
Chloride	mg/L	*0.8*	*0.7*	*0.9*	*1.1*	*1.8*	*2.9*	*1.2*	1.3	1.4	< 1.0	1.2	1.1	1.2	< 1.0	1.2	1.1
Cyanide	mg/L				*0.001*	*0.001*	*0.003*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005
Fluoride	mg/L	*0.092*	*0.094*	*0.075*	*0.113*	*0.105*	*0.11*	*0.12*	0.11	0.13	< 0.10	0.19	0.11	0.13	0.11	0.11	< 0.10
Sulfate	mg/L	*4.660*	*5.967*	*18.050*	*11.900*	*14.908*	*22.1*	*22.64*	7.8	9.1	7.9	69	27	27	19	27	10
Nutrients and Chlorophyll a																	
Ammonia Nitrogen	mg N/L	*0.049*	*0.01*	*0.01*	*0.03*	*0.015*	*0.01*	*0.07*	0.078	< 0.050	< 0.050	0.058	0.074	0.19	< 0.050	< 0.050	< 0.050
Nitrate	mg N/L	*0.01*	*0.01*	*0.01*	*0.01*	*0.012*	*0.43*	*0.37*	0.11	< 0.10	< 0.10	1.18	0.46	0.6	0.27	0.41	0.12
Nitrite	mg N/L	*0.18*	*0.22*	*0.47*	*0.014*	*0.319*	*0.013*	*0.010*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Metals																	
Aluminum	mg/L	*0.2400*	*0.0980*	*0.0410*	*0.0440*	*0.4047*	*0.030*	*0.1741*	0.1660	0.1900	0.3580	0.6650	0.0851	0.0309	0.0249	0.0227	0.0247
Arsenic	mg/L	*0.0037*	*0.0018*	*0.0005*	*0.0044*	*0.0026*	*0.0032*	*0.0136*	0.0010	0.0429	0.0592	0.0112	0.0022	0.0015	0.0013	0.0015	0.0014
Barium	mg/L	*0.0092*	*0.0083*	*0.0083*	*0.0074*	*0.0112*	*0.0103*	*0.0098*	0.0092	0.0072	0.0064	0.0194	0.0108	0.0103	0.0088	0.0096	0.0064
Cadmium	mg/L	*0.00002*	*0.00004*	*0.00002*	*0.00002*	*0.00005*	*0.00002*	*0.00001*	< 0.00001	< 0.00001	0.00001	0.00002	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chromium	mg/L	*0.0010*	*0.0007*	*0.0011*	*0.0008*	*0.0050*	*0.0006*	*0.0026*	0.0010	0.0039	0.0079	0.0056	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Copper	mg/L	*0.0037*	*0.0012*	*0.0007*	*0.0009*	*0.0020*	*0.0023*	*0.0029*	0.0013	0.0015	0.0124	0.0036	0.0016	0.0020	0.0012	0.0010	0.0014
Iron	mg/L	*0.4200*	*0.1500*	*0.0950*	*0.1100*	*0.7942*	*0.06*	*0.3488*	0.2770	0.3730	0.8300	1.1700	-	0.0460	0.0330	0.0300	0.0310
Lead	mg/L	*0.0022*	*0.0012*	*0.0003*	*0.0003*	*0.0003*	*0.0002*	*0.0008*	0.0003	0.0003	0.0046	0.0008	0.0003	0.0006	< 0.00020	< 0.00020	< 0.00020
Manganese	mg/L	*0.0100*	*0.0059*	*0.0140*	*0.0036*	*0.0166*	*0.0240*	*0.0201*	0.0104	0.0089	0.0173	0.1130	0.0165	0.0054	0.0031	0.0050	0.0013
Mercury	mg/L	*0.00001*	*0.00003*	*0.00001*	*0.00001*	*0.00002*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0005*	*0.0011*	*0.0006*	*0.0005*	*0.0009*	*0.0015*	*0.0012*	< 0.0010	< 0.0010	< 0.0010	0.0026	0.0011	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Nickel	mg/L	*0.0029*	*0.0012*	*0.0029*	*0.0015*	*0.0039*	*0.0046*	*0.0054*	0.0012	0.0065	0.0128	0.0184	0.0033	0.0016	0.0012	0.0025	< 0.0010
Selenium	mg/L	*0.0010*	*0.0010*	*0.0010*	*0.0022*	*0.0015*	*0.001*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Silver	mg/L	*0.00016*	*0.00010*	*0.00010*	*0.00010*	*0.00024*	*0.0001*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Thallium	mg/L	*0.03100*	*0.00500*	*0.00500*	*0.00040*	*0.00048*	*0.0002*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Zinc	mg/L	*0.098*	*0.003*	*0.001*	*0.001*	*0.008*	*0.001*	*0.008*	< 0.005	0.005	0.025	0.010	< 0.005	0.007	< 0.005	< 0.005	0.006

8.5.3.1.7 Portage Rock Storage Facility (ST-16)

The Portage Waste Rock Storage Facility (PRSF) has been in operation since 2009. In 2013, ponded water was observed at the south-east base of the PRSF (sampling station ST-16). This was first reported in the 2013 Annual Report (as well as to regulators in July 2013) as a small volume of the seepage, with elevated levels of cyanide, nickel and copper (among other constituents) had migrated, through a rockfill perimeter road, to the near shore area of NP-2 Lake. Agnico Eagle determined, in 2013, that the seepage contained reclaim water from the North Cell TSF that had flowed under the PRSF to a sump area designated as sampling station ST-16 (refer to RSF Seepage Golder Report in Appendix G5 of the 2013 Annual Report).

Mitigation measures were implemented in 2013 and this included daily inspections during the freshet period, the installation of a pumping system in ST-16 to direct accumulated water back to the North Cell TSF, installation of four thermistors to analyse freezing in the PRSF and installation of a filter barrier along RF-1 and 2 to prevent water and tailings egress from the North Cell (tailings water) through the PRSF to ST-16. As part of progressive reclamation capping of the North Cell tailings commenced in winter 2015. The North portion on the North Cell was capped in 2015 and a 30m strip was placed in front of RF1 and RF2 in 2016 to eventually connect to the 2015 capping in winter 2017. In 2017, capping of the North Cell with soapstone continued for areas that were located outside the tailings covered areas. Capping was placed on original ground along the Portage RSF western boundary and at the northern boundary of the cell to fill the gaps left during capping from previous years and the existing infrastructures around the cell. The capping was placed in these areas to prevent any tailings and contact water migration outside the North Cell perimeter. The tailings are capped in the area of RF-1 and RF-2 which assist to prevent any seepage migration from the North Cell.

In 2021, 447,461 m^3 of North Cell water was transferred to the South Cell reclaim pond minimizing the water contained in this cell.

Thermistors installed in 2013 indicate that freezeback is occurring along the seepage path. Since 2014, a permanent pumping system has been operating at ST-16, to collect water and pump it to the TSF North Cell. Water volumes pumped from ST-16 and deposited in the North Cell TSF are provided in Table 8-20. Water volumes pumped in 2021 at ST-16 was 50,780 m^3, which was higher compared to the pumped volume of previous years 2014-2019 (Table 8-20) and lower than 2020. The volume pumped also included snow melt and precipitation accumulating into this sump. The installation of the filters at RF-1 and RF-2, capping of tailings and decreased water volume in the North Cell likely contributed to be effective in controlling and minimizing seepage from the North Cell.

Table 8-20 Meadowbank Waste Rock Seepage pumped volume 2014-2021

Year	Volume pumped (m^3)
2014	32,169
2015	19,236
2016	20,844
2017	25,815
2018	12,606
2019	33,782
2020	75,082
2021	50,780

From 2014 to 2018, average analysis results for applicable parameters confirmed no impacts to downstream lakes (NP-1, Dogleg, Second Portage Lake). The average Nickel, Cyanide Free, Cyanide Total, Ammonia (NH3) and Ammonia Nitrogen results are all below CCME, Water Licence and MDMER criteria in NP2 Lake from 2014 – 2018. From the results, the action plan implemented by Agnico Eagle has been very successful in preventing any further seepage into NP2 Lake and into the ST-16 sump itself. All seepage water are entirely contained inside the ST-16 sump. The MDRB has commented on the success of this action plan. The till plug, pumping system, installation of filters and effective tailings beaches at RF-1 and RF-2, progressive tailings capping at RF-1 and RF-2 and the dewatering of the North Cell in 2015 and 2016 have effectively mitigated this problem. In addition, thermistors installed in the RSF indicate freezing in the former seep path is occurring (which would mean that no water is migrating). Refer to the 2018 Annual Report for the results.

The KivIA requested that Agnico Eagle continue monitoring until there is a 5 year period of non-detect cyanide results. In 2018 (5 previous year), the monitoring indicated that yearly average for CN levels does not exceed the CCME guideline, the MDMER or Water License limit for effluent discharge into the environment for NP2, NP1 and downstream lakes, Dogleg and Second Portage. Thus, based on the analysis of the previous results, Agnico Eagle has suspended the program in 2019. However, ECCC's comment regarding the 2018 Annual Report recommended that Agnico Eagle continue to monitor Lake NP-2 on a yearly basis for the same suite of parameters as have been measured since 2014. Water quality results for 2021 ST-16 and NP-2 South can be found in Table 8-21 and 8-22, respectively. Monitoring stations are illustrated on Figure 1. Results are presented for information purposes only as there are no applicable water license limits at this location.

In accordance with the 2021 Freshet Action Plan (see Appendix D of the 2021 Water Management Report and Plan Version 9 (Appendix 23), Agnico Eagle will continue in 2022 to contain the ST-16 Seepage and to monitor the water quality, as needed. This is conducted to assess and prevent any impact to the receiving environment (NP2) and to downstream lakes (NP-1, Dogleg and Second Portage).

Table 8-21 Meadowbank 2021 RSF Seepage Water Quality Monitoring (ST-16)

ST-16	Sample date	*Annual Average*									6/21/2021	7/13/2021	8/9/2021	9/19/2021	10/11/2021
Parameter	**Unit**	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Field Measured															
Temperature	°C	-	*5.6*	*10.6*	*11.0*	*14.1*	*9.2*	*13.1*	*9.1*	*4.5*	5	7.8	6.2	2.5	0.8
pH	pH units	*6.95*	*7.34*	*7.39*	*7.46*	*7.48*	*7.54*	*7.75*	*7.70*	*7.67*	7.66	7.62	8.01	7.46	7.58
Conductivity	uS/cm	*2138.33*	*2432.1*	*473.0*	*445.3*	*435.3*	*401.3*	*406.4*	*288.9*	*281.8*	112.9	224	289	382	401
Turbidity	NTU	*70.00*	*22.44*	*11.75*	*3.76*	*2.74*	*4.15*	*2.90*	*22.53*	*12.91*	7.63	49.3	3.55	1.47	2.60
Conventional Parameters															
Hardness, as CaCO3	mg/L	*932.67*	*1131*	*143*	*189*	*154*	*176*	*167*	*140*	*125*	58.1	96	129	171	169
Total alkalinity, as CaCO3	mg/L	*142.25*	*171*	*62*	*74*	*77*	*75*	*61*	*75*	*63*	40	52	64	85	73
Carbonate, as CaCO3	mg/L	-	-	-	*2*	*2*	*2*	*2*	*4*	*1*	< 1	< 1	< 1	< 1	< 1
Bicarbonate, as CaCO3	mg/L	-	-	-	*74*	*77*	*72*	*61*	*78*	*62*	40	52	63	84	73
TDS	mg/L	*1599.33*	*2525*	*318*	*336*	*315*	*248*	*2*	*187*	*182*	90	125	205	275	215
TSS	mg/L	*50.00*	*19*	*10*	*9*	*4*	*1*	*265*	*10*	*8*	3	30	3	2	< 1
Total organic carbon	mg/L	-	*36.10*	*11.13*	*8.28*	*8.68*	*7.35*	*3.87*	*4.10*	*2.88*	3.8	2.6	3.2	2.5	2.3
Dissolved organic carbon	mg/L	-	*41.30*	*9.90*	*6.38*	*8.65*	*6.25*	*4.77*	*2.63*	*2.64*	3.30	2.40	2.80	2.50	2.20
Color	TCU	-	-	*51.33*	*23.25*	*16*	-	-	*77*	*12*	15	10	12	11	10
Major Ions															
Bromide	mg/L	-	-	*0.1*	*0.07*	*0.0925*	-	-	*0.07*	*1.00*	< 1	< 1	< 1	< 1	< 1
Chloride	mg/L	*223.77*	*500.6*	*10.3*	*8.9*	*9.6*	*5.2*	*5.2*	*3.0*	*3.0*	1.3	2.7	3.4	3.6	4.1
Cyanide	mg/L	-	*1.380*	*0.022*	*0.003*	*0.074*	*0.002*	*0.002*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Fluoride	mg/L	*0.20*	*0.33*	*0.19*	*0.20*	*0.23*	*0.19*	*0.20*	*0.17*	*0.20*	0.15	0.15	0.21	0.26	0.24
Silica	mg/L	-	*2.30*	-	*3.88*	*2.98*	*2.98*	*2.57*	*5.01*	*4.10*	2	3.7	4.2	5.1	5.5
Sulfate	mg/L	*1418.67*	*2020*	*130*	*136*	*92*	*106*	*102*	*67*	*64*	25	48	64	86	95
Thiocyanate	mg/L	-	*3.91*	*0.23*	*0.17*	*0.095*	*0.05*	*0.053*	*0.05*	*0.20*	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Thiosulphates	mg/L	-	*7.59*	*1.34*	*0.02*	*0.020*	*0.05*	*0.020*	*0.02*	*0.20*	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nutrients and Chlorophyll a															
Ammonia Nitrogen	mg N/L	*14.08*	*31.34*	*1.11*	*0.28*	*0.32*	*0.08*	*0.07*	*0.06*	*0.05*	0.053	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate	mg N/L	*23.20*	*24.35*	*7.84*	*6.66*	*6.30*	*4.20*	*5.44*	*2.50*	*3.28*	0.49	1.67	3.42	5.11	5.73
Nitrite	mg N/L	*0.240*	*0.955*	*0.065*	*0.043*	*0.070*	*0.035*	*0.040*	*0.035*	*0.014*	< 0.01	0.024	0.015	< 0.01	< 0.01
Total Kjeldahl nitrogen	mg N/L	-	*45.00*	*2.28*	*1.12*	*1.32*	*0.82*	*0.62*	*0.39*	*0.23*	0.27	0.27	0.19	< 0.2	< 0.2
Total phosphorus	mg N/L	-	*0.125*	*0.047*	*0.016*	*0.031*	*0.012*	*0.020*	*0.013*	*0.013*	0.025	0.023	0.0063	0.005	0.0034
Orthophosphate (P)	mg/L	*0.07*	-	*0.02*	*0.02*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	< 0.01	0.022	< 0.01	< 0.01	< 0.01
Chlorophyll a	mg/L	-	*1.5600*	*0.8600*	*0.4100*	*0.2775*	*0.3100*	*0.5533*	*0.0871*	*0.0002*	-	0.00019	-	0.00016	0.00016
Total Metals															
Aluminum	mg/L	*0.1837*	*0.1600*	*0.0060*	*0.0985*	*0.0383*	*0.0297*	*2.3067*	*0.6415*	*0.2966*	0.1410	1.1900	0.0889	0.0245	0.0385

ST-16	Sample date	*Annual Average*									6/21/2021	7/13/2021	8/9/2021	9/19/2021	10/11/2021
Parameter	**Unit**	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Antimony	mg/L	*0.00077*	*0.00058*	*0.00013*	*0.00030*	*0.00023*	*0.00027*	*0.00027*	*0.00010*	*0.00125*	0.00061	0.00171	0.0016	0.00128	0.00103
Arsenic	mg/L	*0.00855*	*0.00720*	*0.00050*	*0.00300*	*0.00058*	*0.00237*	*0.01857*	*0.0140*	*0.0464*	0.0250	0.1190	0.0415	0.0257	0.0209
Barium	mg/L	*0.1212*	*0.0320*	*0.0172*	*0.0181*	*0.0163*	*0.0190*	*0.0191*	*0.0147*	*0.0150*	0.0101	0.0176	0.0151	0.0133	0.0191
Beryllium	mg/L	*0.00037*	*0.00050*	*0.00050*	*0.00050*	*0.00050*	*0.00050*	*0.00050*	*0.00050*	*0.00010*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	*0.095*	*0.083*	*0.040*	*0.015*	*0.013*	*0.017*	*0.010*	*0.010*	*0.050*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cadmium	mg/L	*0.000330*	*0.000260*	*0.000045*	*0.000040*	*0.000020*	*0.000030*	*0.000020*	*0.000020*	*0.000011*	0.000013	0.000012	< 0.00001	< 0.00001	< 0.00001
Calcium (total)	mg/L	*312.0*	*15.7*	*-*	*53.3*	*34.2*	*36.8*	*32.1*	*32.4*	*27.5*	13.6	20.7	28.9	37.0	37.2
Chromium	mg/L	*0.00183*	*0.00290*	*0.00060*	*0.00060*	*0.00060*	*0.00110*	*0.00107*	*0.00805*	*0.00566*	0.00240	0.02230	0.00160	< 0.001	< 0.001
Cobalt	mg/L	*0.20443*	*0.26570*	*0.00465*	*0.00290*	*0.00133*	*0.00090*	*0.00113*	*0.0014*	*0.0009*	0.00091	0.00235	0.00047	0.00045	0.00048
Copper	mg/L	*1.9255*	*0.3900*	*0.0298*	*0.0259*	*0.018*	*0.0158*	*0.0105*	*0.0103*	*0.0050*	0.0072	0.0047	0.0049	0.0042	0.0038
Iron	mg/L	*9.300*	*1.150*	*0.255*	*0.060*	*0.315*	*0.360*	*0.150*	*1.018*	*0.514*	0.304	1.780	0.233	0.107	0.148
Lead	mg/L	*0.00080*	*0.00220*	*0.00030*	*0.00030*	*0.00160*	*0.00030*	*0.00030*	*0.0007*	*0.0003*	< 0.0002	0.00089	< 0.0002	< 0.0002	< 0.0002
Lithium	mg/L	*0.00780*	*0.00530*	*0.00500*	*0.00500*	*0.01800*	*0.00500*	*0.00500*	*0.0050*	*0.0020*	< 0.002	0.0022	< 0.002	< 0.002	< 0.002
Magnesium (total)	mg/L	*60.00*	*15.67*	*11.49*	*18.93*	*17.05*	*17.00*	*18.13*	*14.48*	*13.59*	5.85	10.8	13.8	19	18.5
Manganese	mg/L	*4.0825*	*1.5100*	*0.7082*	*0.3835*	*0.1315*	*11.3582*	*0.0371*	*0.0620*	*0.0594*	0.1790	0.0336	0.0300	0.0228	0.0314
Mercury	mg/L	*0.00010*	*0.00002*	*0.00001*	*0.00023*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0930*	*0.0670*	*0.0152*	*0.0123*	*0.0106*	*0.0109*	*0.0181*	*0.0136*	*0.0209*	0.0102	0.0211	0.0267	0.0209	0.0256
Nickel	mg/L	*0.9667*	*0.5400*	*0.0430*	*0.0369*	*0.0203*	*0.0158*	*0.0102*	*0.0143*	*0.0094*	0.0084	0.0174	0.0067	0.007	0.0074
Potassium (total)	mg/L	*88.00*	*41.75*	*8.33*	*9.32*	*8.35*	*6.18*	*8.12*	*6.70*	*6.98*	3.36	5.21	7.33	9.66	9.36
Selenium	mg/L	*0.0133*	*0.0280*	*0.0010*	*0.0010*	*0.0010*	*0.0009*	*0.0006*	*0.0010*	*0.0008*	0.0002	0.0007	0.0008	0.0010	0.0011
Silver	mg/L	*0.0056*	*0.001300*	*0.000100*	*0.000100*	*0.000100*	*0.000100*	*0.000100*	*0.000100*	*0.000021*	0.000025	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Sodium (total)	mg/L	*590.00*	*4.50*	*-*	*22.05*	*14.76*	*11.56*	*11.63*	*8.25*	*5.68*	2.14	3.24	5.82	8.42	8.76
Strontium	mg/L	*1.327*	*0.400*	*0.156*	*0.167*	*0.157*	*0.203*	*0.190*	*0.140*	*0.153*	0.065	0.117	0.161	0.207	0.215
Thallium	mg/L	*0.00337*	*0.00500*	*0.00500*	*0.00080*	*0.00080*	*0.00020*	*0.00020*	*0.00020*	*0.00001*	< 0.00001	0.00003	< 0.00001	< 0.00001	< 0.00001
Tin	mg/L	*0.0010*	*0.001*	*0.001*	*0.003*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Titanium	mg/L	*0.2269*	*0.1800*	*0.0275*	*0.0275*	*0.0350*	*0.0433*	*0.0100*	*0.0267*	*0.0100*	< 0.005	0.0301	< 0.005	< 0.005	< 0.005
Uranium	mg/L	*0.1063*	*0.0690*	*0.0057*	*0.0058*	*0.0050*	*0.0043*	*0.0057*	*0.0040*	*0.0048*	0.0015	0.0064	0.0038	0.0060	0.0063
Vanadium	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.002*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	mg/L	*0.006*	*0.005*	*0.001*	*0.002*	*0.001*	*0.001*	*0.001*	*0.003*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Dissolved Metals															
Aluminum	mg/L	*0.0165*	*0.0175*	*0.0060*	*0.0060*	*0.0060*	*0.006*	*0.0005*	*0.0060*	*0.0069*	0.0092	0.0069	0.0054	0.0041	0.0090
Antimony	mg/L	*-*	*0.00070*	*0.00013*	*0.00023*	*0.00023*	*0.0001*	*0.00037*	*0.00010*	*0.00121*	0.00057	0.00173	0.00152	0.00122	0.00103
Arsenic	mg/L	*0.0045*	*0.0069*	*0.0005*	*0.0018*	*0.0008*	*0.0008*	*0.0161*	*0.0048*	*0.0434*	0.0227	0.112	0.0382	0.024	0.0201
Barium	mg/L	*0.0996*	*0.0573*	*0.0172*	*0.0177*	*0.0154*	*0.0176*	*0.0168*	*0.0064*	*0.0197*	0.009	0.0121	0.0139	0.0144	0.049
Beryllium	mg/L	*-*	*0.00050*	*0.00050*	*0.00050*	*0.00050*	*0.0005*	*0.00050*	*0.00050*	*0.00010*	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Boron	mg/L	*-*	*0.2000*	*0.0400*	*0.0105*	*0.0100*	*0.02*	*0.0100*	*0.0100*	*0.0500*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050

ST-16	Sample date	*Annual Average*									6/21/2021	7/13/2021	8/9/2021	9/19/2021	10/11/2021
Parameter	**Unit**	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Cadmium	mg/L	*0.00036*	*0.00070*	*0.00003*	*0.00003*	*0.00002*	*0.00003*	*0.00002*	*0.00002*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chromium	mg/L	-	*0.00060*	*0.00060*	*0.00060*	*0.00060*	*0.0009*	*0.00060*	*0.00060*	*0.00100*	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Cobalt	mg/L	-	*0.25410*	*0.00465*	*0.00248*	*0.00123*	*0.00065*	*0.00097*	*0.00050*	*0.00046*	0.00072	0.0004	0.00036	0.00039	0.00044
Copper	mg/L	*1.81050*	*1.32500*	*0.02980*	*0.02083*	*0.01433*	*0.01270*	*0.00807*	*0.00597*	*0.00535*	0.00582	0.00233	0.01050	0.00460	0.00348
Iron	mg/L	*2.2850*	*0.2600*	*0.2550*	*0.2125*	*0.1450*	*0.0967*	*0.0267*	*0.0333*	*0.0492*	0.0683	0.0152	0.0449	0.0499	0.0675
Lead	mg/L	*0.00030*	*0.00130*	*0.00030*	*0.00033*	*0.00030*	*0.00030*	*0.00160*	*0.00021*	*0.00020*	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Lithium	mg/L	-	-	*0.0050*	*0.0050*	*0.0050*	*0.005*	*0.0050*	*0.0050*	*0.0020*	<0.002	< 0.002	< 0.002	0.002	< 0.002
Manganese	mg/L	*4.08250*	*2.3725*	*0.7082*	*0.3594*	*0.1140*	*9.8916*	*0.0263*	*0.0500*	*0.0525*	0.173	0.013	0.0261	0.0192	0.0313
Mercury	mg/L	*0.00010*	*0.00010*	*0.00008*	*0.00003*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.09885*	*0.18825*	*0.01518*	*0.01253*	*0.00983*	*0.01033*	*0.01687*	*0.00993*	*0.02130*	0.0102	0.0215	0.0262	0.022	0.0266
Nickel	mg/L	*1.11240*	*0.57105*	*0.04295*	*0.03465*	*0.01763*	*0.01443*	*0.00847*	*0.00917*	*0.00660*	0.0071	0.006	0.0062	0.0065	0.0072
Selenium	mg/L	*0.01400*	*0.09750*	*0.00100*	*0.00100*	*0.00100*	*0.00117*	*0.00063*	*0.00100*	*0.00072*	0.0002	0.00064	0.00077	0.00093	0.00106
Silver	mg/L	*0.00105*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00002*	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Strontium	mg/L	-	*0.9090*	*0.1558*	*0.1545*	*0.1548*	*0.0002*	*0.0005*	*0.1220*	*0.1524*	0.0649	0.1160	0.1500	0.2100	0.2210
Thallium	mg/L	*0.00500*	*0.005*	*0.00500*	*0.0008*	*0.0008*	*0.00020*	*0.00020*	*0.00020*	*0.00001*	0.000012	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Tin	mg/L	-	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0050*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Titanium	mg/L	-	*0.560*	*0.028*	*0.020*	*0.030*	*0.030*	*0.010*	*0.010*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Uranium	mg/L	-	*0.2510*	*0.0045*	*0.0055*	*0.0043*	*0.0045*	*0.0050*	*0.0033*	*0.0045*	0.0014	0.0054	0.0038	0.0059	0.0062
Vanadium	mg/L	-	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	mg/L	*0.00550*	*0.001*	*0.001*	*0.002*	*0.001*	*0.001*	*0.003*	*0.001*	*0.006*	< 0.005	< 0.005	< 0.005	< 0.005	0.011

Table 8-22 Meadowbank 2021 NP2-South Water Quality Monitoring

NP2-South	Sample date	*Annual Average*								6/21/2021	7/13/2021	8/16/2021	9/19/2021	10/11/2021
Parameter	**Unit**	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Field Measured														
Temperature	°C	*6.3*	*19.1*	*10.9*	*11.7*	*9.7*	*11.0*	*10.3*	*5.3*	5	9.4	6.2	4.4	1.7
pH	pH units	*7.30*	*7.13*	*7.28*	*7.79*	*7.72*	*7.46*	*7.85*	*7.61*	7.87	7.73	7.2	7.52	7.72
Conductivity	uS/cm	*317.6*	*284.5*	*236.0*	*231.4*	*205.5*	*195.4*	*173.2*	*148.5*	53.6	220	141.1	168.8	158.8
Turbidity	NTU	*2.70*	*3.20*	*1.40*	*1.40*	*1.81*	*1.70*	*1.47*	*2.63*	4.87	4.16	1.93	0.99	1.21
Conventional Parameters														
Hardness, as CaCO3	mg/L	*99*	*75*	*82*	*74*	*69*	*71*	*90*	*64*	29.0	65.1	72.2	78.3	75.0
Total alkalinity, as CaCO3	mg/L	*40*	*42*	*47*	*56*	*50*	*37*	*63*	*46*	24	50	50	52	54
Carbonate, as CaCO3	mg/L	*NA*	*NA*	*2*	*2*	*2*	*2*	*5*	*1*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bicarbonate, as CaCO3	mg/L	*NA*	*NA*	*47*	*56*	*50*	*37*	*63*	*45*	23	50	50	51	53
TDS	mg/L	*270*	*183*	*163*	*147*	*108*	*118*	*113*	*69*	45	70	90	80	60
TSS	mg/L	*2*	*1*	*3*	*3*	*2*	*1*	*2*	*2*	2	3	1	1	2
Total organic carbon	mg/L	*5.7*	*4.2*	*4.5*	*5.9*	*4.9*	*3.7*	*4.1*	*3.9*	3.2	4.3	4.5	3.8	3.8
Dissolved organic carbon	mg/L	*5.2*	*4.4*	*3.8*	*5.9*	*3.8*	*3.7*	*3.9*	*3.7*	3.0	4.2	4.2	3.6	3.7
Colour	TCU	*7*	*7*	*9*	*6*	*5*	*NA*	*11*	*11*	14	13	11	10	8
Major Ions														
Bromide	mg/L	*0.10*	*0.05*	*0.04*	*0.06*	*0.03*	*NA*	*0.05*	*1.00*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloride	mg/L	*9.6*	*6.8*	*5.1*	*4.6*	*3.6*	*3.1*	*2.2*	*1.9*	1.5	2.4	1.8	2.1	1.6
Cyanide	mg/L	*0.021*	*0.005*	*5.130*	*0.002*	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Fluoride	mg/L	*0.12*	*0.11*	*0.00*	*0.13*	*0.12*	*0.13*	*0.12*	*0.12*	< 0.10	0.10	0.13	0.14	0.12
Silica	mg/L	*NA*	*NA*	*0.35*	*0.51*	*0.41*	*1.00*	*0.81*	*0.76*	0.73	1.2	0.74	0.71	0.40
Sulfate	mg/L	*121.3*	*79.8*	*58.9*	*44.4*	*39.2*	*31.7*	*32.6*	*22.2*	7.9	26	23	30	24
Thiocyanate	mg/L	*0.05*	*0.05*	*0.13*	*0.11*	*0.05*	*0.05*	*0.05*	*0.20*	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Thiosulphates	mg/L	*0.02*	*0.92*	*0.02*	*0.02*	*0.02*	*NA*	*0.02*	*0.20*	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nutrients and Chlorophyll a														
Ammonia Nitrogen	mg N/L	*2.90*	*0.01*	*0.03*	*0.05*	*0.03*	*0.01*	*0.02*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate	mg N/L	*2.47*	*1.26*	*0.28*	*0.09*	*0.01*	*0.14*	*0.08*	*0.19*	< 0.10	0.15	0.11	0.39	0.19
Nitrite	mg N/L	*0.19*	*0.01*	*0.01*	*0.01*	*0.18*	*0.01*	*0.03*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Kjeldahl nitrogen	mg N/L	*2.70*	*0.36*	*0.49*	*0.62*	*0.24*	*0.23*	*0.19*	*0.18*	0.13	0.19	0.27	0.13	0.20
Total phosphorus	mg N/L	*0.0082*	*0.0110*	*0.0069*	*2.2300*	*0.0058*	*0.0100*	*0.0200*	*0.0040*	0.0049	0.0049	0.0039	0.0029	0.0033
Orthophosphate (P)	mg/L	*0.010*	*0.010*	*0.010*	*0.010*	*0.010*	*0.010*	*0.013*	*0.010*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Chlorophyll a	mg/L	*1.33*	*2.29*	*1.77*	*1.05*	*1.32*	*NA*	*0.0013*	*0.0015*	0.00030	0.0017	0.0017	0.0021	0.0015
Total Metals														
Aluminum	mg/L	*0.0670*	*0.0060*	*0.0060*	*0.0670*	*0.0060*	*0.0430*	*0.0150*	*0.0699*	0.0949	0.0963	0.0694	0.0626	0.0263
Antimony	mg/L	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0005*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Arsenic	mg/L	*0.00075*	*0.00340*	*0.00050*	*0.00050*	*0.00057*	*0.00080*	*0.00103*	*0.00275*	0.00198	0.00504	0.00337	0.00156	0.0018

NP2-South	Sample date	*Annual Average*								6/21/2021	7/13/2021	8/16/2021	9/19/2021	10/11/2021
Parameter	**Unit**	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Barium	mg/L	*0.0150*	*0.0100*	*0.0069*	*0.0050*	*0.0045*	*0.0042*	*0.0038*	*0.0049*	0.0036	0.0064	0.005	0.0045	0.0049
Beryllium	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium	mg/L	*0.00002*	*0.00002*	*0.00002*	*0.00002*	*0.00002*	*0.00002*	*0.00002*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Calcium (total)	mg/L	*NA*	*NA*	*22.2*	*19.1*	*17.6*	*18.4*	*23.4*	*16.1*	7.48	16.5	17.9	19.7	19
Chromium	mg/L	*0.0006*	*0.0006*	*0.0009*	*0.0006*	*0.0007*	*0.0006*	*0.0006*	*0.0010*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	*0.00340*	*0.00100*	*0.00050*	*0.00063*	*0.00050*	*0.00050*	*0.00087*	*0.00053*	< 0.00020	0.00026	0.00048	0.00146	0.00023
Copper	mg/L	*0.0085*	*0.0054*	*0.0050*	*0.0035*	*0.0032*	*0.0038*	*0.0040*	*0.0035*	0.0033	0.0036	0.0036	0.0036	0.0030
Iron	mg/L	*0.300*	*0.057*	*0.083*	*0.130*	*0.093*	*0.060*	*0.153*	*0.115*	0.196	0.181	0.093	0.051	0.055
Lead	mg/L	*0.00080*	*0.00030*	*0.00030*	*0.00080*	*0.00083*	*0.00030*	*0.00021*	*0.00022*	0.00031	0.00021	< 0.00020	< 0.00020	< 0.00020
Lithium	mg/L	*0.005*	*0.012*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.002*	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Magnesium (total)	mg/L	*8.23*	*6.49*	*6.90*	*6.57*	*6.10*	*6.16*	*7.72*	*5.73*	2.5	5.78	6.67	7.05	6.67
Manganese	mg/L	*0.0320*	*0.0100*	*0.0160*	*0.0150*	*0.0108*	*0.0062*	*0.0357*	*0.0215*	0.0227	0.0156	0.0104	0.0507	0.0079
Mercury	mg/L	*0.00001*	*0.00001*	*0.00001*	*0.00002*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0005*	*0.0005*	*0.0006*	*0.0006*	*0.0005*	*0.0006*	*0.0007*	*0.0018*	< 0.0010	0.0019	0.002	0.0018	0.0021
Nickel	mg/L	*0.0130*	*0.0052*	*0.0083*	*0.0053*	*0.0055*	*0.0111*	*0.0155*	*0.0140*	0.005	0.0077	0.0134	0.0337	0.01
Potassium (total)	mg/L	*5.17*	*2.82*	*3.66*	*2.33*	*1.92*	*1.94*	*2.35*	*1.65*	0.91	1.74	1.82	2.05	1.73
Selenium	mg/L	*0.0013*	*0.0010*	*0.0010*	*0.0010*	*0.0008*	*0.0008*	*0.0010*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001
Silver	mg/L	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Sodium (total)	mg/L	*NA*	*NA*	*11.70*	*9.76*	*7.05*	*5.17*	*4.92*	*2.66*	1.02	2.86	3.31	3.31	2.81
Strontium	mg/L	*0.1100*	*0.0990*	*0.0710*	*0.0830*	*0.0677*	*0.0735*	*0.0773*	*0.0654*	0.0303	0.0681	0.0768	0.0747	0.0772
Thallium	mg/L	*0.00500*	*0.00500*	*0.00080*	*0.00080*	*0.00020*	*0.00020*	*0.00020*	*0.00001*	< 0.000010	0.000011	< 0.000010	< 0.000010	< 0.000010
Tin	mg/L	*0.020*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Titanium	mg/L	*0.020*	*0.010*	*0.010*	*0.018*	*0.013*	*0.010*	*0.010*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Uranium	mg/L	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0013*	*0.0012*	0.0005	0.0012	0.0011	0.0016	0.0015
Vanadium	mg/L	*0.0005*	*0.0005*	*0.0009*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0050*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Zinc	mg/L	*0.0013*	*0.0010*	*0.0010*	*0.0025*	*0.0010*	*0.0010*	*0.0037*	*0.0050*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Dissolved Metals														
Aluminum	mg/L	*0.0130*	*0.0060*	*0.0060*	*0.0060*	*0.0053*	*0.0028*	*0.0087*	*0.0163*	0.0118	0.0141	0.0274	0.0194	0.0089
Antimony	mg/L	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0005*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Arsenic	mg/L	*0.00068*	*0.00180*	*0.00050*	*0.00050*	*0.00057*	*0.00065*	*0.00053*	*0.00234*	0.00154	0.00428	0.00285	0.00152	0.00153
Barium	mg/L	*0.0150*	*0.0086*	*0.0061*	*0.0044*	*0.0047*	*0.0055*	*0.0028*	*0.01056*	0.0030	0.0060	0.0046	0.0045	0.0347
Beryllium	mg/L	*0.0005*	*0.0006*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	*0.02*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium	mg/L	*0.00013*	*0.00003*	*0.00002*	*0.00002*	*0.00003*	*0.00002*	*0.00002*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chromium	mg/L	*0.0006*	*0.0015*	*0.0009*	*0.0008*	*0.0007*	*0.0006*	*0.0006*	*0.001*	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Cobalt	mg/L	*0.00360*	*0.00097*	*0.00050*	*0.00064*	*0.00050*	*0.00050*	*0.00067*	*0.00039*	< 0.00020	< 0.00020	0.00049	0.00086	< 0.00020
Copper	mg/L	*0.0069*	*0.0040*	*0.0036*	*0.0027*	*0.0028*	*0.0027*	*0.0019*	*0.0031*	0.00264	0.00323	0.00361	0.00303	0.00274

NP2-South	Sample date	*Annual Average*								6/21/2021	7/13/2021	8/16/2021	9/19/2021	10/11/2021
Parameter	**Unit**	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Iron	mg/L	*0.018*	*0.010*	*0.010*	*0.030*	*0.017*	*0.010*	*0.013*	*0.031*	0.049	0.039	0.028	0.020	0.017
Lead	mg/L	*0.0038*	*0.0003*	*0.0003*	*0.0005*	*0.0004*	*0.0003*	*0.0002*	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Lithium	mg/L	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.002*	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Magnesium (Dissolved)	mg/L	*7.70*	*5.73*	*6.83*	*NA*	*6.07*	*NA*	*NA*	*5.506*	2.39	5.91	6.00	6.88	6.35
Manganese	mg/L	*0.0400*	*0.0005*	*0.0017*	*0.0046*	*0.0057*	*0.0016*	*0.0233*	*0.01468*	0.02	0.0097	0.0085	0.0302	0.005
Mercury	mg/L	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0015*	*0.0006*	*0.0006*	*0.0005*	*0.0005*	*0.0006*	*0.0006*	*0.00176*	< 0.0010	0.0019	0.0019	0.0017	0.0023
Nickel	mg/L	*0.0130*	*0.0046*	*0.0067*	*0.0043*	*0.0051*	*0.0089*	*0.0185*	*0.01192*	0.0043	0.0077	0.0154	0.0225	0.0097
Selenium	mg/L	*0.002*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Silver	mg/L	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	*0.11*	*0.09*	*0.07*	*0.07*	*0.07*	*0.06*	*0.06*	*0.064*	0.0293	0.0729	0.0685	0.0733	0.0760
Thallium	mg/L	*0.00500*	*0.00500*	*0.00080*	*0.00080*	*0.00020*	*0.00030*	*0.00020*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Tin	mg/L	*0.003*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Titanium	mg/L	*0.017*	*0.010*	*0.010*	*0.018*	*0.013*	*0.010*	*0.010*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Uranium	mg/L	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.001122*	0.0004	0.0011	0.0011	0.0015	0.0015
Vanadium	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	mg/L	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0013*	*0.0010*	*0.0010*	*0.00624*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0112

8.5.3.1.8 North Portage Pit (ST-17)

Since 2019, there is no more sump associated with the North Portage Pit and thus, as per the Water License, Agnico Eagle has started to consider this area as the Portage Pit Lake. The new naming convention of ST-17 replaced ST-17 Lake when the in-pit tailings deposition in the Portage pits started in 2020. Refer to previous annual reports for ST-17 Lake and ST-17 Pit Sump results.

In 2021, seven (7) samples were collected with the new naming convention (ST-17) from June to December. A new pumping system has been installed to allow water sampling collection on a yearly basis. The Pore Water Quality Monitoring Program is followed. The sampling location is illustrated on Figure 1. Results are presented in Table 8-23. There are no applicable license limits.

8.5.3.1.9 South Portage Pit (ST-19)

No more sump is associated with the South portage Pit since the end of 2019. Sump sampling results (ST-19 Pit Sump) can be found in previous annual reports. In 2020, samples were taken in the pit under ST-19 Lake's name. In August 2020, the in-pit tailings deposition started in the Portage pits and the station name was modified for ST-19 instead of ST-19 Lake. Location is remaining the same for the water collection, only the use of a different station name.

In 2021, water from South Portage Pit Lake was sampled from June to December. A new pumping system was installed to allow water sampling collection on a yearly basis. Results are presented in Table 8-24. There are no applicable NWB water license limits. The Pore Water Quality Monitoring Program is followed since 2020.The sampling location is illustrated on Figure 1.

Table 8-23 Meadowbank 2021 North Portage Pit Water Quality Monitoring (ST-17)

ST-17	Sample date	*Annual Average*		6/28/2021	7/13/2021	8/2/2021	9/7/2021	10/24/2021	11/21/2021	12/7/2021
Parameter	**Unit**	***2020***	***2021***							
Field Measured										
Temperature	°C	*8.4*	*4.8*	1.3	9.6	8.8	8	1.4	2.5	1.8
pH	pH units	*7.24*	*7.78*	8.15	7.8	7.96	7.45	7.97	7.45	7.69
Conductivity	uS/cm	*2391.7*	*1775.5*	137.2	1198	1771	2107	2244	2500	2471
Turbidity	NTU	*14.25*	*7.44*	4.11	9.52	8.86	9.58	6.76	8.55	4.71
Conventional Parameters										
Hardness, as CaCO3	mg/L	*610*	*476*	66.1	305	446	493	551	655	814
Total alkalinity, as CaCO3	mg/L	*91*	*78*	16	58	80	85	100	105	105
Carbonate, as CaCO3	mg/L	*-*	*1.00*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	-
Bicarbonate, as CaCO3	mg/L	*92*	*78*	16	57	79	85	100	105	105
TDS	mg/L	*1120*	*1178*	180	760	1110	1240	1410	1763	1786
TSS	mg/L	*63*	*3*	4	2	3	3	3	3	2
Total organic carbon	mg/L	*13.8*	*10.8*	1.3	5.8	13	16	13	13.4	13
Dissolved organic carbon	mg/L	*12.5*	*9.6*	1.2	5.6	13.0	16.0	13.0	10.6	8.1
Salinity	ppm	*1.00*	*1.73*	-	-	-	-	-	1.72	1.75
Sodium Adsorption Ratio (salinity in water)	-	*-*	*3.04*	1	2.6	3.6	3.9	4.1	-	-
Oxidation-Reduction Potential	mV	*-*	*277.8*	165	199.7	204	290	227	448	411
Major Ions										
Bromide	mg/L	*0.79*	*1.26*	< 1	< 1	< 1	< 1	< 1	1.31	1.21
Chloride	mg/L	*124.45*	*99.7*	13	60	110	120	120	138.4	136.4
Cyanide	mg/L	*0.067*	*0.132*	0.011	0.072	0.73	0.043	0.024	0.023	0.023
Cyanide (free)	mg/L	*0.0265*	*0.1931*	0.0048	0.0230	1.3000	0.0037	0.0029	0.0090	0.0080
Cyanide (WAD)	mg/L	*0.0550*	*0.0858*	0.0036	0.0450	0.5100	0.0110	0.0098	0.0140	0.0070
Fluoride	mg/L	*0.25*	*0.24*	0.13	0.22	0.23	0.27	0.30	0.36	0.18
Silica	mg/L	*6.17*	*3.65*	0.64	3.1	4.3	4.7	5.5	-	-
Sulfate	mg/L	*720*	*673*	79	430	650	780	790	983	1000
Nutrients and Chlorophyll a										
Ammonia Nitrogen	mg N/L	*13.09*	*17.63*	2.2	9.5	17	19	22	25.94	27.74
Nitrate	mg N/L	*2.82*	*1.56*	0.25	1.24	2.22	2.51	1.45	1.67	1.58
Nitrite	mg N/L	*0.256*	*0.180*	0.014	0.092	0.219	0.256	0.231	0.21	0.24
Total Kjeldahl nitrogen	mg N/L	*25*	*28*	3.3	15	30	35	35	42	34
Total phosphorus	mg N/L	*0.098*	*0.028*	0.002	0.006	0.011	0.021	0.014	0.070	0.070
Orthophosphate (P)	mg/L	*0.08*	*0.021*	< 0.01	< 0.01	0.031	0.030	0.029	0.020	0.020

ST-17	Sample date	*Annual Average*		6/28/2021	7/13/2021	8/2/2021	9/7/2021	10/24/2021	11/21/2021	12/7/2021
Parameter	**Unit**	***2020***	***2021***							
Total Metals										
Aluminum	mg/L	*0.4100*	*0.0464*	0.0596	0.0768	0.0763	0.0575	0.0248	0.0250	< 0.005
Antimony	mg/L	-	*0.00304*	0.000436	0.00231	0.00436	0.00454	0.00409	0.00250	-
Arsenic	mg/L	*0.39503*	*0.0808*	0.0162	0.0653	0.0902	0.0871	0.0976	0.0916	0.1175
Barium	mg/L	*0.0473*	*0.0256*	0.00428	0.0161	0.0274	0.028	0.0303	0.0286	0.0446
Beryllium	mg/L	-	*0.00009*	< 0.00001	0.000011	< 0.00001	< 0.00002	< 0.00001	< 0.0005	-
Boron	mg/L	-	*0.0635*	0.011	0.059	0.105	0.103	0.101	< 0.002	-
Cadmium	mg/L	*0.00002*	*0.00005*	< 0.000005	0.00002	0.00003	0.00004	0.00002	< 0.00002	0.00020
Calcium (total)	mg/L	*214.6*	*157.1*	21.4	99.4	150	164	184	213	268
Chromium	mg/L	*0.00335*	*0.00070*	0.00049	0.00059	0.00131	0.00085	0.00045	< 0.0006	< 0.0006
Copper	mg/L	*0.5140*	*0.704*	0.021	0.060	1.110	1.380	0.661	0.757	0.940
Iron	mg/L	*1.298*	*0.291*	0.133	0.266	0.312	0.307	0.267	0.390	0.360
Lead	mg/L	*0.00045*	*0.00097*	0.00033	0.00087	0.00172	0.00191	0.00085	0.00037	0.00071
Lithium	mg/L	-	*0.00366*	0.00055	0.00323	0.00363	0.004	0.00455	0.006	-
Magnesium (total)	mg/L	*18.60*	*20.32*	3.07	13.80	17.20	20.00	22.30	30.25	35.64
Manganese	mg/L	*0.2574*	*0.4986*	0.0865	0.3690	0.4220	0.5140	0.5370	0.7353	0.8265
Mercury	mg/L	*0.00001*	*0.00005*	< 0.00001	< 0.00001	< 0.0001	< 0.0001	< 0.0001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0952*	*0.0702*	0.0088	0.0443	0.0648	0.0708	0.0885	0.0943	0.1202
Nickel	mg/L	*0.1076*	*0.4539*	0.0045	0.0245	0.5090	0.8450	0.5170	0.5642	0.7134
Potassium (total)	mg/L	*79.22*	*49.30*	4.97	27.1	45.2	51.9	55.6	70.28	90.04
Selenium	mg/L	*0.0224*	*0.0216*	0.0010	0.0055	0.0214	0.0266	0.0233	0.0315	0.0418
Silver	mg/L	*0.00035*	*0.00016*	0.000010	0.000012	0.000414	0.000307	0.000097	< 0.0001	0.000200
Sodium (total)	mg/L	*203.9*	*181.3*	18.9	103	162	190	202	270	323
Strontium	mg/L	-	*0.519*	0.084	0.387	0.555	0.614	0.761	0.712	-
Thallium	mg/L	*0.00067*	*0.00007*	0.000003	0.0000162	0.0000208	0.0000192	0.0000287	< 0.0002	< 0.0002
Tin	mg/L	-	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0004	< 0.0002	-	-
Titanium	mg/L	-	*0.0027*	0.0009	0.0009	0.0023	0.0016	< 0.0005	< 0.01	-
Uranium	mg/L	-	*0.0090*	0.0016	0.0068	0.0091	0.0094	0.0133	0.0140	-
Vanadium	mg/L	-	*0.0003*	< 0.0002	< 0.0002	0.00022	< 0.0004	< 0.0002	< 0.0005	-
Zinc	mg/L	*0.072*	*0.004*	0.001	0.001	0.002	0.002	0.001	0.010	0.011
Dissolved Metals										
Aluminum	mg/L	*0.0118*	*0.0077*	0.0065	0.0067	0.0052	0.0047	0.0035	0.0190	0.0080
Antimony	mg/L	-	*0.00313*	0.00044	0.00234	0.00463	0.00447	0.00378	-	-
Arsenic	mg/L	*0.34538*	*0.05523*	0.01240	0.05490	0.07750	0.06070	0.06450	0.06300	0.05360
Barium	mg/L	*0.0483*	*0.0247*	0.0044	0.0165	0.0283	0.0285	0.0295	0.0306	0.0349
Beryllium	mg/L	-	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00002	< 0.00001	-	-

ST-17	Sample date	*Annual Average*		6/28/2021	7/13/2021	8/2/2021	9/7/2021	10/24/2021	11/21/2021	12/7/2021
Parameter	**Unit**	***2020***	***2021***							
Boron	mg/L	-	*0.081*	0.011	0.057	0.114	0.113	0.111	-	-
Cadmium	mg/L	*0.00002*	*0.00002*	0.00001	0.00001	0.00003	0.00003	0.00002	< 0.00002	< 0.00002
Chromium	mg/L	*0.00550*	*0.00026*	< 0.0001	< 0.0001	0.00014	< 0.0002	< 0.0001	< 0.0006	< 0.0006
Copper	mg/L	*0.327*	*0.563*	0.015	0.048	1.180	1.200	0.467	0.540	0.493
Iron	mg/L	*0.020*	*0.034*	0.004	0.006	0.016	0.028	0.045	0.130	0.010
Lead	mg/L	*0.00049*	*0.00012*	0.00002	0.00003	0.00011	0.00020	0.00014	< 0.00017	< 0.00017
Lithium	mg/L	-	*0.00339*	0.00071	0.00324	0.00381	0.00470	0.00448	-	-
Manganese	mg/L	*0.2039*	*0.4678*	0.0869	0.3670	0.4280	0.4850	0.5250	0.7437	0.6390
Mercury	mg/L	*0.00001*	*0.00005*	< 0.00001	< 0.00001	< 0.0001	< 0.0001	< 0.0001	< 0.00001	0.00002
Molybdenum	mg/L	*0.0898*	*0.0655*	0.0093	0.0426	0.0681	0.0723	0.0818	0.0935	0.0909
Nickel	mg/L	*0.0919*	*0.4255*	0.0042	0.0235	0.5540	0.7980	0.5160	0.5509	0.5322
Selenium	mg/L	*0.0225*	*0.0179*	0.0008	0.0055	0.0216	0.0242	0.0213	0.0239	0.0281
Silver	mg/L	*0.00018*	*0.00012*	0.00001	0.00001	0.00050	0.00008	0.00004	< 0.0001	0.0001
Strontium	mg/L	*0.573*	*0.546*	0.090	0.405	0.583	0.637	0.687	0.723	0.700
Thallium	mg/L	*0.00035*	*0.00007*	0.00001	0.00001	0.00002	0.00002	0.00002	< 0.0002	< 0.0002
Tin	mg/L	-	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0004	< 0.0002	-	-
Titanium	mg/L	-	*0.0006*	< 0.0005	< 0.0005	< 0.0005	< 0.001	< 0.0005	-	-
Uranium	mg/L	-	*0.0082*	0.0017	0.0069	0.0092	0.0102	0.0131	-	-
Vanadium	mg/L	-	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0004	< 0.0002	-	-
Zinc	mg/L	*0.001*	*0.006*	0.0004	0.002	0.001	0.004	0.001	0.021	0.011

Table 8-24 Meadowbank 2021 South Portage Pit Water Quality Monitoring (ST-19)

ST-19	Sample date	*Annual Average*		6/28/2021	7/25/2021	8/17/2021	9/7/2021	10/24/2021	11/2/2021	12/7/2021
Parameter	**Unit**	***2020***	***2021***							
Field Measured										
Temperature	°C	-	*3.9*	3.5	8	5.6	7.9	0.7	0.1	1.3
pH	pH units	*7.75*	*8.20*	8.57	8.17	7.67	8.01	8.31	8.35	8.35
Conductivity	uS/cm	*2677*	*2971*	2039	4012	2159	2658	2833	2723	4373
Turbidity	NTU	-	*3.99*	1.7	5.24	3.31	2.15	7.52	6.42	1.56
Conventional Parameters										
Hardness, as CaCO3	mg/L	*871*	*988*	1110	1110	843	901	667	711	1574
Total alkalinity, as CaCO3	mg/L	*90*	*91*	82	83	93	95	92	100	95
Carbonate, as CaCO3	mg/L	-	*1.00*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-
Bicarbonate, as CaCO3	mg/L	-	*90*	81	82	92	94	91	100	-
TDS	mg/L	*17*	*2680*	3240	3040	2010	2460	2390	2450	3167
TSS	mg/L	*1*	*15*	12	16	9	17	28	15	6
Total organic carbon	mg/L	*18.7*	*26*	36	36	20	27	17	21	-
Dissolved organic carbon	mg/L	*17.7*	*25.4*	34	34	20	27	13	19	30.8
Sodium Adsorption Ratio (salinity in water)	-	-	*4.6*	5.4	5.2	4	5.1	3.7	3.9	-
Oxidation-Reduction Potential	mV	-	*192.9*	143	192.8	171.4	237	208	205	-
Major Ions										
Bromide	mg/L	-	*2.33*	< 5	< 1	< 1	< 1	< 1	< 5	-
Chloride	mg/L	*200.0*	*219.87*	350	-	180	110	130	170	379.2
Cyanide	mg/L	*0.049*	*0.31*	< 0.05	0.047	0.063	0.1	0.094	0.054	1.771
Cyanide (free)	mg/L	*0.018*	*0.37*	0.0025	0.0040	0.0340	0.5100	0.3900	0.0930	1.5500
Cyanide (WAD)	mg/L	*0.021*	*0.23*	< 0.0020	0.0022	0.015	0.0087	0.059	0.019	1.515
Fluoride	mg/L	*0.39*	*0.25*	0.22	0.22	0.25	0.22	0.27	0.25	0.32
Silica	mg/L	-	*6.0*	3	6.2	6.4	7.3	6.3	6.9	-
Sulfate	mg/L	*1150*	*1032*	1500	-	1000	530	580	820	1760
Nutrients and Chlorophyll a										
Ammonia Nitrogen	mg N/L	*14.72*	*40.11*	55	54	35	39	21	22	54.79
Nitrate	mg N/L	*2.04*	*8.17*	10.30	9.67	6.46	8.96	4.32	5.38	12.10
Nitrite	mg N/L	*0.080*	*0.280*	0.414	0.391	0.224	0.287	0.124	0.181	0.340
Total Kjeldahl nitrogen	mg N/L	-	*66*	88	88	56	72	42	50	-
Total phosphorus	mg N/L	*0.01*	*0.027*	0.052	0.043	0.013	0.010	0.008	0.005	0.060
Orthophosphate (P)	mg/L	-	*0.039*	0.085	0.054	0.044	0.024	0.012	0.012	-
Total Metals										
Aluminum	mg/L	*0.019*	*0.0947*	0.0731	0.0547	0.0463	0.201	0.184	0.0875	0.016

ST-19	Sample date	*Annual Average*		6/28/2021	7/25/2021	8/17/2021	9/7/2021	10/24/2021	11/2/2021	12/7/2021
Parameter	**Unit**	***2020***	***2021***							
Antimony	mg/L	-	*0.01139*	0.01550	0.01630	0.01000	0.01100	0.00756	0.00796	-
Arsenic	mg/L	*0.0108*	*0.1296*	0.2790	0.2050	0.1500	0.0914	0.0692	0.0576	0.0547
Barium	mg/L	*0.0292*	*0.0893*	0.109	0.107	0.0699	0.0855	0.0504	0.0575	0.146
Beryllium	mg/L	-	*0.00002*	< 0.00002	< 0.00005	< 0.00002	< 0.00002	< 0.00002	< 0.00001	-
Boron	mg/L	-	*0.199*	0.233	0.215	0.189	0.214	0.165	0.180	-
Cadmium	mg/L	*0.00002*	*0.00007*	0.00010	0.00006	0.00005	0.00005	0.00009	0.00012	< 0.00002
Calcium (total)	mg/L	*267*	*358*	411	411	302	322	230	250	578
Chromium	mg/L	*0.0006*	*0.0019*	0.0012	0.0006	0.0005	0.0025	0.0058	0.0021	0.0007
Copper	mg/L	*0.003*	*2.451*	6.510	3.550	1.500	1.450	0.430	0.538	3.180
Iron	mg/L	*0.070*	*0.277*	0.162	0.107	0.087	0.439	0.434	0.197	0.510
Lead	mg/L	*0.00017*	*0.00056*	0.00134	0.00046	0.00024	0.00034	0.00055	0.00059	0.00042
Lithium	mg/L	-	*0.00337*	0.00200	< 0.0025	0.00290	0.00360	0.00440	0.00483	-
Magnesium (total)	mg/L	*50.10*	*23.40*	21.70	20.50	21.80	23.50	22.40	21.20	32.73
Manganese	mg/L	*1.351*	*0.0456*	0.0444	0.0330	0.0840	0.0567	0.0330	0.0271	0.0409
Mercury	mg/L	*0.00001*	*0.0001*	< 0.00001	< 0.00001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.00001
Molybdenum	mg/L	*0.1804*	*0.1051*	0.1420	0.1230	0.0876	0.0946	0.0619	0.0691	0.1574
Nickel	mg/L	*0.0338*	*0.2757*	0.4020	0.3190	0.2000	0.2460	0.1570	0.1680	0.4382
Potassium (total)	mg/L	*66.6*	*138.2*	163	161	109	118	79.5	89.8	246.8
Selenium	mg/L	*0.001*	*0.1071*	0.1210	0.1310	0.0895	0.0880	0.0644	0.0633	0.1926
Silver	mg/L	*0.0001*	*0.0004*	0.00071	0.00005	0.00006	0.00077	0.00068	0.00067	0.00010
Sodium (total)	mg/L	*391*	*330*	383	389	261	280	190	201	606
Strontium	mg/L	*0.924*	*1.346*	1.750	1.490	1.170	1.260	0.903	1.100	1.746
Thallium	mg/L	*0.0002*	*0.0001*	0.00005	< 0.00001	0.00002	0.00003	0.00004	0.00004	< 0.0002
Tin	mg/L	-	*0.0005*	< 0.0004	< 0.001	< 0.0004	< 0.0004	< 0.0004	< 0.0002	-
Titanium	mg/L	-	*0.0018*	< 0.001	< 0.0025	< 0.0010	0.0023	0.0023	0.0019	-
Uranium	mg/L	-	*0.0192*	0.0178	0.0120	0.0194	0.0204	0.0225	0.0230	-
Vanadium	mg/L	-	*0.0006*	< 0.0004	< 0.001	< 0.0004	0.0010	0.0004	0.0005	-
Zinc	mg/L	*0.001*	*0.002*	0.001	0.005	0.001	0.005	0.001	0.0004	< 0.001
Dissolved Metals										
Aluminum	mg/L	*0.006*	*0.00847*	0.0062	0.0176	0.0115	0.0064	0.00399	0.0076	0.006
Antimony	mg/L	-	*0.01046*	0.01510	0.01690	0.00986	0.00755	0.00375	0.00958	-
Arsenic	mg/L	*0.0012*	*0.1200*	0.2550	0.2180	0.1320	0.0761	0.0642	0.0599	0.0348
Barium	mg/L	*0.0201*	*0.0797*	0.1080	0.1140	0.0676	0.0623	0.0291	0.0663	0.1108
Beryllium	mg/L	-	*0.00002*	< 0.00002	< 0.00005	< 0.00002	< 0.00002	< 0.00001	< 0.00002	-
Boron	mg/L	-	*0.190*	0.240	0.228	0.192	0.162	0.111	0.209	-
Cadmium	mg/L	*0.00002*	*0.00006*	0.00010	0.00006	0.00004	0.00003	0.00001	0.00012	< 0.00002

ST-19	Sample date	*Annual Average*		6/28/2021	7/25/2021	8/17/2021	9/7/2021	10/24/2021	11/2/2021	12/7/2021
Parameter	**Unit**	***2020***	***2021***							
Chromium	mg/L	*0.0006*	*0.00029*	< 0.00020	< 0.00050	< 0.00020	< 0.00020	< 0.00010	< 0.00020	< 0.00060
Copper	mg/L	*0.0005*	*2.044*	6.450	3.760	0.543	0.971	0.469	0.731	1.385
Iron	mg/L	*0.01*	*0.011*	0.005	< 0.005	0.002	0.006	0.044	0.004	0.01
Lead	mg/L	*0.00017*	*0.00010*	0.00015	0.00005	0.00003	0.00008	0.00013	0.00006	< 0.00017
Lithium	mg/L	-	*0.00345*	0.0021	< 0.0025	0.0032	0.0034	0.0045	0.0050	-
Manganese	mg/L	*1.2296*	*0.04446*	0.0419	0.033	0.0974	0.0526	0.0257	0.0317	0.0289
Mercury	mg/L	*0.00001*	*0.0001*	< 0.00001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00001
Molybdenum	mg/L	*0.1618*	*0.0992*	0.131	0.133	0.0826	0.0644	0.0821	0.0876	0.1137
Nickel	mg/L	-	*0.245*	0.399	0.329	0.199	0.172	0.147	0.224	-
Selenium	mg/L	*0.001*	*0.0960*	0.1170	0.1320	0.0743	0.0618	0.0215	0.0922	0.1731
Silver	mg/L	*0.00010*	*0.00033*	0.00066	0.00008	0.00001	0.00054	0.00004	0.00092	< 0.0001
Strontium	mg/L	*0.995*	*1.274*	1.630	1.650	1.160	0.947	0.696	1.200	1.637
Thallium	mg/L	*0.00020*	*0.00005*	0.00003	< 0.00001	0.00002	0.00003	0.00002	0.00003	< 0.0002
Tin	mg/L	-	*0.0005*	< 0.0004	< 0.001	< 0.0004	< 0.0004	< 0.0002	< 0.0004	-
Titanium	mg/L	-	*0.0012*	< 0.001	< 0.0025	< 0.001	< 0.001	< 0.0005	< 0.001	-
Uranium	mg/L	-	*0.0188*	0.0185	0.0127	0.0213	0.0254	0.0134	0.0215	-
Vanadium	mg/L	-	*0.0005*	< 0.0004	< 0.001	< 0.0004	< 0.0004	< 0.0002	< 0.0004	-
Zinc	mg/L	*0.001*	*0.001*	0.001	0.002	0.001	0.001	0.0004	0.001	< 0.001

8.5.3.1.10 Goose Pit (ST-20)

Mining activities have ceased in the Goose pit in April 2015. Starting in June 2015, no additional water was pumped out of the Bay Goose Pit sump; instead runoff and groundwater were kept in the pit to contribute to natural re-flooding of the pit. On May 24th, 2019, Agnico Eagle received from NWB the Ministers Approval regarding the Amendment No.3 to Type A Water Licence No. 2AM-MEA1526 to authorize Water Uses and Waste Deposits associated with the In-Pit Tailings Disposal. In-Pit Deposition in Goose Pit started on July 5th, 2019.

Since the in-pit tailings deposition started in July 2019, the station name has been changed for ST-20 instead of ST-20 Lake. Nomenclature modification only, the sampling location remain the same. Refer to previous annual report for the ST-20 Lake sampling results.

In 2021, Agnico Eagle collected five (5) monthly water quality samples at the bottom of Goose Pit (ST-20) Results of sampling conducted at station ST-20 are presented in Table 8-25. Station location is illustrated in Figure 1.

Four samples were also collected monthly during open water in from June to September as per the requirements in the NWB water license at a sump at the top of Bay Goose Pit (sampling station ST-20 Goose Pit Sump). The data are presented in Table 8-26, the sampling location is illustrated on Figure 1. There are no applicable license limits for ST-20 Goose Pit Sump and ST-20 as the water was not directly released into the environment; the data is presented for information purposes only.

8.5.3.1.11 Tailings Storage Facility (ST-21)

The North Cell Tailings Storage Facility became operational in February 2010. On November 17th, 2014 the reclaim water intake was transferred from the North Cell TSF to the South Cell TSF. Tailings deposition was also stopped in the North Cell TSF and commenced in the South Cell TSF at that time. As per the NWB Water License, sampling station ST-21 changed location from the North to the South Cell. Sampling was conducted monthly as per the requirements of the NWB Water License. On July 5th, 2019, tailings deposition started in Bay Goose Pit. There are no applicable license limits for this station as the water is used as reclaim water at the mill. Sample results are presented in Table 8-27. The location of sampling station ST-21 (South Cell TSF) is illustrated on Figure 1. As per the water license, no further monitoring in the TSF North Cell is required.

8.5.3.1.12 Vault Pit (ST-26)

In 2014, a sump was constructed in the Vault pit in an area of water accumulation. Water from the Vault Pit is sampled monthly during open water as per the requirements in the NWB water license. Since 2020, water from Vault Pit sump (ST-23) is no longer sampled due to the natural reflooding of the Pit, samples are now collected from the Vault Pit Lake (ST-26) (Table 8-28). Please refer to previous annual reports for ST-23 results. The Vault Pit Lake was sampled monthly during open water as per the requirements in the NWB Water License (sampling station ST-26 on Figure 3). In 2021 no water was pumped to the Vault Attenuation Pond as per previous years. Water is rather kept in the pit and contribute to the natural reflooding. There are no applicable license limits for ST-26.

Table 8-25 Meadowbank 2021 Goose Pit Water Quality Monitoring (ST-20)

ST-20	Sample date	*Annual Average*			6/27/2021	7/19/2021	8/2/2021	9/7/2021	10/24/2021
Parameter	**Unit**	***2019***	***2020***	***2021***					
Field Measured									
Temperature	°C	-	*7.9*	*7.8*	5.6	12.4	10.6	9.8	0.7
pH	pH units	-	*8.28*	*8.02*	7.61	8.14	8.12	7.95	8.26
Conductivity	uS/cm	-	*2362.3*	*2021.4*	727	1948	2326	2467	2639
Turbidity	NTU	-	*3.85*	*3.87*	5.77	3.91	6.71	1.45	1.52
Conventional Parameters									
Hardness, as CaCO3	mg/L	405	817.33	527.20	199	507	615	661	654
Total alkalinity, as CaCO3	mg/L	*61*	*81*	*100.40*	45	97	120	120	120
Carbonate, as CaCO3	mg/L	*2*	*7*	*1.10*	< 1	< 1	1	1.5	< 1
Bicarbonate, as CaCO3	mg/L	*61*	*78*	*98.40*	45	97	110	120	120
TDS	mg/L	*803*	*1493*	*1396*	560	1240	1670	1770	1740
TSS	mg/L	*20*	*11*	*2.75*	2	3	4	< 1	2
Total organic carbon	mg/L	*6.70*	-	*12.80*	5	13	16	15	15
Dissolved organic carbon	mg/L	*9*	*17*	*11.72*	4.6	12	14	14	14
Sodium Adsorption Ratio (salinity in water)	-	-	-	*3.20*	2	3.1	3.5	3.8	3.6
Oxidation-Reduction Potential	mV	-	-	*222.14*	187.7	277	165	263	218
Major Ions									
Bromide	mg/L	-	-	*1*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloride	mg/L	*80.0*	*223.7*	*109*	45	100	130	140	130
Cyanide	mg/L	*0.152*	*0.370*	*0.058*	0.035	0.096	0.063	0.055	0.041
Cyanide (free)	mg/L	*0.1470*	-	*0.0143*	0.0140	0.0270	0.0170	0.0049	0.0088
Cyanide (WAD)	mg/L	-	*0.3812*	*0.0336*	0.0270	0.0430	0.0440	0.0290	0.0250
Fluoride	mg/L	-	*0.27*	*0.25*	0.18	0.26	0.24	0.29	0.28
Silica	mg/L	*12.7*	*7.2*	*5.9*	2.5	5.4	6.7	7.4	7.6
Sulfate	mg/L	*469*	*943*	*768*	270	740	900	980	950
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg N/L	*10.5*	*22.5*	*23.2*	8.8	21	27	29	30
Nitrate	mg N/L	*1.90*	*3.91*	*2.05*	0.91	2.10	2.38	2.80	2.06
Nitrite	mg N/L	*0.020*	*0.180*	*0.462*	0.142	0.406	0.516	0.531	0.717
Total Kjeldahl nitrogen	mg N/L	*18*	*43*	*36*	14	29	44	47	47
Total phosphorus	mg N/L	*0.060*	*0.063*	*0.023*	0.017	0.019	0.023	0.011	0.047
Orthophosphate (P)	mg/L	*0.05*	*1.38*	*0.15*	0.04	0.17	0.19	0.10	0.24
Total Metals									
Aluminum	mg/L	*0.5880*	*0.1693*	*0.0526*	0.0765	0.0300	0.0882	0.0288	0.0396
Antimony	mg/L	*0.0040*	*0.0133*	*0.0140*	0.0054	0.0135	0.0162	0.0174	0.0175
Arsenic	mg/L	*0.0191*	*0.8344*	*0.5060*	0.1870	0.4780	0.5790	0.6340	0.6520
Barium	mg/L	*0.0383*	*0.0637*	*0.0434*	0.0199	0.0426	0.0491	0.0525	0.0529
Beryllium	mg/L	*0.00050*	*0.00050*	*0.00002*	< 0.00001	< 0.00001	< 0.00002	< 0.00002	< 0.00002
Boron	mg/L	*0.030*	*0.010*	*0.137*	0.057	0.137	0.159	0.172	0.161
Cadmium	mg/L	*0.00024*	*0.00050*	*0.00001*	0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001
Calcium (total)	mg/L	*127*	*309*	*197.84*	73.2	188	229	246	253
Chromium	mg/L	*0.00940*	*0.00162*	*0.00063*	0.00101	0.00037	0.00094	0.00039	0.00045
Copper	mg/L	*0.5609*	*2.5258*	*0.0245*	0.0110	0.0285	0.0337	0.0258	0.0235
Iron	mg/L	*1.030*	*0.458*	*0.112*	0.178	0.057	0.195	0.048	0.082
Lead	mg/L	*0.00030*	*0.00024*	*0.00036*	0.00052	0.00035	0.00052	0.00022	0.00019
Lithium	mg/L	*0.01300*	*0.00517*	*0.00345*	0.00163	0.00342	0.00390	0.00420	0.00410
Magnesium (total)	mg/L	*21.10*	*13.28*	*9*	3.91	8.78	10.3	11.1	10.9
Manganese	mg/L	*0.0509*	*0.0474*	*0.0501*	0.0405	0.053	0.0525	0.0491	0.0553
Mercury	mg/L	*0.00002*	*0.00001*	*0.00008*	< 0.00001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum	mg/L	*0.1281*	*0.1025*	*0.0770*	0.0277	0.0752	0.0868	0.0952	0.1

ST-20	Sample date	*Annual Average*			6/27/2021	7/19/2021	8/2/2021	9/7/2021	10/24/2021
Parameter	**Unit**	***2019***	***2020***	***2021***					
Nickel	mg/L	*0.0232*	*0.1656*	*0.0653*	0.0266	0.0643	0.0754	0.0807	0.0796
Potassium (total)	mg/L	*35.90*	*137.54*	*80.18*	29.9	76.2	92.7	103	99.1
Selenium	mg/L	*0.0052*	*0.0479*	*0.0329*	0.0119	0.0305	0.0393	0.0399	0.0427
Silver	mg/L	-	*0.0009*	*0.0000*	-	-	-	0.000038	-
Sodium (total)	mg/L	*149*	*274.2*	*157.9*	59.7	152	181	199	198
Strontium	mg/L	*0.620*	*0.693*	*0.543*	0.202	0.530	0.615	0.667	0.699
Thallium	mg/L	*0.00020*	*0.00020*	*0.00002*	0.00002	0.00002	0.00002	0.00001	0.00001
Tin	mg/L	*0.0010*	*0.0010*	*0.0003*	< 0.0002	< 0.0002	< 0.0004	< 0.0004	< 0.0004
Titanium	mg/L	*0.010*	*0.010*	*0.002*	0.004	0.001	0.003	< 0.001	< 0.001
Uranium	mg/L	*0.0130*	*0.0080*	*0.0064*	0.0027	0.0064	0.0072	0.0077	0.0080
Vanadium	mg/L	*0.0020*	*0.0008*	*0.0005*	0.00024	0.00052	0.00055	0.00059	< 0.0004
Zinc	mg/L	*0.0030*	*0.0028*	*0.0015*	0.0020	0.0010	0.0016	0.0023	0.0005
Dissolved Metals									
Aluminum	mg/L	*0.0240*	*0.0088*	*0.0111*	0.0087	0.0108	0.0186	0.0112	0.0060
Antimony	mg/L	*0.00320*	*0.01277*	*0.01210*	0.00545	0.01340	0.01690	0.01700	0.00777
Arsenic	mg/L	*0.0146*	*0.7832*	*0.3984*	0.1810	0.4810	0.5860	0.6780	0.0660
Barium	mg/L	*0.0303*	*0.0552*	*0.0430*	0.0199	0.0411	0.0499	0.0517	0.0526
Beryllium	mg/L	*0.0005*	*0.0005*	*0.00001*	< 0.00001	< 0.00001	< 0.00002	< 0.00001	< 0.00001
Boron	mg/L	*0.010*	*0.010*	*0.141*	0.056	0.138	0.179	0.152	0.179
Cadmium	mg/L	*0.000020*	*0.000020*	*0.000019*	0.0000065	< 0.000005	0.000072	< 0.000005	< 0.000005
Chromium	mg/L	*0.0006*	*0.0006*	*0.0002*	< 0.0001	0.0002	< 0.0002	< 0.0001	0.0002
Copper	mg/L	*0.3543*	*0.6846*	*0.0197*	0.0085	0.0243	0.0286	0.0198	0.0172
Iron	mg/L	*0.010*	*0.010*	*0.007*	< 0.001	0.002	0.010	0.004	0.019
Lead	mg/L	*0.00030*	*0.00024*	*0.00012*	0.00001	0.00002	0.00046	0.00003	0.00009
Lithium	mg/L	*0.00500*	*0.00517*	*0.00344*	0.00153	0.00323	0.00430	0.00371	0.00444
Manganese	mg/L	*0.0309*	*0.0265*	*0.0413*	0.0372	0.0491	0.0506	0.0426	0.0270
Mercury	mg/L	*0.00001*	*0.00001*	*0.00008*	< 0.00001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum	mg/L	*0.1025*	*0.0937*	*0.0705*	0.0282	0.0734	0.0905	0.0962	0.0641
Nickel	mg/L	*0.0150*	*0.1433*	*0.0622*	0.0260	0.0631	0.0760	0.0725	0.0732
Selenium	mg/L	*0.002*	*0.038*	*0.03218*	0.0116	0.0321	0.0392	0.0396	0.0384
Silver	mg/L	*0.51400*	*0.00010*	*0.00002*	-	-	-	0.00002	-
Strontium	mg/L	*0.0100*	*0.6288*	*0.5940*	0.2050	0.5230	0.6210	0.6850	0.9360
Thallium	mg/L	-	-	*0.00002*	0.00001	0.00002	0.00002	0.00002	0.00001
Tin	mg/L	*0.0010*	-	*0.0003*	< 0.0002	< 0.0002	< 0.0004	< 0.0002	0.0007
Titanium	mg/L	*0.0002*	*0.0100*	*0.0006*	< 0.0005	< 0.0005	< 0.001	< 0.0005	< 0.0005
Uranium	mg/L	*0.0110*	*0.0070*	*0.0063*	0.0027	0.0060	0.0070	0.0078	0.0078
Vanadium	mg/L	*0.0005*	*0.0007*	*0.0004*	< 0.0002	0.0005	< 0.0004	0.0005	0.0003
Zinc	mg/L	*0.0010*	*0.0010*	*0.0029*	0.0006	0.0013	0.0116	< 0.0001	0.0007

Table 8-26 Meadowbank 2021 Goose Pit Sump Water Quality Monitoring (ST-20 Pit Sump)

ST-20 PIT SUMP	Sample date	*Annual Average*									6/28/2021	7/19/2021	8/2/2021	9/7/2021
Parameter	**Unit**	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***				
Field Measured														
Temperature	°C	-	-	-	-	-	-	-	-	*10.70*	8.7	13	11.2	9.9
pH	pH units	*7.68*	*7.97*	*7.37*	*7.73*	*7.92*	*7.48*	*8.49*	*7.88*	*7.89*	7.58	8.16	8.04	7.79
Conductivity	uS/cm	-	-	-	-	-	-	-	-	*388.50*	213	446	445	450
Turbidity	NTU	*52.61*	*27.34*	*41.13*	*23.77*	*9.02*	*13.50*	*12.94*	*17.99*	*10.71*	10.8	15.4	14.6	2.04
Conventional Parameters														
Hardness, as CaCO3	mg/L	*0.002*	*131*	*134*	*127*	*226*	*149*	-	-	*193*	194	187	192	200
Total alkalinity, as CaCO3	mg/L	*130*	*90*	*57*	*4*	*86*	*46*	-	-	*55*	57	54	54	54
TDS	mg/L	*314*	*530*	*180*	*238*	*423*	*236*	*225*	*228*	*306*	325	295	305	300
TSS	mg/L	-	-	*7*	*18*	*5*	*8*	*8*	*9*	*7*	8	7	11	< 1
Major Ions														
Chloride	mg/L	*62.2*	*52.5*	*22.2*	*13.4*	*12.7*	*7.7*	*5.0*	*5.6*	*7.4*	8	6.8	7.3	7.6
Cyanide	mg/L	-	-	*0.008*	*0.004*	*0.002*	*0.003*	*0.001*	*0.001*	*0.007*	0.012	< 0.005	< 0.005	0.006
Fluoride	mg/L	*0.72*	*0.94*	*0.40*	*0.34*	*0.18*	*0.20*	*0.17*	*0.19*	*0.26*	0.26	0.28	0.23	0.27
Sulfate	mg/L	*0.7*	*0.9*	*0.4*	*0.3*	*147.3*	*0.2*	*0.2*	*108*	*145*	140	150	140	150
Nutrients and Chlorophyll a														
Ammonia Nitrogen	mg N/L	*0.30*	*0.06*	*1.13*	*0.10*	*1.16*	*0.16*	*0.59*	*0.05*	*0.11*	0.15	0.17	0.07	< 0.05
Nitrate	mg N/L	*20.80*	*10.85*	*2.96*	*3.71*	*13.22*	*5.37*	*3.79*	*3.48*	*3.58*	3.75	3.59	3.4	3.59
Nitrite	mg N/L	*0.540*	*0.260*	*0.190*	*0.023*	*0.130*	*0.020*	*0.038*	*0.025*	*0.017*	0.011	0.022	0.019	0.015
Total Metals														
Aluminum	mg/L	-	-	*0.3050*	*0.3870*	*0.1120*	*0.1997*	*0.1995*	*0.3995*	*0.1801*	0.3090	0.1800	0.2040	0.0274
Arsenic	mg/L	-	-	*0.00140*	*0.00063*	*0.00290*	*0.00150*	*0.00188*	*0.00623*	*0.00373*	0.00215	0.00408	0.00427	0.00441
Barium	mg/L	-	-	*0.0276*	*0.0210*	*0.0410*	*0.0218*	*0.0201*	*0.0169*	*0.0214*	0.0240	0.0207	0.0211	0.0199
Cadmium	mg/L	-	-	*0.00002*	*0.00005*	*0.00003*	*0.00002*	*0.00002*	*0.00002*	*0.00002*	0.00003	0.00001	0.00002	0.00001
Chromium	mg/L	-	-	*0.00060*	*0.00330*	*0.00060*	*0.00267*	*0.00285*	*0.00395*	*0.00137*	0.00160	0.00174	0.00171	0.00043
Copper	mg/L	-	-	*0.0023*	*0.0030*	*0.0020*	*0.0015*	*0.0019*	*0.0036*	*0.0011*	0.0013	0.0014	0.0011	0.0009
Iron	mg/L	-	-	*0.690*	*0.670*	*0.210*	*0.323*	*0.355*	*0.678*	*0.317*	0.516	0.329	0.384	0.0373
Lead	mg/L	-	-	*0.00048*	*0.00030*	*0.00030*	*0.00030*	*0.00030*	*0.00039*	*0.00030*	0.00041	0.00032	0.00041	0.00007
Manganese	mg/L	-	-	*0.2682*	*0.0680*	*0.0990*	*0.1174*	*0.0529*	*0.0460*	*0.0359*	0.0789	0.0298	0.0316	0.00318
Mercury	mg/L	-	-	*0.00001*	*0.00001*	*0.00002*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	-	-	*0.0138*	*0.0068*	*0.0066*	*0.0049*	*0.0048*	*0.0033*	*0.0044*	0.0042	0.00426	0.00432	0.00465
Nickel	mg/L	-	-	*0.0380*	*0.0400*	*0.0760*	*0.0754*	*0.0338*	*0.0840*	*0.0460*	0.0612	0.0439	0.0434	0.0355
Selenium	mg/L	-	-	*0.0010*	*0.0010*	*0.0017*	*0.0008*	*0.0007*	*0.0010*	*0.0007*	0.0008	0.0007	0.0008	0.0007
Silver	mg/L	-	-	*0.0001*	*0.0001*	*0.0017*	*0.0001*	*0.0001*	*0.0001*	*0.0000*	< 0.00002	0.0000090	<0.000005	-

ST-20 PIT SUMP	Sample date	*Annual Average*									6/28/2021	7/19/2021	8/2/2021	9/7/2021
Parameter	**Unit**	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***				
Thallium	mg/L	-	-	*0.00500*	*0.00110*	*0.00080*	*0.00040*	*0.00020*	*0.00020*	*0.00004*	0.00004	0.00004	0.00004	0.00004
Zinc	mg/L	-	-	*0.0010*	*0.0030*	*0.0023*	*0.0017*	*0.0014*	*0.0025*	*0.0022*	< 0.0050	0.0014	0.0019	0.0006

Table 8-27 Meadowbank 2021 Tailings Reclaim Pond Water Quality Monitoring (ST-21)

ST-21-S	Sample date	*Annual Average*									6/22/2021	7/25/2021	8/17/2021	9/22/2021	10/3/2021
Parameter	**Unit**	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Field Measured															
Temperature	°C	-	-	-	-	-	-	-	*8.3*	*5.5*	5.6	7.6	8.2	0.7	5.5
pH	pH units	*8.40*	*7.84*	*7.99*	*8.14*	*8.22*	*8.24*	*8.03*	*7.91*	*8.12*	8.4	7.99	8.11	7.98	8.11
Conductivity	uS/cm	-	-	-	-	-	-	-	*1160*	*1583*	377	2142	2389	1460	1549
Turbidity	NTU	*15.31*	*6.00*	*10.68*	*10.59*	*7.85*	*16.28*	*16.22*	*19.71*	*36.36*	41.40	47.70	46.00	16.40	30.30
Conventional Parameters															
Hardness, as CaCO3	mg/L	*1219*	*1252*	*1218*	*1264*	*1224*	*1119*	*810*	-	*419*	163	585	513	430	403
Total alkalinity, as CaCO3	mg/L	*125*	*100*	*123*	*125*	*127*	*118*	*79*	*75*	*88*	43	92	100	110	94
TDS	mg/L	*2949*	*3669*	*2499*	*2338*	*3033*	*2628*	*1606*	*735*	*1186*	300	1620	1860	1110	1040
TSS	mg/L	-	*14*	*13*	*21*	*11*	*8*	*15*	*35*	*42*	27	120	35	12	14
Major Ions															
Chloride	mg/L	*931.3*	*1747.4*	*538.0*	*465.3*	*370.8*	*441.7*	*206.3*	*43.7*	*101.8*	9.1	150	230	63	57
Cyanide	mg/L	*11.350*	*10.240*	*4.000*	*3.930*	*0.890*	*1.018*	*0.952*	*0.024*	*0.055*	0.0075	0.056	0.067	0.044	0.1
Cyanide (free)	mg/L	-	-	*0.011*	*0.031*	*0.370*	*0.163*	*3.200*	*0.0038*	*0.0420*	< 0.0010	0.0070	0.1000	0.0190	0.0420
Cyanide (WAD)	mg/L	-	-	*0.310*	*0.640*	*0.170*	*0.081*	*2.452*	*0.0028*	*0.0138*	0.0019	0.0015	0.0026	0.0180	0.0450
Fluoride	mg/L	*2.17*	*2.59*	*0.65*	*0.58*	*0.40*	*0.47*	*0.42*	*0.26*	*0.23*	0.14	0.26	0.2	0.28	0.27
Sulfate	mg/L	*2034*	*2218*	*1645*	*1939*	*1855*	*2151*	*1153*	*383*	*570*	180	840	790	530	510
Nutrients and Chlorophyll a															
Ammonia Nitrogen	mg N/L	*25.7*	*0.7*	*37.6*	*42.3*	*43.6*	*50.5*	*22.3*	*6.0*	*15.7*	1.4	24	24	13	16
Nitrate	mg N/L	*15.20*	*26.19*	*9.45*	*7.20*	*3.69*	*4.86*	*4.35*	*4.49*	*7.42*	1.69	7.38	7.81	8.8	11.4
Nitrite	mg N/L	*0.550*	*0.420*	*0.330*	*0.190*	*0.240*	*0.630*	*0.270*	*0.353*	*0.213*	0.036	0.245	0.157	0.211	0.415
Total Metals															
Aluminum	mg/L	*0.253*	*0.163*	*0.090*	*0.144*	*0.110*	*0.238*	*0.099*	*0.453*	*0.910*	0.314	3.420	0.368	0.146	0.303
Arsenic	mg/L	*0.0192*	*0.0107*	*0.0170*	*0.0150*	*0.0086*	*0.0171*	*0.0218*	*0.0190*	*0.0923*	0.0105	0.2830	0.0499	0.0640	0.0540
Barium	mg/L	*0.0712*	*0.0077*	*0.0750*	*0.0930*	*0.0860*	*0.1368*	*0.0421*	*0.0287*	*0.0381*	0.0126	0.0721	0.0406	0.0374	0.0279
Cadmium	mg/L	*0.0007*	*0.0010*	*0.0008*	*0.0013*	*0.0015*	*0.0027*	*0.0001*	*0.00003*	*0.00009*	0.0000334	0.00019	0.00011	0.0000616	0.0000724
Chromium	mg/L	*0.00100*	*0.00060*	*0.00150*	*0.00130*	*0.00150*	*0.00229*	*0.00149*	*0.00313*	*0.02466*	0.00153	0.10500	0.00810	0.00205	0.00660
Copper	mg/L	*3.292*	*3.400*	*1.100*	*0.460*	*0.370*	*0.908*	*1.605*	*0.079*	*2.796*	0.011	4.450	8.760	0.467	0.292
Iron	mg/L	*0.360*	*0.420*	*0.630*	*1.010*	*0.049*	*1.092*	*0.469*	*1.243*	*2.614*	0.920	9.540	1.410	0.377	0.825
Lead	mg/L	*0.0024*	*0.0005*	*0.0005*	*0.0007*	*0.0014*	*0.0031*	*0.0021*	*0.0050*	*0.0153*	0.0080	0.0476	0.0121	0.0025	0.0063
Manganese	mg/L	*0.3343*	*0.0674*	*0.6900*	*0.2100*	*0.2800*	*0.4865*	*0.3420*	*0.5820*	*0.3444*	0.145	0.432	0.203	0.384	0.558
Mercury	mg/L	*0.00015*	*0.00035*	*0.00025*	*0.00035*	*0.00027*	*0.00019*	*0.00002*	*0.00001*	*0.00006*	< 0.00001	0.00001	< 0.0001	< 0.0001	< 0.0001
Molybdenum	mg/L	*0.3519*	*0.3672*	*0.3100*	*0.4200*	*0.5300*	*0.5168*	*0.2373*	*0.0590*	*0.0417*	0.0138	0.0609	0.0482	0.0412	0.0445
Nickel	mg/L	*0.264*	*0.669*	*0.110*	*0.052*	*0.130*	*0.120*	*0.099*	*0.030*	*1.139*	0.011	1.250	3.720	0.413	0.300
Selenium	mg/L	*0.0300*	*0.1770*	*0.0620*	*0.0730*	*0.0480*	*0.0698*	*0.0054*	*0.0013*	*0.0417*	0.0003	0.0584	0.0933	0.0321	0.0244
Silver	mg/L	-	-	*0.0014*	*0.0009*	*0.0004*	*0.0002*	*0.0004*	*0.0001*	*0.0009*	0.0000	0.0018	0.0021	0.0002	0.0002
Thallium	mg/L	*0.14800*	*0.00500*	*0.00500*	*0.00170*	*0.00080*	*0.00055*	*0.00062*	*0.00020*	*0.00004*	0.00002	0.00008	0.00002	0.00004	0.00004
Zinc	mg/L	*0.004*	*0.010*	*0.003*	*0.004*	*0.010*	*0.005*	*0.005*	*0.004*	*0.005*	0.003	0.011	0.006	0.003	0.003

Table 8-28 Meadowbank 2021 Vault Pit Water Quality Monitoring (ST-26)

ST-26	Sample date	*Annual Average*		6/29/2021	7/13/2021	8/3/2021	9/28/2021	10/21/2021
Parameter	**Unit**	***2020***	***2021***					
Field Measured								
Temperature	°C	*9.1*	*6.7*	7.5	8.8	9.1	6.4	1.6
pH	pH units	*7.99*	*7.60*	7.66	6.8	7.88	7.6	8.08
Conductivity	uS/cm	*278.9*	*219*	86.2	245	247	255	262
Turbidity	NTU	*1.61*	*4.78*	5.67	10.2	3.42	0.91	3.69
Conventional Parameters								
Hardness, as CaCO3	mg/L	*119*	*104*	70.2	105	114	117	113
Total alkalinity, as CaCO3	mg/L	*55*	*46*	35	47	48	50	50
Carbonate, as CaCO3	mg/L	*5*	*1*	< 1	< 1	< 1	< 1	< 1
Bicarbonate, as CaCO3	mg/L	*55.6*	*45.4*	35	46	47	49	50
TDS	mg/L	*125*	*150*	115	150	170	135	180
TSS	mg/L	*20*	*8*	6	9	22	1	3
Total organic carbon	mg/L	*2.3*	*1.7*	1.2	1.8	1.9	1.9	1.8
Dissolved organic carbon	mg/L	*2.4*	*1.6*	1.1	1.7	1.8	1.8	1.8
Major Ions								
Chloride	mg/L	*8.28*	*7.12*	4.8	8	7.4	7.6	7.8
Cyanide	mg/L	*0.001*	*0.005*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Cyanide (free)	mg/L	*0.0010*	*0.00252*	< 0.0010	0.0021	0.0036	0.0041	0.0018
Silica	mg/L	*3.86*	*2.32*	1.6	2.4	2.4	2.5	2.7
Sulfate	mg/L	*61.8*	*53.0*	40	52	56	57	60
Nutrients and Chlorophyll a								
Ammonia Nitrogen	mg N/L	*0.148*	*0.074*	0.09	0.093	0.054	< 0.050	0.081
Nitrate	mg N/L	*2.23*	*1.61*	1.26	1.65	1.55	1.75	1.82
Nitrite	mg N/L	*0.018*	*0.012*	< 0.010	0.013	0.011	0.011	0.013
Total Kjeldahl nitrogen	mg N/L	*0.36*	*0.13*	0.18	< 0.10	0.1	0.16	0.1
Total phosphorus	mg N/L	*0.028*	*0.006*	0.004	0.004	0.020	0.002	0.002
Orthophosphate (P)	mg/L	*0.016*	*0.010*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Metals								
Aluminum	mg/L	*0.0270*	*0.2543*	0.1080	0.2360	0.8630	0.0339	0.0307
Antimony	mg/L	*0.0003*	*0.0013*	0.0009	0.0014	0.0013	0.0015	0.0015
Arsenic	mg/L	*0.0045*	*0.0032*	0.0022	0.0034	0.0042	0.0031	0.0030
Barium	mg/L	*0.01204*	*0.01366*	0.00899	0.0148	0.0162	0.0142	0.0141
Beryllium	mg/L	*0.0005*	*0.0001*	< 0.00001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	*0.01*	*0.04*	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium	mg/L	*0.000020*	*0.000014*	0.0000083	0.000018	0.000023	0.000011	0.000012
Calcium (total)	mg/L	*34.6*	*30.2*	20.6	30.2	33	34.4	32.7
Chromium	mg/L	*0.0006*	*0.0010*	0.0003	< 0.0010	0.0017	< 0.0010	< 0.0010
Copper	mg/L	*0.0017*	*0.0013*	0.0008	0.0013	0.0020	0.0013	0.0012
Iron	mg/L	*0.06*	*0.46*	0.199	0.362	1.71	0.025	0.026
Lead	mg/L	*0.0002*	*0.0009*	0.0004	0.0010	0.0026	< 0.0002	< 0.0002
Lithium	mg/L	*0.0050*	*0.0023*	0.0014	0.0024	0.003	0.0024	0.0025
Magnesium (total)	mg/L	*7.94*	*6.96*	4.53	7.26	7.73	7.67	7.62
Manganese	mg/L	*0.0212*	*0.0194*	0.0212	0.0275	0.0395	0.0051	0.0038
Mercury	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0219*	*0.0212*	0.0144	0.0232	0.021	0.0237	0.0237
Nickel	mg/L	*0.0021*	*0.0022*	0.0014	0.0023	0.0037	0.0018	0.0018
Potassium (total)	mg/L	*3.26*	*2.72*	1.91	2.83	2.89	3.09	2.9
Selenium	mg/L	*0.0009*	*0.0003*	0.0002	0.0003	0.0003	0.0003	0.0003
Sodium (total)	mg/L	*3.67*	*2.71*	1.91	2.95	2.8	2.97	2.91

ST-26	Sample date	*Annual Average*		6/29/2021	7/13/2021	8/3/2021	9/28/2021	10/21/2021
Parameter	**Unit**	***2020***	***2021***					
Strontium	mg/L	*0.219*	*0.215*	0.151	0.228	0.22	0.246	0.232
Thallium	mg/L	*0.000200*	*0.000017*	0.0000096	0.000021	0.00002	0.000017	0.000018
Tin	mg/L	*0.001*	*0.004*	< 0.0002	< 0.005	< 0.005	< 0.005	< 0.005
Titanium	mg/L	*0.0100*	*0.0044*	0.00092	< 0.0050	0.006	< 0.0050	< 0.0050
Uranium	mg/L	*0.0052*	*0.0055*	0.0038	0.0055	0.0057	0.0061	0.0062
Vanadium	mg/L	*0.0005*	*0.004*	< 0.0002	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	mg/L	*0.001*	*0.005*	0.003	< 0.005	< 0.005	< 0.005	< 0.005
Dissolved Metals								
Aluminum	mg/L	*0.0062*	*0.0190*	0.0159	0.017	0.0215	0.0215	0.0192
Antimony	mg/L	*0.0003*	*0.0013*	0.0010	0.0014	0.0013	0.0014	0.0015
Arsenic	mg/L	*0.0034*	*0.0027*	0.0020	0.0030	0.0029	0.0029	0.0028
Barium	mg/L	*0.0110*	*0.0127*	0.0087	0.0138	0.0136	0.0133	0.0143
Beryllium	mg/L	*0.0005*	*0.0001*	< 0.00001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	*0.01*	*0.04*	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium	mg/L	*0.000020*	*0.000011*	0.000012	0.000011	0.000014	< 0.000010	< 0.000010
Chromium	mg/L	*0.0006*	*0.0008*	< 0.0001	< 0.001	< 0.001	< 0.001	< 0.001
Copper	mg/L	*0.0014*	*0.0010*	0.0007	0.0010	0.0012	0.0012	0.0011
Iron	mg/L	*0.0100*	*0.0072*	0.0075	0.0081	0.0074	< 0.0050	0.0079
Lead	mg/L	*0.00022*	*0.00017*	0.000054	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Lithium	mg/L	*0.0050*	*0.0021*	0.0014	0.0021	0.0022	0.0022	0.0024
Manganese	mg/L	*0.0112*	*0.0110*	0.018	0.0224	0.0122	< 0.0010	0.0014
Mercury	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0188*	*0.0212*	0.0145	0.0234	0.0217	0.0224	0.0241
Nickel	mg/L	*0.0015*	*0.0016*	0.0011	0.0018	0.0016	0.0017	0.0018
Selenium	mg/L	*0.0011*	*0.0003*	0.0002	0.0003	0.0003	0.0003	0.0003
Strontium	mg/L	*0.204*	*0.215*	0.15	0.245	0.225	0.23	0.227
Thallium	mg/L	-	*0.000016*	0.0000144	0.000018	0.000017	0.000016	0.000013
Tin	mg/L	-	0.004	< 0.0002	< 0.005	< 0.005	< 0.005	< 0.005
Titanium	mg/L	*0.010*	*0.004*	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.005
Uranium	mg/L	*0.0044*	*0.0053*	0.0038	0.0052	0.0055	0.0060	0.0059
Vanadium	mg/L	*0.001*	*0.004*	< 0.0002	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	mg/L	*0.001*	*0.004*	0.0004	< 0.005	< 0.005	< 0.005	< 0.005

8.5.3.1.13 Vault Rock Storage Facility (ST-24)

The Vault Waste Rock Storage Facility (VRSF) has been in operation since 2013. As in the past, ponded water was observed at the base of the VRSF (sampling station ST-24). In 2021, water was sampled in June, July, August and September. As per NWB Water License, samples were collected to assess water quality and the results are presented in Table 8-29. No water was pumped from this location as it is mainly a ponding area without flow and will dry-up during warmer months. There are no applicable license limits at this location as there is no discharge to the environment; the data is presented for information purposes only. The location of this sampling station (ST-24) is illustrated on Figure 3.

8.5.3.1.14 Vault Attenuation Pond (ST-25)

Surface water was sampled monthly during open water from the Vault Attenuation Pond as per the requirements in the NWB Type A Water License (sampling station ST-25). There are no applicable license limits. The data is presented in Table 8-30 for information purposes only. The location of sampling station ST-25 is illustrated on Figure 3. There was no water pumped out from the Vault Attenuation Pond to Wally Lake in 2021.

Table 8-29 Meadowbank 2021 Vault Waste Rock Storage Facility Seepage Water Quality Monitoring (ST-24)

ST-24	Sample Date	*Annual Average*								6/21/2021	7/13/2021	8/3/2021	9/20/2021
Parameter	**Unit**	***2014***	***2015***	***2106***	***2017***	***2018***	***2019***	***2020***	***2021***				
Field Measured													
Temperature	°C	-	-	-	-	-	-	*11.05*	*7.45*	2.5	11.6	10.1	5.6
pH	pH units	*7.34*	*7.04*	*7.28*	*6.36*	*7.29*	*7.65*	*7.71*	*7.63*	7.4	7.5	7.98	7.65
Conductivity	uS/cm	-	-	-	-	-	-	*265.6*	*235.0*	134.7	195.2	274	336
Turbidity	NTU	*25.90*	*17.75*	*74.12*	*91.60*	*24.41*	*6.47*	*2.88*	*4.13*	7.81	6.46	1.48	0.77
Conventional Parameters													
Hardness, as CaCO3	mg/L	*1131*	*42*	*169*	*86*	*117*	*85*	*133*	*110*	69.8	85.1	127	159
Total alkalinity, as CaCO3	mg/L	*171*	*37*	*27*	*32*	*42*	*39*	*53*	*43*	29	35	48	61
TDS	mg/L	*58*	*59*	*272*	*118*	*207*	*143*	*175*	*158*	110	125	165	230
TSS	mg/L	-	-	*26*	*38*	*27*	*5*	*4*	*3*	4	5	1	< 1
Major Ions													
Chloride	mg/L	*3.2*	*1.6*	*4.7*	*1.5*	*3.6*	*1.8*	*4.8*	*4.6*	3.2	3.6	5.6	6
Cyanide	mg/L	-	-	*0.026*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005
Fluoride	mg/L	*0.07*	*0.04*	*0.06*	*0.08*	*0.09*	*0.10*	*0.09*	*0.10*	< 0.10	< 0.10	< 0.10	0.11
Sulfate	mg/L	*5.10*	-	*156*	*44*	*102*	*66*	*74*	*64*	41	47	68	99
Nutrients and Chlorophyll a													
Ammonia Nitrogen	mg N/L	*0.01*	*0.11*	*2.52*	*0.29*	*0.23*	*0.19*	*0.03*	*0.61*	0.0	< 0.05	2.2	0.14
Nitrate	mg N/L	*0.02*	*0.11*	*2.89*	*2.41*	*2.99*	*2.17*	*2.29*	*1.16*	0.75	0.94	1.29	1.66
Nitrite	mg N/L	*0.01*	*0.01*	*0.063*	*0.02*	*0.03*	*0.03*	*0.01*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01
Total Metals													
Aluminum	mg/L	*0.0660*	*0.1050*	*0.6700*	*2.0100*	*0.4790*	*0.1238*	*0.0895*	*0.1059*	0.164	0.195	0.0458	0.0189
Arsenic	mg/L	*0.0081*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0045*	*0.0029*	*0.0021*	0.0018	0.0023	0.0023	0.0021
Barium	mg/L	*0.0632*	*0.0077*	*0.0350*	*0.0253*	*0.0229*	*0.0150*	*0.0141*	*0.0127*	0.0097	0.0107	0.0139	0.0166
Cadmium	mg/L	*0.00091*	*0.00002*	*0.00008*	*0.00008*	*0.00010*	*0.00006*	*0.00002*	*0.00003*	0.00004	0.00004	0.00003	0.00003
Chromium	mg/L	*0.0006*	*0.0006*	*0.0006*	*0.0062*	*0.0007*	*0.0009*	*0.0006*	*0.0010*	< 0.001	< 0.001	< 0.001	< 0.001
Copper	mg/L	*0.7477*	*0.0022*	*0.0031*	*0.0072*	*0.0068*	*0.0062*	*0.0036*	*0.0036*	0.0031	0.0034	0.0034	0.0046
Iron	mg/L	*0.49*	*1.10*	*8.54*	*2.92*	*1.13*	*0.25*	*0.17*	*0.17*	0.245	0.262	0.056	0.102
Lead	mg/L	*0.0003*	*0.0018*	*0.0006*	*0.0003*	*0.0003*	*0.0003*	*0.0002*	*0.0003*	0.00033	0.00033	< 0.00020	< 0.00020
Manganese	mg/L	*2.4700*	*0.0860*	*1.4200*	*0.1912*	*0.1888*	*0.0513*	*0.0418*	*0.0303*	0.0418	0.0269	0.0154	0.0372
Mercury	mg/L	*0.00005*	*0.00001*	*0.00001*	*0.00001*	*0.00002*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.2110*	*0.0010*	*0.0056*	*0.0072*	*0.0109*	*0.0138*	*0.0156*	*0.0151*	0.01	0.0118	0.0182	0.0205
Nickel	mg/L	*0.5806*	*0.0026*	*0.0160*	*0.1250*	*0.0079*	*0.0050*	*0.0045*	*0.0038*	0.0035	0.0044	0.0034	0.0037
Selenium	mg/L	*0.0990*	*0.0010*	*0.0010*	*0.0010*	*0.0016*	*0.0006*	*0.0010*	*0.0002*	0.0002	0.0002	0.0003	0.0003
Silver	mg/L	-	-	*0.00013*	*0.00010*	*0.00010*	*0.00034*	*0.00010*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Thallium	mg/L	*0.00500*	*0.00500*	*0.00120*	*0.00080*	*0.00060*	*0.00020*	*0.00020*	*0.00001*	< 0.00001	0.00001	0.00001	0.00001
Zinc	mg/L	*0.009*	*0.001*	*0.012*	*0.013*	*0.004*	*0.006*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005

Table 8-30 Meadowbank 2021 Vault Attenuation Pond Water Quality Monitoring (ST-25)

ST-25	Sample date	*Annual Average*								6/28/2021	7/13/2021	8/3/2021	9/20/2021
Parameter	**Unit**	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***				
Field Measured													
Temperature	°C	-	-	-	-	-	-	*9.9*	*6.7*	0.8	10.2	10.2	5.5
pH	pH units	*6.51*	*7.08*	*7.50*	*7.83*	*7.24*	*7.55*	*7.68*	*7.61*	7.7	7.51	7.85	7.37
Conductivity	uS/cm	-	-	-	-	-	-	*177.7*	*136.0*	17.7	175.1	176.7	174.5
Turbidity	NTU	*5.89*	*10.99*	*14.60*	*16.39*	*7.63*	*5.44*	*4.18*	*1.74*	1.44	2.63	1.91	0.97
Conventional Parameters													
Hardness, as CaCO3	mg/L	*59*	*70*	*123*	*118*	*102*	*84*	*88*	*58*	14.4	70.8	74.3	72.4
Total alkalinity, as CaCO3	mg/L	*47*	*42*	*48*	*54*	*36*	*36*	*41*	*21*	5.7	26	27	27
TDS	mg/L	*151*	*137*	*216*	*188*	*181*	*140*	*114*	*86*	45	100	105	95
TSS	mg/L	-	-	*8*	*30*	*11*	*4*	*6*	*2*	< 1	2	2	1
Major Ions													
Chloride	mg/L	*4.1*	*6.8*	*9.7*	*9.8*	*7.1*	*6.1*	*5.4*	*5.0*	< 1.0	4	11	3.9
Cyanide	mg/L	*0.009*	*0.008*	*0.013*	*0.005*	*0.002*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005
Fluoride	mg/L	*0.14*	*0.09*	*0.14*	*0.10*	*0.15*	*0.14*	*0.10*	*0.10*	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	*23.9*	*7.1*	*65.3*	*88.4*	*74.6*	*58.4*	*43.9*	*36.1*	8.4	44	45	47
Nutrients and Chlorophyll a													
Ammonia Nitrogen	mg N/L	*0.03*	*2.23*	*1.20*	*1.86*	*0.88*	*0.45*	*0.15*	*0.28*	0.25	0.07	0.75	< 0.05
Nitrate	mg N/L	*0.08*	*0.14*	*0.07*	*1.40*	*0.02*	*1.20*	*0.97*	*0.59*	0.16	0.88	0.71	0.62
Nitrite	mg N/L	*2.30*	*4.67*	*2.75*	*2.19*	*2.69*	*0.01*	*0.05*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01
Total Metals													
Aluminum	mg/L	*0.123*	*0.027*	*0.196*	*0.634*	*0.254*	*0.158*	*0.168*	*0.041*	0.026	0.061	0.061	0.017
Arsenic	mg/L	*0.0005*	*0.0005*	*0.0008*	*0.0041*	*0.0006*	*0.0017*	*0.0011*	*0.0005*	0.0002	0.0005	0.0007	0.0006
Barium	mg/L	*0.0081*	*0.0140*	*0.0270*	*0.0230*	*0.0236*	*0.0169*	*0.0179*	*0.0127*	0.0034	0.0163	0.0162	0.0148
Cadmium	mg/L	*0.00002*	*0.00002*	*0.00004*	*0.00002*	*0.00007*	*0.00009*	*0.00002*	*0.00002*	0.00001	0.00002	0.00002	0.00001
Chromium	mg/L	*0.0006*	*0.0011*	*0.0082*	*0.0022*	*0.0020*	*0.0010*	*0.0011*	*0.0010*	< 0.001	< 0.001	< 0.001	< 0.001
Copper	mg/L	*0.0024*	*0.0034*	*0.0025*	*0.0037*	*0.0066*	*0.0073*	*0.0039*	*0.0015*	0.0009	0.0016	0.0017	0.0019
Iron	mg/L	*0.120*	*0.170*	*0.600*	*0.990*	*0.500*	*0.373*	*0.314*	*0.060*	0.041	0.08	0.098	0.021
Lead	mg/L	*0.0189*	*0.0006*	*0.0003*	*0.0003*	*0.0003*	*0.0003*	*0.0002*	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Manganese	mg/L	*0.016*	*0.029*	*0.190*	*0.069*	*0.129*	*0.101*	*6.018*	*0.011*	0.019	0.0124	0.0081	0.0045
Mercury	mg/L	*0.00001*	*0.00001*	*0.00170*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0045*	*0.0110*	*0.0110*	*0.0170*	*0.0062*	*0.0033*	*0.0045*	*0.0044*	0.0013	0.0053	0.0055	0.0056
Nickel	mg/L	*0.001*	*0.0036*	*0.0056*	*0.0052*	*0.0122*	*0.0093*	*0.0043*	*0.0019*	0.0011	0.0024	0.0021	0.0019
Selenium	mg/L	*0.0010*	*0.0010*	*0.0010*	*0.0013*	*0.0008*	*0.0011*	*0.0009*	*0.0001*	< 0.0001	0.0001	0.0001	0.0001
Silver	mg/L	-	-	*0.00010*	-	*0.00010*	*0.00025*	*0.00010*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Thallium	mg/L	*0.00500*	*0.00500*	*0.00100*	*0.00080*	*0.00050*	*0.00020*	*0.00020*	*0.00001*	< 0.00001	0.00001	0.00001	< 0.00001
Zinc	mg/L	*0.001*	*0.002*	*0.005*	*0.002*	*0.009*	*0.007*	*0.002*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005

8.5.3.1.15 WRSF – Waste Extension Pool (WEP/ ST-30 and ST-31)

In 2014, as per inspections conducted within the framework of the Freshet Action Plan, run off was noted at the northeast side of the NPAG waste rock extension pile in a natural depression (WEP). Agnico Eagle contained this run off and pumped it back to the North Cell TSF as a precaution and to prevent egress to the East Diversion non-contact water ditch. In 2021, 25,356 m^3 of water was pumped from the WEP collection system to the North Cell TSF which includes 16,120 m^3 of water from WEP1 and 9,236 m^3 from WEP2. The water from the WEP collection system is pumped to the ST-16 sump system, and then pumped to the North Cell TSF. Table 8-31 below provide 2016 – 2021 pumped volume for WEP1 and WEP2.

Table 8-31 Meadowbank 2016 -2021 Volume of Water Pumped from WEP 1 and WEP 2

Years	WEP 1 pumped volume (m^3)	WEP 2 pumped volume (m^3)	Total volume system (m^3)
2016	3,694	1,802	5,496
2017	14,456	10,282	24,738
2018	13,923	8,169	22,092
2019	14,680	20,431	35,111
2020	23,543	17,243	40,786
2021	16,120	9,236	25,356

WEP1 and WEP2 sumps were constructed in September 2015 (Appendix G4 of the 2015 Annual Report) to better manage water around the northeast side of the PRSF and to ensure that all water ponding behind the PRSF is transferred back to the North Cell TSF (and eventually transferred to the South Cell). The sumps WEP1 and WEP2 have replaced the natural depression forming the former WEP for the water management in this area. Sumps locations are illustrated on Appendix G4 of the 2015 Annual Report. Sampling have commence in 2016 at sumps WEP1 and WEP2 as per NWB Water License 2AM-MEA1530. There are no applicable license limits. The sampling location is illustrated on Figure 1 and results are presented in Table 8-32 for WEP1 (ST-30) and Table 8-33 for WEP2 (ST-31).

Results of samples collected in 2021 at station ST-5 (East Diversion ditch discharge point into NP2) are documented in Table 8-16. The results from summer 2021 show that no water coming from the former WEP collection system was in contact with the East Diversion ditch. Agnico Eagle will continue to monitor the area and will ensure that water collected in WEP1 and WEP2 sumps are pumped back into the North Cell TSF.

Table 8-32 Meadowbank 2021 Waste Extension Pool WEP1 Water Quality Monitoring (ST-30)

ST-30	Sample Date	*Annual Average*						6/14/2021	7/6/2021	8/2/2021	9/6/2021	10/3/2021
Parameter	**Unit**	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Field Measured												
Temperature	°C	-	-	-	-	*9.35*	*7.10*	0.4	9.4	12	8.2	5.5
pH	pH units	*7.36*	*7.49*	*7.42*	*7.42*	*7.36*	*7.53*	7.14	7.59	7.66	7.48	7.78
Conductivity	uS/cm	-	-	-	-	*220.8*	*187.3*	45.7	79.8	248	285	278
Turbidity	NTU	*15.74*	*44.26*	*8.35*	*7.51*	*6.04*	*3.91*	8.50	3.43	3.30	2.41	1.90
Conventional Parameters												
Hardness, as CaCO3	mg/L	*102*	*157*	*66*	*115*	*113*	*92*	21.9	69.2	112	135	123
Total alkalinity, as CaCO3	mg/L	*80*	*105*	*54*	*51*	*73*	*55*	13	48	62	82	70
TDS	mg/L	*221*	*249*	*136*	*169*	*150*	*145*	80	60	195	210	180
TSS	mg/L	*7*	*14*	*6*	*6*	*6*	*1*	2	2	1	< 1	< 1
Major Ions												
Chloride	mg/L	*6.7*	*6.7*	*2.7*	*2.5*	*2.3*	*2.1*	< 1.0	2.1	2	2.6	2.7
Cyanide	mg/L	*0.002*	*0.032*	*0.010*	*0.005*	*0.008*	*0.006*	< 0.005	0.006	0.009	0.007	0.006
Cyanide (free)	mg/L	*0.005*	*0.007*	*0.005*	*0.054*	*0.002*	*0.005*	0.007	0.003	0.004	0.002	0.007
Cyanide (WAD)	mg/L	*0.004*	*0.003*	*0.006*	*0.001*	*0.002*	*0.003*	< 0.001	0.003	0.003	0.003	0.004
Fluoride	mg/L	*0.15*	*0.18*	*0.13*	*0.13*	*0.13*	*0.14*	< 0.10	0.13	0.14	0.18	0.14
Sulfate	mg/L	*55.9*	*71.4*	*32.2*	*44.8*	*34.2*	*40.1*	8.3	34	49	51	58
Nutrients and Chlorophyll a												
Ammonia Nitrogen	mg N/L	*2.21*	*1.37*	*0.19*	*0.10*	*0.26*	*0.13*	< 0.05	0.06	0.32	0.17	< 0.05
Nitrate	mg N/L	*1.07*	*0.79*	*0.39*	*1.79*	*1.45*	*1.56*	0.32	0.3	1.75	3.01	2.4
Nitrite	mg N/L	*0.054*	*0.048*	*0.017*	*0.103*	*0.040*	*0.013*	< 0.010	0.011	0.021	0.011	< 0.010
Total Metals												
Aluminum	mg/L	*0.246*	*0.864*	*0.122*	*0.072*	*0.113*	*0.055*	0.165	0.046	0.026	0.019	0.019
Arsenic	mg/L	*0.0008*	*0.0420*	*0.0047*	*0.0084*	*0.0032*	*0.0108*	0.0403	0.0028	0.0046	0.0042	0.0020
Barium	mg/L	*0.0170*	*0.0190*	*0.0102*	*0.0101*	*0.0149*	*0.0124*	0.0034	0.0101	0.0156	0.0188	0.0142
Cadmium	mg/L	*0.00008*	*0.00002*	*0.00002*	*0.00003*	*0.00002*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chromium	mg/L	*0.0006*	*0.0036*	*0.0015*	*0.0030*	*0.0013*	*0.0014*	0.0032	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Copper	mg/L	*0.0170*	*0.0120*	*0.0109*	*0.0137*	*0.0123*	*0.0057*	0.0023	0.0092	0.0058	0.0059	0.0055
Iron	mg/L	*2.540*	*3.140*	*0.875*	*0.467*	*1.108*	*0.474*	0.265	0.364	0.764	0.605	0.372
Lead	mg/L	*0.0012*	*0.0009*	*0.0003*	*0.0003*	*0.0003*	*0.0002*	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Manganese	mg/L	*0.2800*	*0.6800*	*0.0664*	*0.0143*	*10.9900*	*0.0392*	0.0202	0.0252	0.0408	0.0662	0.0435
Mercury	mg/L	*0.00018*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0190*	*0.0018*	*0.0018*	*0.0040*	*0.0025*	*0.0035*	0.0028	0.0033	0.0038	0.0047	0.0028
Nickel	mg/L	*0.0056*	*0.0120*	*0.0047*	*0.0045*	*0.0044*	*0.0028*	0.0044	0.0025	0.0022	0.0029	0.0022
Selenium	mg/L	*0.0010*	*0.0010*	*0.0023*	*0.0007*	*0.0010*	*0.0003*	< 0.00010	0.0002	0.0004	0.0004	0.0003
Silver	mg/L	*0.00014*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Thallium	mg/L	*0.00100*	*0.00080*	*0.00050*	*0.00020*	*0.00020*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Zinc	mg/L	*0.001*	*0.003*	*0.001*	*0.001*	*0.002*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

Table 8-33 Meadowbank 2021 Waste Extension Pool WEP2 Water Quality Monitoring (ST-31)

ST-31	Sample date	*Annual Average*						6/14/2021	7/6/2021	8/2/2021	9/6/2021	10/10/2021
Parameter	**Unit**	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Field Measured												
Temperature	°C	-	-	-	-	*9.7*	*6.4*	0.3	9.8	11.9	8.4	1.6
pH	pH units	*7.56*	*7.66*	*7.30*	*7.34*	*7.67*	*7.34*	7.36	7.45	6.67	7.65	7.56
Conductivity	uS/cm	-	-	-	-	*213.2*	*190.7*	127.4	101.8	231	276	217.3
Turbidity	NTU	*17.32*	*12.94*	*18.24*	*7.94*	*4.17*	*4.06*	10.20	2.75	3.25	1.40	2.72
Conventional Parameters												
Hardness, as CaCO3	mg/L	*135*	*96*	*72*	*115*	*101*	*94*	59	96.7	102	119	93.8
Total alkalinity, as CaCO3	mg/L	*113*	*79*	*52*	*50*	*75*	*60*	38	61	59	81	60
TDS	mg/L	*181*	*212*	*112*	*125*	*142*	*150*	95	120	185	205	145
TSS	mg/L	*5*	*10*	*79*	*5*	*3*	*4*	4	7	5	< 1	2
Major Ions												
Chloride	mg/L	*5.5*	*12.2*	*5.6*	*2.9*	*3.2*	*2.6*	1.7	2.4	2.2	3.6	3.1
Cyanide	mg/L	*0.004*	*0.002*	*0.002*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Cyanide (free)	mg/L	*0.005*	*0.012*	*0.005*	*0.001*	*0.001*	*0.003*	0.006	0.002	0.001	0.002	0.004
Cyanide (WAD)	mg/L	*0.004*	*0.002*	*0.002*	*0.001*	*0.001*	*0.001*	< 0.001	< 0.001	< 0.001	< 0.001	0.001
Fluoride	mg/L	*0.30*	*0.15*	*0.13*	*0.11*	*0.13*	*0.13*	< 0.10	0.14	0.12	0.16	0.15
Sulfate	mg/L	*32.2*	*41.7*	*30.9*	*39.0*	*31.5*	*39.4*	24	41	48	47	37
Nutrients and Chlorophyll a												
Ammonia Nitrogen	mg N/L	*0.09*	*1.82*	*0.04*	*0.06*	*0.05*	*0.10*	0.12	< 0.05	0.23	< 0.05	< 0.05
Nitrate	mg N/L	*0.55*	*3.09*	*0.34*	*1.12*	*1.04*	*1.15*	0.67	0.8	0.79	1.25	2.25
Nitrite	mg N/L	*0.01*	*0.19*	*0.15*	*0.02*	*0.02*	*0.01*	0.02	< 0.01	< 0.01	< 0.01	< 0.01
Total Metals												
Aluminum	mg/L	*0.277*	*0.192*	*1.259*	*0.074*	*0.086*	*0.099*	0.150	0.121	0.138	0.025	0.062
Arsenic	mg/L	*0.0006*	*0.0046*	*0.0024*	*0.0440*	*0.0195*	*0.0594*	0.2370	0.0484	0.0061	0.0036	0.0020
Barium	mg/L	*0.0160*	*0.0097*	*0.0178*	*0.0083*	*0.0112*	*0.0109*	0.0051	0.0111	0.0125	0.0149	0.0110
Cadmium	mg/L	*0.000038*	*0.000020*	*0.000020*	*0.000020*	*0.000020*	*0.000011*	0.000015	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chromium	mg/L	*0.0015*	*0.0027*	*0.0059*	*0.0023*	*0.0011*	*0.0021*	0.0044	0.0020	0.0019	< 0.001	0.0011
Copper	mg/L	*0.0039*	*0.0016*	*0.0046*	*0.0018*	*0.0032*	*0.0013*	0.0006	0.0016	0.0017	0.0014	0.0010
Iron	mg/L	*0.820*	*0.630*	*2.738*	*0.337*	*0.343*	*0.286*	0.283	0.278	0.392	0.186	0.293
Lead	mg/L	*0.0003*	*0.0022*	*0.0003*	*0.0003*	*0.0003*	*0.0002*	0.0004	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Manganese	mg/L	*0.1200*	*0.1500*	*0.1248*	*0.0508*	*0.0948*	*0.0357*	0.0292	0.0303	0.0264	0.0347	0.0577
Mercury	mg/L	*0.00001*	*0.00003*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0011*	*0.0014*	*0.0008*	*0.0068*	*0.0046*	*0.0103*	0.0277	0.0132	0.0026	0.0040	0.0042
Nickel	mg/L	*0.0055*	*0.0039*	*0.0087*	*0.0034*	*0.0032*	*0.0042*	0.0106	0.0031	0.0028	0.0023	0.0021
Selenium	mg/L	*0.0010*	*0.0010*	*0.0025*	*0.0005*	*0.0010*	*0.0002*	0.0003	0.0002	0.0002	0.0002	0.0003
Silver	mg/L	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Thallium	mg/L	*0.00110*	*0.00080*	*0.00050*	*0.00020*	*0.00020*	*0.00001*	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Zinc	mg/L	*0.001*	*0.002*	*0.054*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

8.5.3.1.16 Saddle Dam 3 (ST-32)

Water accumulated at the base of Saddle Dam 3 was pumped into the South Cell TSF (15,885 m^3 in 2021). This water originates from non-contact surface runoff from the surrounding terrain. Water samples were collected during the open water season to assess water quality. There are no applicable license limits for this location as the water was not being released into the environment; the data is presented in Table 8-36 for information purposes only. The sampling location (ST-32) is illustrated on Figure 1. Water accumulation at the toe of Saddle Dam 3 does not have any consequence on the integrity of the TSF infrastructure. As stated previously, water was pumped back to the South Cell TSF as a mitigation measure. Inspections continue to be held at this location on a weekly basis to ensure conformity. Table 8-34 below provide 2016 – 2021 pumped volume from ST-32.

Table 8-34 Meadowbank 2016-2021 Volume of Water Pumped from Saddle Dam 3 (ST-32)

Years	ST-32 pumped volume (m^3)
2016	22,095
2017	16,061
2018	21,962
2019	28,198
2020	27,093
2021	15,885

8.5.3.1.17 Saddle Dam 1 (ST-S-2)

Water accumulated at the base of Saddle Dam 1 was pumped into the North Cell TSF (7,323 m^3 in 2021). This water originates from non-contact surface runoff from the surrounding terrain because of the topography. Water samples were collected during the open water season to assess water quality. There are no applicable license limits for this location as the water was not being released into the environment; the data is presented in Table 8-37 for information purposes only. The sampling location (ST-S-2) is illustrated on Figure 1. The water accumulation at the toe of Saddle Dam 1 does not have any major consequence on the integrity of the TSF infrastructure, as the water is pumped and properly managed. As previously mentioned, water was pumped back to the North Cell TSF as a mitigation measure. Inspections continue to be held at this location on a weekly basis to ensure conformity. Table 8-35 below provide 2015 – 2021 pumped volume from ST-S-2.

Table 8-35 Meadowbank 2015 - 2021 Volume of Water Pumped from Saddle Dam 1 (ST-S-2)

Years	ST-S-2 pumped volume (m^3)
2015	7,185
2016	15,960
2017	13,102
2018	3,626
2019	7,050
2020	15,457
2021	7,323

Table 8-36 Meadowbank 2021 Saddle Dam 3 Water Quality Monitoring (ST-32)

ST-32	Sample date	*Annual Average*						6/14/2021	7/6/2021	8/3/2021	9/6/2021	10/3/2021
Parameter	**Unit**	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Field Measured												
Temperature	°C	-	-	-	-	*13.6*	*6.7*	1.8	9.9	10.1	7.3	4.4
pH	pH units	*6.84*	*7.57*	*7.45*	*7.51*	*7.89*	*7.69*	7.36	7.82	7.47	7.88	7.94
Conductivity	uS/cm	-	-	-	-	*475.4*	*411.1*	137.3	214	505	639	560
Turbidity	NTU	*32.03*	*104.55*	*97.98*	*11.02*	*17.72*	*30.76*	121.00	8.05	9.54	2.50	12.70
Conventional Parameters												
Hardness, as CaCO3	mg/L	*253*	*357*	*195*	*262*	*209*	*202*	63.8	193	232	278	244
Total alkalinity, as CaCO3	mg/L	*46*	*121*	*266*	*46*	*73*	*66*	27	55	75	81	94
TDS	mg/L	*14*	*665*	*56*	*19*	*301*	*339*	140	310	335	470	440
TSS	mg/L	*399*	*504*	*335*	*406*	*6*	*16*	61	5	8	< 1	5
Major Ions												
Chloride	mg/L	*20.3*	*16.2*	*14.7*	*25.6*	*13.5*	*13.8*	4	9	19	20	17
Cyanide	mg/L	*0.010*	*0.049*	*0.016*	*0.008*	*0.004*	*0.009*	0.008	< 0.005	< 0.005	0.022	< 0.005
Fluoride	mg/L	*0.35*	*0.38*	*0.32*	*0.31*	*0.24*	*0.25*	< 0.10	0.23	0.28	0.32	0.33
Sulfate	mg/L	*185*	*185*	*117*	*136*	*110*	*115*	37	130	120	170	120
Nutrients and Chlorophyll a												
Ammonia Nitrogen	mg N/L	*1.40*	*4.34*	*6.79*	*2.30*	*0.24*	*0.47*	0.13	0.22	0.53	0.89	0.59
Nitrate	mg N/L	*8.83*	*16.53*	*23.23*	*16.64*	*9.45*	*7.29*	0.77	4.88	8.62	10.2	12
Nitrite	mg N/L	*0.07*	*0.35*	*0.17*	*0.08*	*0.07*	*0.06*	0.023	0.045	0.031	0.169	0.041
Total Metals												
Aluminum	mg/L	*0.245*	*11.010*	*1.456*	*0.494*	*0.137*	*0.493*	1.860	0.103	0.279	0.031	0.192
Arsenic	mg/L	*0.0005*	*0.0075*	*0.0074*	*0.0392*	*0.0426*	*0.0258*	0.0133	0.0481	0.0119	0.0383	0.0176
Barium	mg/L	*0.0410*	*0.2200*	*0.0498*	*0.0508*	*0.0318*	*0.0350*	0.0187	0.0288	0.0403	0.0471	0.0403
Cadmium	mg/L	*0.00005*	*0.00013*	*0.00005*	*0.00005*	*0.00002*	*0.00003*	0.00003	0.00003	0.00003	0.00004	0.00003
Chromium	mg/L	*0.00490*	*0.05000*	*0.01395*	*0.00873*	*0.00193*	*0.01056*	0.04380	0.00170	0.00350	< 0.0010	0.00280
Copper	mg/L	*0.0140*	*0.0830*	*0.0132*	*0.0058*	*0.0035*	*0.0095*	0.0114	0.0038	0.0051	0.0212	0.0061
Iron	mg/L	*2.280*	*22.380*	*2.685*	*0.863*	*0.275*	*0.905*	3.410	0.200	0.519	0.049	0.346
Lead	mg/L	*0.0078*	*0.0150*	*0.0054*	*0.0003*	*0.0002*	*0.0020*	0.0074	0.0009	0.0009	< 0.0002	0.0004
Manganese	mg/L	*1.410*	*2.880*	*0.444*	*0.291*	*0.088*	*0.144*	0.080	0.076	0.135	0.255	0.176
Mercury	mg/L	*0.00001*	*0.00005*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0027*	*0.0037*	*0.0063*	*0.0108*	*0.0078*	*0.0089*	0.0063	0.0110	0.0094	0.0110	0.0070
Nickel	mg/L	*0.210*	*0.180*	*0.051*	*0.067*	*0.031*	*0.039*	0.021	0.0286	0.0325	0.0718	0.0398
Selenium	mg/L	*0.0010*	*0.0030*	*0.0011*	*0.0027*	*0.0013*	*0.0011*	0.0001	0.0005	0.0007	0.0031	0.0011
Silver	mg/L	*0.00010*	*0.00043*	*0.00010*	*0.00010*	*0.00010*	*0.00005*	0.00004	< 0.00002	< 0.00002	0.00013	< 0.00002
Thallium	mg/L	*0.0008*	*0.0008*	*0.0005*	*0.0002*	*0.0002*	*0.00005*	0.00004	0.00002	0.0001	0.0001	0.0001
Zinc	mg/L	*0.005*	*0.073*	*0.007*	*0.002*	*0.036*	*0.005*	0.007	< 0.005	< 0.005	< 0.005	< 0.005

Table 8-37 Meadowbank 2021 Saddle Dam 1 Water Quality Monitoring (ST-S-2)

ST-S-2	Sample date	*Annual Average*									6/16/2021	7/6/2021	8/2/2021	9/6/2021	10/3/2021
Parameter	**Unit**	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Field Measured															
Temperature	°C	-	-	-	-	-	-	-	*8.75*	*5.00*	0.7	3.8	10.4	7.5	2.6
pH	pH units	*7.04*	*7.31*	*6.64*	*7.47*	*7.92*	*7.60*	*7.04*	*7.93*	*7.64*	7.85	7.67	7.64	7.8	7.25
Conductivity	uS/cm	-	-	-	-	-	-	-	*548.7*	*490.4*	118.8	148	665	766	754
Turbidity	NTU	*27.31*	*26.91*	*45.78*	*22.12*	*21.05*	*27.90*	*21.03*	*7.33*	*21.37*	18.9	65.7	7.68	2.57	12
Conventional Parameters															
Hardness	mg/L	*228*	*199*	*175*	*179*	*215*	*191*	*483*	*311*	*238*	46	132	315	364	331
Total alkalinity	mg/L	*72*	*66*	*51*	*63*	*69*	*50*	*33*	*60*	*60*	24	34	67	78	97
TDS	mg/L	-	-	-	*304*	*302*	*282*	*450*	*376*	*396*	65	185	575	590	565
TSS	mg/L	-	-	-	*43*	*9*	*5*	*111*	*4*	*15*	10	53	4	1	8
Major Ions															
Chloride	mg/L	*55.18*	*27.34*	*7.23*	*6.88*	*5.40*	*5.67*	*11.30*	*6.20*	*6.24*	1.4	4.9	7.7	8.5	8.7
Cyanide	mg/L	-	-	-	*0.013*	*0.009*	*0.014*	*0.016*	*0.003*	*0.008*	0.007	0.015	0.007	< 0.005	0.008
Cyanide (free)	mg/L	-	-	-	*0.005*	*0.014*	*0.005*	*0.006*	*0.002*	*0.004*	0.003	0.005	0.003	0.003	0.007
Cyanide (WAD)	mg/L	-	-	-	*0.003*	*0.007*	*0.003*	*0.005-*	*0.002*	*0.003*	0.002	0.006	0.003	0.002	0.003
Fluoride	mg/L	*0.30*	*0.26*	*0.21*	*0.20*	*0.21*	*0.22*	*0.15*	*0.18*	*0.17*	< 0.10	< 0.10	0.21	0.25	0.17
Sulfate	mg/L	*311*	*172*	*119*	*180*	*110*	*164*	*299*	*217*	*186*	32	98	260	290	250
Nutrients and Chlorophyll a															
Ammonia Nitrogen	mg N/L	*0.052*	*0.040*	*1.510*	*0.130*	*0.095*	*0.143*	*0.267*	*0.063*	*0.815*	0.056	0.140	0.390	0.088	3.400
Nitrate	mg N/L	*16.80*	*9.88*	*7.50*	*8.20*	*9.72*	*4.72*	*3.34*	*4.11*	*5.83*	0.25	1.62	5.67	7.62	14
Nitrite	mg N/L	-	-	-	*0.042*	*0.020*	*0.020*	*0.050*	*0.035*	*0.020*	< 0.010	0.024	< 0.010	< 0.010	0.046
Total Metals															
Aluminum	mg/L	*0.360*	*0.360*	*0.410*	*0.390*	*0.280*	*0.235*	*1.523*	*0.270*	*0.567*	0.318	2.110	0.135	0.0381	0.232
Arsenic	mg/L	*0.1500*	*0.0280*	*0.0073*	*0.0280*	*0.0360*	*0.0167*	*0.0309*	*0.0317*	*0.0204*	0.0077	0.0110	0.0282	0.0391	0.0160
Barium	mg/L	*0.046*	*0.020*	*0.018*	*0.017*	*0.016*	*0.017*	*0.026*	*0.022*	*0.022*	0.006	0.022	0.024	0.025	0.033
Cadmium	mg/L	*0.00011*	*0.00006*	*0.00004*	*0.00005*	*0.00003*	*0.00003*	*0.00002*	*0.00002*	*0.00004*	0.00001	0.00004	0.00003	0.00002	0.00007
Chromium	mg/L	*0.0017*	*0.0025*	*0.0017*	*0.0041*	*0.0046*	*0.0017*	*0.0138*	*0.0024*	*0.0054*	0.0032	0.0189	0.0013	< 0.0010	0.0027
Copper	mg/L	*0.0280*	*0.0100*	*0.0140*	*0.0087*	*0.0035*	*0.0041*	*0.0119*	*0.0032*	*0.0043*	0.0023	0.0090	0.0032	0.0025	0.0048
Iron	mg/L	*0.720*	*0.640*	*1.150*	*1.440*	*0.520*	*0.497*	*3.943*	*0.460*	*0.918*	0.655	3.060	0.305	0.069	0.501
Lead	mg/L	*0.0023*	*0.0003*	*0.0003*	*0.0092*	*0.0015*	*0.0007*	*0.0054*	*0.0003*	*0.0023*	0.0022	0.0071	0.0008	0.0002	0.0014
Manganese	mg/L	*0.420*	*0.240*	*0.330*	*0.280*	*0.081*	*0.251*	*0.296*	*0.110*	*0.110*	0.0552	0.161	0.0836	0.0481	0.201
Mercury	mg/L	*0.00001*	*0.00001*	*0.00001*	*0.00039*	*0.00024*	*0.00013*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0640*	*0.0200*	*0.0140*	*0.0120*	*0.0110*	*0.0096*	*0.0095*	*0.0080*	*0.0083*	0.0034	0.0048	0.0137	0.0130	0.0068
Nickel	mg/L	*0.1300*	*0.0270*	*0.0260*	*0.0310*	*0.0250*	*0.0325*	*0.0547*	*0.0291*	*0.0232*	0.0053	0.0193	0.024	0.026	0.0415
Selenium	mg/L	*0.0030*	*0.0016*	*0.0025*	*0.0010*	*0.0010*	*0.0010*	*0.0026*	*0.0013*	*0.0009*	0.0002	0.0005	0.0013	0.0015	0.0013
Silver	mg/L	*0.00040*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00002*	< 0.00002	0.00003	< 0.00002	< 0.00002	< 0.00002
Thallium	mg/L	*0.0050*	*0.0050*	*0.0050*	*0.0011*	*0.0008*	*0.0006*	*0.0002*	*0.0002*	*0.00002*	< 0.00001	0.00002	< 0.00001	< 0.00001	0.00004
Zinc	mg/L	*0.079*	*0.003*	*0.026*	*0.250*	*0.003*	*0.056*	*0.077*	*0.002*	*0.121*	< 0.005	0.007	< 0.005	< 0.005	0.584

8.5.3.1.18 Central Dike Seepage (ST-S-5)

Sampling was conducted at a minimum on a monthly as per the requirements of the NWB water license. There are no applicable license limits for this station as the water is pumped to the Portage Pit. Sample results are presented in Table 8-39. See Figure 1 for the location of ST-S-5. A total of 883,315 m^3 of water was pumped in 2021 from this sump. The volume of water pumped from Central Dike in 2021 is similar than year 2020. The volume variation of the last two years (2020 & 2021) compared to previous years, could be explain by the water pumped destination. In 2020, the seepage was pumped to the Portage Pit for most of the year rather than the South Cell TSF where the seepage would eventually flow back to the dike in a closed loop. In 2021, no water was pumped back to the South Cell TSF. Refer to Section 8.5.8.1.2 for details on the Central Dike seepage regarding consequence and mitigation measure in place. Table 8-38 below provide 2015 – 2021 pumped volume from ST-S-5.

Table 8-38 Meadowbank 2015 - 2021 Volume of Water Pumped from Central Dike Seepage (ST-S-5)

Years	ST-S-5 pumped volume (m^3)
2015	2,948,024
2016	4,597,688
2017	4,699,046
2018	2,306,369
2019	2,123,002
2020	704,020
2021	883,315

8.5.3.1.19 Phaser Pit (ST-41 Lake)

The Phaser Pit Sump (ST-41) was constructed during 2018 operation to manage the water runoff from the pit. In 2020, due to the natural reflooding ongoing of the pit, Agnico Eagle start considering this as Phaser Pit Lake (ST-41 Lake). Refer to previous annual reports for ST-41 sump results. In 2021, ST-41 Lake monthly samples were conducted from June to September, during open water season as per the requirements of the NWB Water License. There are no applicable license limits. The data is presented in Table 8-40. Sampling station ST-41 Lake is illustrated on Figure 3. No water was transferred to Phaser Attenuation Pond and all water was kept in the pit to promote the natural reflooding.

8.5.3.1.20 BB Phaser Pit (ST-42 Lake)

The BB Phaser Pit Sump was constructed during 2018 operation to manage the water runoff from the pit. In 2020, due to the natural reflooding of the pit, BB Phaser Pit Sump is no longer an active station and Agnico Eagle considers this station as BB Phaser Pit Lake (ST-42 Lake). Refer to previous annual reports for ST-42 sump results. Monthly samples have been conducted from June to October during open water season, as per the requirements of the NWB water license. There are no applicable license limits. The data is presented in Table 8-41. Sampling station ST-42 Lake is illustrated on Figure 3. No water has been transferred to Phaser Attenuation Pond since 2019. All water was kept in the pit to promote the natural reflooding.

8.5.3.1.21 Phaser Attenuation Pond (ST-43)

During 2021, no water from Phaser and BB Phaser Pits was pumped and transferred to Phaser Attenuation Pond (ST-43). Water accumulated in Phaser Attenuation pond used to be transferred to the Vault Attenuation pond. In 2021, no water was transferred and all water was kept in the pond to promote

the natural reflooding. Monthly samples have been conducted during open water season as per the requirements of the NWB Water License. There are no applicable license limits. The data is presented in Table 8-42. Sampling station ST-43 is illustrated on Figure 3.

Table 8-39 Meadowbank 2021 Central Dike Seepage Water Quality Monitoring (ST-S-5)

ST-S-5	Sample date	*Annual Average*							1/4/2021	1/11/2021	1/18/2021	1/25/2021	2/1/2021	2/8/2021	2/15/2021	2/22/2021	3/1/2021	3/8/2021	3/15/2021	3/22/2021	3/29/2021
Parameter	**Unit**	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***													
Field Measured																					
Temperature	°C	-	-	-	-	-	*3.8*	*1.8*	0.6	1	0.8	0.2	0.9	4.6	1.4	0.5	0.7	0.6	0.5	0.2	0.5
pH	pH units	*7.37*	*7.71*	*7.52*	*7.56*	*7.60*	*7.61*	*7.49*	7.25	7.48	7.42	7.29	7.39	7.26	7.31	7.23	7.28	7.22	7.36	7.35	7.51
Conductivity	uS/cm	-	-	-	-	-	*3545*	*3335*	3696	3688	3602	3626	3664	3706	3576	3570	3689	3743	3792	3927	3726
Turbidity	NTU	*10.21*	*10.33*	*11.89*	*17.27*	*19.36*	*13.36*	*13.23*	11.7	10.6	9.41	11.5	12.7	12.8	13.9	16.9	15.3	15.1	10.6	12.8	15.4
Conventional Parameters																					
Hardness, as CaCO3	mg/L	*1140*	*1176*	*1126*	*1094*	*1038*	*987*	*838*	966	864	812	959	893	887	888	880	906	875	900	913	918
Total alkalinity, as CaCO3	mg/L	*180*	*145*	*125*	*116*	*89*	*118*	*122*	120	120	130	120	130	130	120	130	120	120	120	130	120
TDS	mg/L	*2240*	*2582*	*2753*	*2376*	*2174*	*2160*	*2438*	2710	2670	2630	2650	2600	2660	2690	2770	2640	2620	2590	2640	2650
TSS	mg/L	*6*	*6*	*5*	*8*	*9*	*6*	*3*	3	2	3	3	4	4	3	4	4	3	2	3	3
Major Ions																					
Chloride	mg/L	*498.1*	*451.2*	*379.4*	*459.6*	*334.6*	*286.3*	*222.4*	240	230	240	250	240	230	240	240	250	240	240	240	250
Cyanide	mg/L	*0.300*	*0.310*	*0.200*	*0.140*	*0.057*	*0.058*	*0.076*	0.064	0.062	0.072	0.068	0.067	0.081	0.066	0.067	0.094	0.088	0.060	0.094	0.083
Cyanide (free)	mg/L	*0.060*	*0.080*	*0.360*	*0.053*	*0.012*	*0.016*	*0.092*	0.210	0.170	0.049	0.150	0.160	0.160	0.180	0.047	0.140	0.041	0.110	0.015	0.059
Cyanide (WAD)	mg/L	*0.180*	*0.210*	*0.080*	*0.114*	*0.017*	*0.011*	*0.019*	0.014	0.013	0.019	0.016	0.011	0.013	0.015	0.015	0.016	0.018	0.016	0.042	0.016
Fluoride	mg/L	*0.69*	*0.53*	*0.48*	*0.55*	*0.51*	*0.51*	*0.47*	0.47	0.47	0.48	0.48	0.46	0.49	0.47	0.47	0.49	0.55	0.47	0.49	0.51
Sulfate	mg/L	*1449*	*1806*	*1714*	*2019*	*1716*	*1529*	*1403*	1500	1600	1500	1500	1500	1600	1400	1600	1500	1400	1500	1600	1500
Nutrients and Chlorophyll a																					
Ammonia Nitrogen	mg N/L	*17.89*	*27.32*	*29.83*	*31.49*	*25.14*	*26.28*	*28.57*	32	31	29	28	32	32	29	32	33	31	33	33	33
Nitrate	mg N/L	*2.79*	*0.60*	*0.10*	*0.07*	*0.37*	*0.14*	*0.27*	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nitrite	mg N/L	*0.063*	*0.060*	*0.020*	*0.020*	*0.069*	*0.047*	*0.026*	0.043	0.044	0.044	0.045	0.039	0.041	0.033	0.035	0.028	0.021	0.016	0.014	< 0.010
Total Metals																					
Aluminum	mg/L	*0.220*	*0.022*	*0.015*	*0.008*	*0.022*	*0.038*	*0.018*	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	0.010	0.008	0.008	< 0.006	0.010	0.041	0.018	< 0.015
Arsenic	mg/L	*0.0210*	*0.0450*	*0.0550*	*0.0420*	*0.0587*	*0.0533*	*0.0465*	0.0437	0.0464	0.0396	0.0468	0.0508	0.0437	0.0468	0.0489	0.0601	0.0429	0.0393	0.0397	0.0437
Barium	mg/L	*0.0340*	*0.0320*	*0.0240*	*0.0245*	*0.0231*	*0.0226*	*0.0204*	0.0214	0.0207	0.0192	0.0218	0.0206	0.0204	0.0208	0.0216	0.0224	0.021	0.0212	0.0218	0.0218
Cadmium	mg/L	*0.00042*	*0.00084*	*0.00079*	*0.00089*	*0.00015*	*0.00014*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00005	0.0000	< 0.00005
Chromium	mg/L	*0.003*	*0.002*	*0.001*	*0.001*	*0.001*	*0.001*	*0.002*	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.005	< 0.002	< 0.005
Copper	mg/L	*0.070*	*0.054*	*0.005*	*0.005*	*0.031*	*0.002*	*0.001*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.0025	< 0.001	< 0.0025
Iron	mg/L	*1.6*	*2.1*	*1.8*	*1.7*	*2.1*	*1.6*	*1.2655*	1.07	1.04	1.13	1.22	1.27	1.21	1.32	1.39	1.36	1.29	1.28	1.27	1.35
Lead	mg/L	*0.0009*	*0.0008*	*0.0028*	*0.0003*	*0.0004*	*0.0005*	*0.0004*	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0010	< 0.00040	< 0.0010
Manganese	mg/L	*2.80*	*2.20*	*2.19*	*2.20*	*2.02*	*2.01*	*1.61*	1.68	1.6	1.7	1.75	1.62	1.72	1.7	1.66	1.64	1.7	1.85	1.73	1.73
Mercury	mg/L	*0.00003*	*0.00009*	*0.00001*	*0.00006*	*0.00002*	*0.00001*	*0.00003*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.180*	*0.300*	*0.300*	*0.290*	*0.230*	*0.191*	*0.1486*	0.17	0.151	0.142	0.173	0.167	0.165	0.16	0.16	0.177	0.163	0.162	0.166	0.163
Nickel	mg/L	*0.0980*	*0.0470*	*0.0180*	*0.0231*	*0.0343*	*0.0108*	*0.0056*	0.0038	0.0035	0.0041	0.0037	0.0032	0.0036	0.0035	0.0034	0.0028	0.0038	< 0.0050	0.004	< 0.0050
Selenium	mg/L	*0.0260*	*0.0340*	*0.0140*	*0.0110*	*0.0024*	*0.0012*	*0.0007*	-	-	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0007	0.0007	< 0.00050	0.0006	0.0007
Silver	mg/L	*0.00010*	*0.00022*	*0.00014*	*0.00010*	*0.00018*	*0.00011*	*0.00004*	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.0001	< 0.00004	< 0.0001
Thallium	mg/L	*0.00500*	*0.00170*	*0.00080*	*0.00053*	*0.00045*	*0.00027*	*0.00003*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00005	< 0.00002	< 0.00005
Zinc	mg/L	*0.003*	*0.006*	*0.003*	*0.002*	*0.008*	*0.004*	*0.010*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.025	< 0.010	< 0.025
Dissolved Metals																					
Aluminum	mg/L	*0.006*	*0.006*	*0.006*	*0.006*	*0.002*	*0.006*	*0.007*	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	0.009	< 0.006	< 0.006	< 0.006	< 0.006	< 0.015
Arsenic	mg/L	*0.0220*	*0.0220*	*0.0140*	*0.0136*	*0.0128*	*0.0102*	*0.0187*	0.0133	0.0138	0.0163	0.0143	0.0209	0.0119	0.0131	0.0116	0.0163	0.0111	0.0163	0.0117	0.0176
Barium	mg/L	-	-	*0.021*	*0.025*	*0.020*	*0.021*	*0.0198*	0.0207	0.0192	0.0202	0.0206	0.0208	0.0209	0.0193	0.0206	0.0203	0.0204	0.0215	0.0219	0.0207
Cadmium	mg/L	*0.00051*	*0.00075*	*0.00075*	*0.00094*	*0.00015*	*0.00007*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00005
Chromium	mg/L	*0.0014*	*0.0016*	*0.0007*	*0.0010*	*0.0006*	*0.0007*	*0.0020*	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.005
Copper	mg/L	*0.0056*	*0.0470*	*0.0053*	*0.0055*	*0.0209*	*0.0011*	*0.0006*	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.001
Iron	mg/L	*0.06*	*0.17*	*0.06*	*0.20*	*0.06*	*0.04*	*0.3614*	0.209	0.255	0.358	0.292	0.4	0.307	0.35	0.355	0.439	0.277	0.5	0.39	0.419
Lead	mg/L	*0.0006*	*0.0007*	*0.0037*	*0.0003*	*0.0003*	*0.0003*	*0.0004*	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.001
Manganese	mg/L	*2.55*	*2.18*	*2.14*	*2.27*	*1.97*	*1.85*	*1.6191*	1.73	1.6	1.8	1.73	1.62	1.73	1.63	1.63	1.65	1.69	1.77	1.81	1.69
Mercury	mg/L	*0.00004*	*0.00007*	*0.00010*	*0.00002*	*0.00005*	*0.00001*	*0.00003*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.210*	*0.290*	*0.300*	*0.298*	*0.223*	*0.177*	*0.1454*	0.157	0.15	0.15	0.162	0.166	0.169	0.151	0.161	0.159	0.157	0.159	0.171	0.158

ST-S-5	Sample date	*Annual Average*							1/4/2021	1/11/2021	1/18/2021	1/25/2021	2/1/2021	2/8/2021	2/15/2021	2/22/2021	3/1/2021	3/8/2021	3/15/2021	3/22/2021	3/29/2021
Parameter	**Unit**	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***													
Nickel	mg/L	*0.0490*	*0.0610*	*0.0180*	*0.0238*	*0.0332*	*0.0093*	*0.0057*	0.0043	0.0034	0.0038	0.0036	0.0032	0.0034	0.0049	0.0031	0.0030	0.0034	0.0039	0.0041	< 0.0050
Selenium	mg/L	*0.0280*	*0.0370*	*0.0180*	*0.0173*	*0.0033*	*0.0015*	*0.0007*	0.0007	0.0007	0.0005	0.0006	0.0004	0.0006	0.0004	0.0006	0.0007	0.0007	0.0007	0.0007	0.0006
Silver	mg/L	*0.00010*	*0.00020*	*0.00013*	*0.00010*	*0.00010*	*0.00009*	*0.00004*	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00010
Thallium	mg/L	*0.00500*	*0.00170*	*0.00080*	*0.00055*	*0.00036*	*0.00030*	*0.00003*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00006	< 0.00005
Zinc	mg/L	*0.001*	*0.002*	*0.002*	*0.001*	*0.002*	*0.004*	*0.010*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.025

ST-S-5	Sample date	*Annual Average*							4/5/2021	4/12/2021	4/20/2021	4/26/2021	5/10/2021	6/7/2021	7/5/2021	7/25/2021	8/2/2021	9/7/2021	10/4/2021	11/1/2021	21/12/2021
Parameter	**Unit**	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***													
Field Measured																					
Temperature	°C	-	-	-	-	-	*3.8*	*1.8*	0.6	0	0.7	0.6	2.1	0.9	6	4.8	4.9	10.2	2.5	0.6	0.9
pH	pH units	*7.37*	*7.71*	*7.52*	*7.56*	*7.60*	*7.61*	*7.49*	7.34	7.58	7.37	7.84	7.36	7.4	7.52	7.77	8.06	7.87	7.62	7.86	7.87
Conductivity	uS/cm	-	-	-	-	-	*3545*	*3335*	3739	3672	3511	3715	3298	2727	1608	2857	3091	3001	1618	2827	3029
Turbidity	NTU	*10.21*	*10.33*	*11.89*	*17.27*	*19.36*	*13.36*	*13.23*	15.9	12.9	13.1	15.3	17.3	9.46	14.6	11.4	17.6	15.3	3.45	18.8	10.1
Conventional Parameters																					
Hardness, as CaCO3	mg/L	*1140*	*1176*	*1126*	*1094*	*1038*	*987*	*838*	868	858	903	820	763	639	809	711	800	730	571	769	878
Total alkalinity, as CaCO3	mg/L	*180*	*145*	*125*	*116*	*89*	*118*	*122*	120	120	120	120	110	89	110	110	120	130	110	140	152
TDS	mg/L	*2240*	*2582*	*2753*	*2376*	*2174*	*2160*	*2438*	2620	2570	2750	2490	2450	1940	2230	1920	2440	2030	1140	2060	2216
TSS	mg/L	*6*	*6*	*5*	*8*	*9*	*6*	*3*	3	2	2	1	3	6	4	6	3	6	2	4	4
Major Ions																					
Chloride	mg/L	*498.1*	*451.2*	*379.4*	*459.6*	*334.6*	*286.3*	*222.4*	250	230	250	250	220	180	220	200	200	200	84	160	207.7
Cyanide	mg/L	*0.300*	*0.310*	*0.200*	*0.140*	*0.057*	*0.058*	*0.076*	0.089	0.096	0.110	0.077	0.075	0.076	0.086	0.039	0.064	0.130	0.029	0.062	0.070
Cyanide (free)	mg/L	*0.060*	*0.080*	*0.360*	*0.053*	*0.012*	*0.016*	*0.092*	0.050	0.020	0.240	0.190	0.021	0.016	0.018	0.052	0.140	0.015	0.047	0.062	0.023
Cyanide (WAD)	mg/L	*0.180*	*0.210*	*0.080*	*0.114*	*0.017*	*0.011*	*0.019*	0.030	0.016	0.017	0.018	0.022	0.020	0.030	0.015	0.015	0.020	0.011	0.028	0.032
Fluoride	mg/L	*0.69*	*0.53*	*0.48*	*0.55*	*0.51*	*0.51*	*0.47*	0.49	0.49	0.50	0.49	0.45	0.39	0.45	0.52	0.47	0.51	0.36	0.32	0.57
Sulfate	mg/L	*1449*	*1806*	*1714*	*2019*	*1716*	*1529*	*1403*	1500	1500	1600	1500	1400	1100	1300	1200	1300	1300	590	1200	1290
Nutrients and Chlorophyll a																					
Ammonia Nitrogen	mg N/L	*17.89*	*27.32*	*29.83*	*31.49*	*25.14*	*26.28*	*28.57*	33	33	33	33	28	22	26	23	24	24	8.1	21	26.6
Nitrate	mg N/L	*2.79*	*0.60*	*0.10*	*0.07*	*0.37*	*0.14*	*0.27*	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.23	< 0.10	0.28	0.14	< 0.10	4.25	0.16	0.01
Nitrite	mg N/L	*0.063*	*0.060*	*0.020*	*0.020*	*0.069*	*0.047*	*0.026*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.011	< 0.010	0.040	0.018	0.012	0.081	0.021	< 0.01
Total Metals																					
Aluminum	mg/L	*0.220*	*0.022*	*0.015*	*0.008*	*0.022*	*0.038*	*0.018*	0.006	0.008	0.008	0.008	0.022	0.093	0.013	0.088	0.024	0.031	0.011	0.010	< 0.005
Arsenic	mg/L	*0.0210*	*0.0450*	*0.0550*	*0.0420*	*0.0587*	*0.0533*	*0.0465*	0.045	0.0404	0.0444	0.0472	0.0405	0.0537	0.0553	0.0309	0.057	0.0758	0.032	0.0632	0.0314
Barium	mg/L	*0.0340*	*0.0320*	*0.0240*	*0.0245*	*0.0231*	*0.0226*	*0.0204*	0.0209	0.0205	0.0222	0.0215	0.018	0.0169	0.0184	0.0196	0.0191	0.0176	0.0189	0.019	0.0242
Cadmium	mg/L	*0.00042*	*0.00084*	*0.00079*	*0.00089*	*0.00015*	*0.00014*	*0.00002*	< 0.00001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00001	< 0.00002	< 0.00001	< 0.00002	< 0.00001	0.00008	< 0.00002	< 0.00002
Chromium	mg/L	*0.003*	*0.002*	*0.001*	*0.001*	*0.001*	*0.001*	*0.002*	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.002	0.001	< 0.002	0.001	< 0.001	< 0.002	< 0.0006
Copper	mg/L	*0.070*	*0.054*	*0.005*	*0.005*	*0.031*	*0.002*	*0.001*	< 0.0005	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.005	0.001	< 0.001	< 0.0005
Iron	mg/L	*1.6*	*2.1*	*1.8*	*1.7*	*2.1*	*1.6*	*1.2655*	1.32	1.16	1.35	1.66	1.34	1.48	1.39	0.799	1.39	1.89	0.335	1.64	0.95
Lead	mg/L	*0.0009*	*0.0008*	*0.0028*	*0.0003*	*0.0004*	*0.0005*	*0.0004*	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00040	0.00048	< 0.00040	0.0003	< 0.00040	0.000499	< 0.00020	< 0.00040	< 0.00017
Manganese	mg/L	*2.80*	*2.20*	*2.19*	*2.20*	*2.02*	*2.01*	*1.61*	1.75	1.69	1.73	1.69	1.42	1.13	1.59	1.3	1.48	1.55	0.857	1.62	1.9503
Mercury	mg/L	*0.00003*	*0.00009*	*0.00001*	*0.00006*	*0.00002*	*0.00001*	*0.00003*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00010	< 0.00001	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	0.00003
Molybdenum	mg/L	*0.180*	*0.300*	*0.300*	*0.290*	*0.230*	*0.191*	*0.1486*	0.167	0.156	0.167	0.167	0.137	0.118	0.139	0.121	0.134	0.125	0.0659	0.124	0.1228
Nickel	mg/L	*0.0980*	*0.0470*	*0.0180*	*0.0231*	*0.0343*	*0.0108*	*0.0056*	0.0036	0.0035	0.0035	0.0061	0.0034	0.0056	0.0051	0.00982	0.0062	0.00519	0.0359	0.0044	0.0044
Selenium	mg/L	*0.0260*	*0.0340*	*0.0140*	*0.0110*	*0.0024*	*0.0012*	*0.0007*	0.0006	0.0006	0.0006	0.0005	0.0006	0.0002	0.0003	0.0005	0.0004	0.0004	0.0007	0.0019	0.0030
Silver	mg/L	*0.00010*	*0.00022*	*0.00014*	*0.00010*	*0.00018*	*0.00011*	*0.00004*	< 0.00002	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00002	< 0.00004	< 0.00001	< 0.00004	< 0.00002	< 0.00002	< 0.00004	< 0.0001
Thallium	mg/L	*0.00500*	*0.00170*	*0.00080*	*0.00053*	*0.00045*	*0.00027*	*0.00003*	< 0.00001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00001	< 0.00002	0.00001	< 0.00002	0.00001	0.00003	< 0.00002	< 0.0002
Zinc	mg/L	*0.003*	*0.006*	*0.003*	*0.002*	*0.008*	*0.004*	*0.010*	< 0.0050	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0050	< 0.010	0.00459	< 0.010	< 0.0020	< 0.0050	< 0.010	0.001
Dissolved Metals																					
Aluminum	mg/L	*0.006*	*0.006*	*0.006*	*0.006*	*0.002*	*0.006*	*0.007*	< 0.006	< 0.006	< 0.006	< 0.015	< 0.006	< 0.006	< 0.006	0.004	< 0.006	0.002	0.003	< 0.006	< 0.005
Arsenic	mg/L	*0.0220*	*0.0220*	*0.0140*	*0.0136*	*0.0128*	*0.0102*	*0.0187*	0.0195	0.0141	0.0179	0.0191	0.00819	0.0373	0.0364	0.0135	0.033	0.047	0.0205	0.0265	0.0059
Barium	mg/L	-	-	*0.021*	*0.025*	*0.020*	*0.021*	*0.0198*	0.0211	0.0206	0.0213	0.0208	0.0195	0.016	0.0179	0.0205	0.0187	0.0173	0.0183	0.0183	0.0172
Cadmium	mg/L	*0.00051*	*0.00075*	*0.00075*	*0.00094*	*0.00015*	*0.00007*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00005	< 0.00002	< 0.00002	0.00003	< 0.00001	< 0.00002	< 0.00001	0.00009	< 0.00002	< 0.00002

ST-S-5	Sample date	*Annual Average*							1/4/2021	1/11/2021	1/18/2021	1/25/2021	2/1/2021	2/8/2021	2/15/2021	2/22/2021	3/1/2021	3/8/2021	3/15/2021	3/22/2021	3/29/2021
Parameter	**Unit**	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***													
Chromium	mg/L	*0.0014*	*0.0016*	*0.0007*	*0.0010*	*0.0006*	*0.0007*	*0.0020*	< 0.002	< 0.002	< 0.002	< 0.005	< 0.002	< 0.002	< 0.002	< 0.0002	< 0.0020	< 0.0002	< 0.001	< 0.002	< 0.0006
Copper	mg/L	*0.0056*	*0.0470*	*0.0053*	*0.0055*	*0.0209*	*0.0011*	*0.0006*	0.0017	< 0.0004	< 0.0004	< 0.001	0.0010	< 0.0004	0.0005	0.0007	< 0.0004	0.0002	0.0012	< 0.0004	< 0.0005
Iron	mg/L	*0.06*	*0.17*	*0.06*	*0.20*	*0.06*	*0.04*	*0.3614*	0.388	0.277	0.489	0.585	0.188	0.96	0.709	0.028	0.31	0.707	0.0137	0.18	0.01
Lead	mg/L	*0.0006*	*0.0007*	*0.0037*	*0.0003*	*0.0003*	*0.0003*	*0.0004*	< 0.0004	< 0.0004	< 0.0004	< 0.001	< 0.0004	< 0.0004	< 0.0004	0.000033	< 0.0004	< 0.00001	< 0.0002	< 0.0004	< 0.00017
Manganese	mg/L	*2.55*	*2.18*	*2.14*	*2.27*	*1.97*	*1.85*	*1.6191*	1.75	1.68	1.65	1.79	1.56	1.13	1.59	1.4	1.64	1.52	0.683	1.7	1.9242
Mercury	mg/L	*0.00004*	*0.00007*	*0.00010*	*0.00002*	*0.00005*	*0.00001*	*0.00003*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00010	< 0.00010	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00002
Molybdenum	mg/L	*0.210*	*0.290*	*0.300*	*0.298*	*0.223*	*0.177*	*0.1454*	0.166	0.159	0.163	0.158	0.151	0.106	0.128	0.131	0.141	0.126	0.0521	0.123	0.1059
Nickel	mg/L	*0.0490*	*0.0610*	*0.0180*	*0.0238*	*0.0332*	*0.0093*	*0.0057*	0.0036	0.0035	0.0034	< 0.0050	0.0035	0.0049	0.0049	0.0099	0.0068	0.0043	0.0412	0.0045	0.0043
Selenium	mg/L	*0.0280*	*0.0370*	*0.0180*	*0.0173*	*0.0033*	*0.0015*	*0.0007*	0.0007	0.0006	0.0007	< 0.00050	0.0006	0.0004	0.0006	0.0005	0.0005	0.0005	0.0008	0.0016	0.0023
Silver	mg/L	*0.00010*	*0.00020*	*0.00013*	*0.00010*	*0.00010*	*0.00009*	*0.00004*	< 0.00004	< 0.00004	< 0.00004	< 0.00010	< 0.00004	< 0.00004	< 0.00004	< 0.000010	< 0.00004	< 0.000010	< 0.00002	< 0.00004	< 0.0001
Thallium	mg/L	*0.00500*	*0.00170*	*0.00080*	*0.00055*	*0.00036*	*0.00030*	*0.00003*	< 0.00002	< 0.00002	< 0.00002	< 0.00005	< 0.00002	< 0.00002	< 0.00002	0.00001	< 0.00002	< 0.000004	0.00003	< 0.00002	< 0.0002
Zinc	mg/L	*0.001*	*0.002*	*0.002*	*0.001*	*0.002*	*0.004*	*0.010*	< 0.010	< 0.010	< 0.010	< 0.025	< 0.010	< 0.010	< 0.010	0.003	< 0.010	0.001	< 0.0050	< 0.010	0.002

Table 8-40 Meadowbank 2021 Phaser Pit Water Quality Monitoring (ST-41 Lake)

ST-41 Lake	Sample date	*Annual Average*		6/29/2021	7/13/2021	8/3/2021	9/28/2021
Parameter	**Unit**	***2020***	***2021***				
Field Measured							
Temperature	°C	*16.80*	*8.9*	10.3	11.7	8.4	5.2
pH	pH units	*7.68*	*7.7925*	7.89	7.69	7.77	7.82
Conductivity	uS/cm	*149.73*	*151.35*	71.9	173.2	165.4	194.9
Turbidity	NTU	*5.86*	*4.555*	5.17	7.63	4.67	0.75
Conventional Parameters							
Hardness, as CaCO3	mg/L	*83*	*75*	64	75	77	86
Total alkalinity, as CaCO3	mg/L	*28*	*37*	32	35	36	45
Carbonate, as CaCO3	mg/L	-	*1*	< 1	< 1	< 1	< 1
Bicarbonate, as CaCO3	mg/L	-	*37*	32	35	36	45
TDS	mg/L	*102*	*103*	100	110	95	105
TSS	mg/L	*3.7*	*4.0*	3	6	6	< 1
Total organic carbon	mg/L	*1.9*	*2.8*	2.4	2.6	3.2	3
Dissolved organic carbon	mg/L	*1.7*	*2.6*	2.1	2.6	2.9	2.8
Major Ions							
Chloride	mg/L	*2.0*	*2.65*	2.8	3.1	2.2	2.5
Cyanide	mg/L	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005
Silica	mg/L	-	*2.03*	1.6	2.1	2	2.4
Sulfate	mg/L	*34.4*	*37.3*	33	37	37	42
Nutrients and Chlorophyll a							
Ammonia Nitrogen	mg N/L	*0.08*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate	mg N/L	*1.89*	*1.1725*	1.19	1.28	1	1.22
Nitrite	mg N/L	*0.02*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01
Total Kjeldahl nitrogen	mg N/L	-	*0.14*	0.2	< 0.10	0.16	< 0.10
Total phosphorus	mg N/L	-	*0.0048*	0.0048	0.0073	0.0044	0.0027
Orthophosphate (P)	mg/L	-	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01
Total Metals							
Aluminum	mg/L	*0.110*	*0.116*	0.134	0.189	0.111	0.029
Antimony	mg/L	-	*0.0006*	0.0006	0.0006	0.0007	0.0007
Arsenic	mg/L	*0.0021*	*0.0017*	0.0016	0.0019	0.0019	0.0015
Barium	mg/L	*0.0117*	*0.0142*	0.0118	0.0143	0.0130	0.0176
Beryllium	mg/L	-	*0.00001*	< 0.00001	0.00001	0.00002	< 0.00001
Boron	mg/L	-	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01
Cadmium	mg/L	*0.00002*	*0.00002*	0.00003	0.00003	0.00002	0.00002
Calcium (total)	mg/L	*25.4*	*23.03*	19.5	22.6	23.5	26.5
Chromium	mg/L	*0.0006*	*0.0003*	0.0004	0.0004	0.0002	< 0.0001
Copper	mg/L	*0.0029*	*0.0034*	0.0023	0.0028	0.0042	0.0041
Iron	mg/L	*0.1867*	*0.1946*	0.2200	0.3340	0.1870	0.0372
Lead	mg/L	*0.0003*	*0.0005*	0.0005	0.0009	0.0006	0.0002
Lithium	mg/L	-	*0.0014*	0.0013	0.0016	0.0014	0.0014
Magnesium (total)	mg/L	*4.77*	*4.33*	3.78	4.48	4.32	4.72
Manganese	mg/L	*0.0579*	*0.0242*	0.0317	0.0267	0.0236	0.0147
Mercury	mg/L	*0.0000*	*0.0000*	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0059*	*0.0074*	0.0072	0.0092	0.0067	0.0066
Nickel	mg/L	*0.0059*	*0.0039*	0.0033	0.0037	0.0043	0.0041
Potassium (total)	mg/L	-	*1.95*	1.85	2.04	2.01	1.91
Selenium	mg/L	*0.0010*	*0.0002*	0.0002	0.0002	0.0002	0.0002
Sodium (total)	mg/L	-	*1.34*	1.2	1.32	1.4	1.45
Strontium	mg/L	-	*0.127*	0.118	0.133	0.122	0.133

ST-41 Lake	Sample date	*Annual Average*		6/29/2021	7/13/2021	8/3/2021	9/28/2021
Parameter	**Unit**	***2020***	***2021***				
Thallium	mg/L	*0.00020*	*0.00001*	0.00001	0.00001	0.00001	0.00001
Tin	mg/L	-	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Titanium	mg/L	-	*0.0023*	0.0022	0.0042	0.0024	< 0.00050
Uranium	mg/L	-	*0.0039*	0.0032	0.0034	0.0041	0.0047
Vanadium	mg/L	-	*0.0002*	< 0.0002	0.0003	< 0.0002	< 0.0002
Zinc	mg/L	*0.016*	*0.003*	0.004	0.003	0.002	0.002
Dissolved Metals							
Aluminum	mg/L	*0.008*	*0.027*	0.024	0.026	0.037	0.019
Antimony	mg/L	-	*0.0006*	0.0006	0.0006	0.0006	0.0007
Arsenic	mg/L	*0.0007*	*0.0015*	0.0013	0.0015	0.0017	0.0015
Barium	mg/L	*0.0072*	*0.0133*	0.0107	0.0127	0.0122	0.0175
Beryllium	mg/L	-	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Boron	mg/L	-	*0.010*	< 0.01	< 0.01	< 0.01	< 0.01
Cadmium	mg/L	*0.00002*	*0.00002*	0.00002	0.00002	0.00002	0.00001
Chromium	mg/L	*0.0006*	*0.0001*	< 0.00010	< 0.00010	< 0.00010	0.00011
Copper	mg/L	*0.0009*	*0.0030*	0.0018	0.0025	0.0037	0.0040
Iron	mg/L	*0.01*	*0.031*	0.0206	0.0306	0.048	0.0228
Lead	mg/L	*0.0003*	*0.0002*	0.0001	0.0002	0.0003	0.0001
Lithium	mg/L	-	*0.0014*	0.0013	0.0015	0.0013	0.0014
Manganese	mg/L	*0.0383*	*0.0209*	0.0294	0.0237	0.0189	0.0117
Mercury	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0025*	*0.0073*	0.0071	0.0091	0.0064	0.0066
Nickel	mg/L	*0.0037*	*0.0035*	0.0029	0.0032	0.0040	0.0040
Selenium	mg/L	*0.0010*	*0.0002*	0.0002	0.0002	0.0002	0.0002
Strontium	mg/L	-	*0.126*	0.115	0.134	0.117	0.136
Thallium	mg/L	*0.0002*	*0.00001*	0.00001	0.00001	0.00001	0.00001
Tin	mg/L	-	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Titanium	mg/L	-	*0.0005*	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Uranium	mg/L	-	*0.0038*	0.0030	0.0034	0.0040	0.0047
Vanadium	mg/L	-	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Zinc	mg/L	*0.001*	*0.001*	0.001	0.001	0.001	0.0004

Table 8-41 Meadowbank 2021 BB Phaser Pit Water Quality Monitoring (ST-42 Lake)

ST-42 Lake	Sample date	*Annual Average*		6/29/2021	7/13/2021	8/3/2021	9/20/2021	10/24/2021
Parameter	**Unit**	***2020***	***2021***					
Field Measured								
Temperature	°C	*4.3*	*5.1*	3.5	8.4	8.5	4.3	0.9
pH	pH units	*7.99*	*7.68*	7.49	7.76	7.62	7.49	8.03
Conductivity	uS/cm	*161.5*	*127.1*	39.4	136.2	143.8	149.7	166.2
Turbidity	NTU	*1.78*	*4.77*	7.65	6.73	7.10	1.51	0.88
Conventional Parameters								
Hardness, as CaCO3	mg/L	*79.5*	*60.96*	36.3	59.7	65.1	68.3	75.4
Total alkalinity, as CaCO3	mg/L	*55*	*32*	22	31	33	37	39
Carbonate, as CaCO3	mg/L	*-*	*1*	< 1	< 1	< 1	< 1	< 1
Bicarbonate, as CaCO3	mg/L	*-*	*32*	22	31	33	37	39
TDS	mg/L	*46*	*88*	70	80	95	90	105
TSS	mg/L	*4*	*5*	5	9	10	< 1	< 1
Total organic carbon	mg/L	*-*	*3.5*	3.4	3.3	3.5	3.6	3.6
Dissolved organic carbon	mg/L	*5.6*	*3.3*	2.8	3.3	3.1	3.5	3.6
Major Ions								
Chloride	mg/L	*1.6*	*2.2*	2.0	2.3	1.6	2.4	2.5
Cyanide	mg/L	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Silica	mg/L	*-*	*2.3*	1.3	2.2	2.2	2.7	2.9
Sulfate	mg/L	*39*	*30*	16	32	33	34	37
Nutrients and Chlorophyll a								
Ammonia Nitrogen	mg N/L	*0.06*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate	mg N/L	*1.18*	*0.76*	0.42	0.82	0.78	0.88	0.9
Nitrite	mg N/L	*0.01*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Kjeldahl nitrogen	mg N/L	*-*	*0.14*	< 0.10	0.10	0.16	0.22	0.13
Total phosphorus	mg N/L	*0.0100*	*0.0044*	0.0082	0.0057	0.0040	0.0021	0.0018
Orthophosphate (P)	mg/L	*-*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Metals								
Aluminum	mg/L	*0.0600*	*0.1497*	0.2240	0.2290	0.1050		0.0409
Antimony	mg/L	*-*	*0.00055*	0.00036	0.00056	0.00059		0.00067
Arsenic	mg/L	*0.00180*	*0.00166*	0.00171	0.00178	0.00163		0.00153
Barium	mg/L	*0.0162*	*0.0113*	0.0070	0.0122	0.0118		0.0142
Beryllium	mg/L	*-*	*0.00002*	0.00001	0.00003	0.00001		0.00001
Boron	mg/L	*-*	*0.01*	< 0.01	< 0.01	< 0.01		< 0.01
Cadmium	mg/L	*0.00002*	*0.00002*	0.00001	0.00002	0.00002		0.00002
Calcium (total)	mg/L	*24.2*	*18.7*	10.9	18.2	20.1	20.9	23.5
Chromium	mg/L	*0.00060*	*0.00044*	0.00081	0.00047	0.00018		0.00028
Copper	mg/L	*0.0049*	*0.0045*	0.0052	0.0045	0.0044		0.0041
Iron	mg/L	*0.075*	*0.271*	0.438	0.416	0.145		0.087
Lead	mg/L	*0.00017*	*0.00097*	0.00279	0.00061	0.00036		0.00014
Lithium	mg/L	*-*	*0.00128*	0.00091	0.00155	0.00129		0.00135
Magnesium (total)	mg/L	*4.67*	*3.45*	2.19	3.47	3.65	3.9	4.04
Manganese	mg/L	*0.0154*	*0.0206*	0.0271	0.0272	0.0218		0.0061
Mercury	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0044*	*0.0043*	0.0030	0.0045	0.0046		0.0049
Nickel	mg/L	*0.0058*	*0.0044*	0.0039	0.0051	0.0046		0.0041
Potassium (total)	mg/L	*-*	*1.50*	1.07	1.53	1.65	1.57	1.69
Selenium	mg/L	*0.00100*	*0.00014*	0.00009	0.00014	0.00016		0.00017
Silver	mg/L	*0.000100*	*0.000010*	0.000024	0.000008	< 0.000005	-	< 0.000005
Sodium (total)	mg/L	*-*	*1.17*	0.71	1.17	1.28	1.36	1.32

ST-42 Lake	Sample date	*Annual Average*		6/29/2021	7/13/2021	8/3/2021	9/20/2021	10/24/2021
Parameter	**Unit**	***2020***	***2021***					
Strontium	mg/L	-	*0.0902*	0.0524	0.0903	0.0970		0.1210
Thallium	mg/L	*0.00020*	*0.00001*	0.00001	0.00001	0.00001		0.00001
Tin	mg/L	-	*0.0002*	< 0.0002	< 0.0002	< 0.0002		< 0.0002
Titanium	mg/L	-	*0.0034*	0.0039	0.0066	0.0025		< 0.0005
Uranium	mg/L	-	*0.0034*	0.0021	0.0036	0.0040		0.0041
Vanadium	mg/L	-	*0.0003*	0.0003	0.0003	< 0.0002		< 0.0002
Zinc	mg/L	*0.001*	*0.002*	0.004	0.003	0.001		0.001
Dissolved Metals								
Aluminum	mg/L	*0.019*	*0.0384*	0.0595	0.0319	0.0319	0.0367	0.0321
Antimony	mg/L	-	*0.00054*	0.00028	0.00057	0.00058	0.00063	0.00061
Arsenic	mg/L	*0.00125*	*0.00140*	0.00123	0.00141	0.00151	0.00141	0.00144
Barium	mg/L	*0.0124*	*0.0103*	0.0057	0.0108	0.0107	0.0119	0.0126
Beryllium	mg/L	-	*0.00001*	< 0.000010	0.000011	< 0.000010	0.000013	0.000011
Boron	mg/L	-	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cadmium	mg/L	*0.00002*	*0.00001*	0.00002	0.00002	0.00002	0.00001	0.00001
Chromium	mg/L	*0.0006*	*0.00012*	0.00016	< 0.00010	< 0.00010	< 0.00010	0.00014
Copper	mg/L	*0.0035*	*0.0037*	0.0031	0.0037	0.0039	0.0041	0.0040
Iron	mg/L	*0.010*	*0.042*	0.056	0.040	0.034	0.040	0.039
Lead	mg/L	*0.00017*	*0.00020*	0.00057	0.00010	0.00014	0.00010	0.00010
Lithium	mg/L	-	*0.00117*	0.00077	0.00125	0.00117	0.00134	0.00133
Manganese	mg/L	*0.0005*	*0.0126*	0.0204	0.0181	0.0157	0.0053	0.0034
Mercury	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0041*	*0.0042*	0.0026	0.0045	0.0046	0.0045	0.0048
Nickel	mg/L	*0.0047*	*0.0040*	0.0033	0.0046	0.0042	0.0040	0.0037
Selenium	mg/L	*0.00075*	*0.00013*	0.00008	0.00014	0.00015	0.00016	0.00014
Silver	mg/L	*0.00010*	*0.00001*	0.000010	< 0.000005	< 0.000005	< 0.000005	< 0.000005
Strontium	mg/L		*0.0876*	0.0460	0.0897	0.0955	0.0987	0.1080
Thallium	mg/L	*0.000200*	*0.000008*	0.000009	0.000008	0.000007	0.000008	0.000008
Tin	mg/L	-	*0.0003*	0.0006	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Titanium	mg/L	-	*0.0006*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0011
Uranium	mg/L	-	*0.0034*	0.0017	0.0034	0.0038	0.0039	0.0043
Vanadium	mg/L	-	*0.0003*	0.0003	< 0.00020	< 0.00020	< 0.00020	0.0004
Zinc	mg/L	*0.001*	*0.004*	0.018	0.002	0.001	0.001	0.001

Table 8-42 Meadowbank 2021 Phaser Attenuation Pond Water Quality Monitoring (ST-43)

ST-43	Sample date	*Annual Average*				6/28/2021	7/13/2021	8/3/2021	9/20/2021
Parameter	**Unit**	***2018***	***2019***	***2020***	***2021***				
Field Measured									
Temperature	°C	-	-	*12.7*	*8.1*	8.7	9.2	10.5	4
pH	pH units	*7.29*	*7.17*	*7.55*	*7.53*	7.52	7.59	7.56	7.45
Conductivity	uS/cm	-	-	*158.5*	*126.5*	72.9	146.9	145.9	140.3
Turbidity	NTU	*10.10*	*19.91*	*1.98*	*1.35*	2.1	1.74	1.01	0.55
Conventional Parameters									
Hardness, as CaCO3	mg/L	*254.0*	*73.5*	*69.8*	*62.2*	60.3	62.5	63.3	62.8
Total alkalinity, as CaCO3	mg/L	*16*	*35*	*28*	*23*	21	21	22	26
TDS	mg/L	*355*	*122*	*91*	*85*	100	80	80	80
TSS	mg/L	*4*	*13*	*5*	*1*	1	< 1	1	< 1
Major Ions									
Chloride	mg/L	*5.5*	*2.2*	*1.6*	*2.8*	2.7	2.8	2.5	3.2
Cyanide	mg/L	*0.005*	*0.004*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005
Fluoride	mg/L	*0.15*	*0.10*	*0.07*	*0.10*	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	*287*	*65*	*45*	*39*	42	38	37	37
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg N/L	*3.73*	*1.91*	*0.08*	*0.31*	< 0.05	0.09	0.38	0.73
Nitrate	mg N/L	*5.55*	*2.56*	*0.95*	*0.42*	0.60	0.49	0.36	0.21
Nitrite	mg N/L	*0.733*	*0.040*	*0.013*	*0.010*	< 0.010	< 0.010	< 0.010	< 0.010
Total Metals									
Aluminum	mg/L	*0.516*	*0.708*	*0.058*	*0.051*	0.0494	0.0593	0.0456	-
Arsenic	mg/L	*0.00087*	*0.00170*	*0.00065*	*0.00066*	0.00055	0.00068	0.00075	-
Barium	mg/L	*0.055*	*0.020*	*0.011*	*0.011*	0.0109	0.0112	0.0104	-
Cadmium	mg/L	*0.001223*	*0.000198*	*0.000020*	*0.000050*	0.000067	0.000049	0.000034	-
Chromium	mg/L	*0.00060*	*0.00100*	*0.00085*	*0.00011*	0.00012	< 0.00010	< 0.00010	-
Copper	mg/L	*0.0350*	*0.0159*	*0.0048*	*0.0030*	0.0029	0.0029	0.0034	-
Iron	mg/L	*2.653*	*1.340*	*0.340*	*0.204*	0.135	0.251	0.225	-
Lead	mg/L	*0.00040*	*0.00030*	*0.00024*	*0.00022*	0.00017	0.00022	0.00026	-
Manganese	mg/L	*0.6735*	*0.1745*	*0.0581*	*0.0257*	0.0344	0.0314	0.0112	-
Mercury	mg/L	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0035*	*0.0047*	*0.0008*	*0.0014*	0.0011	0.0014	0.0018	-
Nickel	mg/L	*0.0998*	*0.0272*	*0.0107*	*0.0051*	0.0060	0.0053	0.0039	-
Selenium	mg/L	*0.00180*	*0.00440*	*0.00100*	*0.00007*	0.00006	0.00007	0.00008	-
Silver	mg/L	*0.000100*	*0.000100*	*0.000100*	*0.000012*	0.000007	0.000014	0.000016	-
Thallium	mg/L	*0.00020*	*0.00020*	*0.00020*	*0.00001*	< 0.000002	0.00001	0.00001	-
Zinc	mg/L	*0.103*	*0.026*	*0.004*	*0.003*	0.003	0.003	0.002	-

8.5.3.1.22 Landfarm

Meadowbank's first landfarm (Landfarm 1 – ST-14) was located on the north-west side of the South Tailings Cell (Tailing Storage Facility; TSF) is currently flooded and is now inactive. Landfarm 2 (ST-14b) was constructed in 2016, contaminated soil was added since 2017. Surface runoff, due to snow melt and rain, was identified from the landfarm and sampled, as per the Water Licence requirements. Results are shown in Table 8-43 Water was naturally flowing towards the adjacent Tailing Storage Facilities. No other runoff water outside the landfarm was observed. Refer to the Landfarm report (Appendix 30) for more information.

Table 8-43 Meadowbank 2021 Lanfarm Quality Monitoring (ST-14b)

ST-14b	Sample date	*Annual Average*	7/9/2021	8/4/2021
Parameter	**Unit**			
Field Measured				
pH	pH units	*7.75*	7.69	7.81
Conventional Parameters				
TSS	mg/L	*119*	98	140
Total Metals				
Arsenic	mg/L	*0.0367*	0.0355	0.0378
Copper	mg/L	*0.0032*	0.0042	0.0022
Lead	mg/L	*0.0004*	0.0002	0.0006
Nickel	mg/L	*0.0336*	0.0242	0.0430
Volatile Organics				
Benzene	mg/L	*0.0002*	< 0.0002	< 0.0002
Ethylbenzene	mg/L	*0.0002*	< 0.0002	< 0.0002
Toluene	mg/L	*0.0002*	< 0.0002	0.0002
Xylenes	mg/L	*0.0004*	0.0004	< 0.0004
F2 (C10-C16)	mg/L	*0.1*	< 0.1	< 0.1
F3 (C16-C34)	mg/L	*0.2*	< 0.2	< 0.2
F4 (C34-C50)	mg/L	*0.2*	< 0.2	< 0.2

8.5.3.1.23 Landfill

No water quality monitoring was completed at the landfill in 2021 as no leachate was observed.

8.5.3.2 *Whale Tail Site*

8.5.3.2.1 Whale Tail Attenuation Pond (ST-WT-1)

The Whale Tail Attenuation pond was in operation in 2020 beginning on May 20th, 2020. In 2021, the Whale Tail Attenuation pond continued to be in operation. Water from the Whale Tail Attenuation Pond is treated in the WTP prior to being discharged in either Whale Tail South or Mammoth Lake via the submerged diffusers. Samples from the Whale Tail Attenuation Pond (ST-WT-1) prior to treatment, are to be collected four times per year as per the Water Licence, however Agnico Eagle collected samples on a weekly basis for Group 1 parameters but switched to a bi-weekly basis in August 2021. The results for 2021 are presented in Table 8-45 below.

8.5.3.2.2 IVR Attenuation Pond (ST-WT-23)

First samples of the IVR attenuation pond occurred in 2021. Water from the IVR Attenuation Pond is treated in the WTP prior to being discharged in either Whale Tail South or Mammoth Lake via the submerged diffusers. Samples from the IVR Attenuation Pond (ST-WT-23) prior to treatment, are to be collected four times per year as per the Water Licence, however Agnico Eagle collected samples on a on a monthly basis for Group 1 parameters during open water season. The results for 2021 are presented in Table 8-46 below.

8.5.3.2.3 Whale Tail Waste Rock Storage Facility Pond (ST-WT-3)

In 2021, water was observed in the Whale Tail WRSF pond. As per the Water License, water sample are required to be taken four (4) time per calendar year. In 2021, eight (8) water samples were taken and the data is presented in Table 8-47. Agnico Eagle has taken weekly samples starting in July 2019 to have a better control of the water management on site. This frequency was changed to monthly in July 2021. There are no applicable license limits. Sampling station ST-WT-3 is illustrated on Figure 4. A total of 65,167 m^3 was pumped from this pond in 2021. Table 8-44 below provide 2019 – 2021 pumped volume from ST-WT-3.

Table 8-44 Whale Tail WRSF 2019-2021 Volume of Water Pumped from (ST-WT-3)

Years	ST-WT-3 pumped volume (m^3)
2019	203,707
2020	115,632
2021	65,167

8.5.3.2.4 Whale Tail Pit (ST-WT-4)

In 2019, with the development of the Whale Tail Pit, Agnico Eagle started the water quality monitoring in the pit/sump. As per the Water License, water samples needed to be taken four (4) time per calendar year. In 2021, thirty-four (34) water samples were taken and the data is presented in Table 8-48. Agnico Eagle has taken weekly samples, when safe to do and when water is present in the pit, starting in July 2019 to have a better understanding of the water management on site. In July 2021, this sampling frequency was changed to bi-weekly. There are no applicable license limits. Sampling station ST-WT-4 is illustrated on Figure 4. A total of 952,623 m^3 was transferred from this sump to the Whale Tail and IVR Attenuation Pond in 2021.

8.5.3.2.5 IVR Pit (ST-WT-18)

In 2021, Agnico Eagle continued to collect water quality samples in the IVR Pit sump (ST-WT-18) during the development of the IVR Pit. As per the Water License, water samples needed to be taken four (4) time per calendar year. In 2021, five water samples were taken and the data is presented in Table 8-49. Agnico Eagle has taken monthly samples, when safe to do and when water is present in the pit. Water from the IVR Pit was pumped to the IVR Attenuation Pond in July, August, September, and October. A total of 58,938 m^3 was pumped from the IVR Pit to the IVR Attenuation pond in 2021.

8.5.3.2.6 Lake A47 (ST-WT-6)

Due to dewatering of this lake in 2020, this station is no longer operational.

Table 8-45 Whale Tail 2021 Whale Tail Attenuation Pond Water Quality Monitoring (ST-WT-1)

ST-WT-1	Unit	*Annual Average*		1/4/2021	1/11/2021	1/18/2021	1/25/2021	2/1/2021	2/10/2021	3/2/2021	3/11/2021	3/14/2021	3/22/2021	4/1/2021	4/9/2021	4/16/2021	4/19/2021	4/26/2021	5/2/2021	5/15/2021
Parameter		*2020*	*2021*																	
Field Measured																				
Temperature	°C	*4.4*	*2.0*	0.2	0.0	0.0	0.4	0.7	0.1	0.2	0.4	0.8	0.5	0.3	0.5	0.6	0.4	0.8	0.3	0.2
pH	pH units	*7.54*	*7.37*	7.34	7.61	7.37	7.3	7.31	7.12	6.96	7.28	7.36	7.19	7.28	7.44	7.28	7.5	7.57	7.32	7.43
Conductivity	uS/cm	*337.5*	*280.5*	218.2	349.0	194.9	304.0	262.0	197.7	261.0	165.1	349.0	212.6	209.0	197.3	187.2	282.0	265.0	224.0	215.8
Turbidity	NTU	*63.9*	*60.1*	15.5	42.1	16.1	31.7	31.9	6.6	11.8	17.2	332.0	25.6	14.1	17.6	20.0	25.5	26.5	31.5	45.0
Conventional Parameters																				
Hardness, as $CaCO_3$	mg/L	*156*	*107*	77.2	132	74.6	104	94.4	73	102	63.3	140	78.2	79.6	80.4	72	102	95.3	82.7	87.7
Total alkalinity, as $CaCO_3$	mg/L	*59*	*49*	42	58	42	55	50	37	49	35	59	43	43	43	42	58	51	46	49
TDS	mg/L	*212*	*174*	140	200	170	165	125	125	180	90	215	150	115	140	115	140	150	130	155
TSS	mg/L	*67*	*64*	21	48	23	39	50	15	7	11	330	32	16	48	25	27	19	34	24
Major Ions																				
Chloride	mg/L	*52.8*	*30.5*	25	46	27	42	36	25	35	20	41	27	26	29	25	31	33	31	24
Fluoride	mg/L	*0.12*	*0.14*	0.12	0.17	0.12	0.18	0.16	0.12	0.20	0.12	0.17	0.13	0.14	0.11	0.12	0.14	0.14	0.14	0.10
Sulfate	mg/L	*28.9*	*34.0*	20	34	17	21	18	25	27	13	33	17	16	17	15	19	19	17	18
Nutrients and Chlorophyll a																				
Ammonia (NH_3)	mg/L	*1.35*	*1.10*	0.87	1.80	0.43	2.10	1.00	0.25	0.54	0.12	3.30	0.44	0.49	0.36	0.50	2.70	1.40	0.44	0.87
Ammonia Nitrogen	mg N/L	*0.02*	*0.90*	0.71	1.50	0.35	1.70	0.82	0.21	0.45	0.10	2.70	0.36	0.40	0.29	0.41	2.20	1.10	0.37	0.71
Nitrate	mg N/L	*2.47*	*1.80*	0.83	1.21	0.35	1.46	0.62	0.41	0.46	0.25	3.09	0.44	0.55	0.53	0.55	3.15	1.51	0.36	1.09
Nitrite	mg N/L	*0.14*	*0.12*	0.02	0.04	0.01	0.06	0.03	< 0.010	0.02	< 0.010	0.08	0.02	0.02	0.02	0.02	0.12	0.06	0.02	0.06
Total phosphorus	mg P/L	*0.05*	*0.06*	0.02	0.03	0.02	0.03	0.04	0.01	0.01	0.02	0.48	0.07	0.02	0.02	0.03	0.02	0.02	0.02	0.04
Total Metals																				
Aluminum	mg/L	*0.801*	*1.080*	0.150	0.723	0.185	0.515	0.717	0.111	0.086	0.133	5.520	0.191	0.161	0.121	0.206	0.247	0.507	0.330	0.511
Arsenic	mg/L	*0.0304*	*0.0399*	0.0122	0.0122	0.0118	0.0120	0.0114	0.0069	0.0122	0.0104	0.0485	0.0121	0.0145	0.0135	0.0117	0.0137	0.0190	0.0214	0.0152
Barium	mg/L	*0.0817*	*0.0655*	0.0414	0.0751	0.0396	0.0601	0.0566	0.0435	0.0608	0.0342	0.1560	0.0460	0.0482	0.0479	0.0416	0.0764	0.0757	0.0599	0.0571
Cadmium	mg/L	*0.000028*	*0.000021*	< 0.000010	0.000016	< 0.000010	0.000014	0.000014	0.000013	< 0.000010	0.000011	0.000108	0.000013	0.000011	0.000011	< 0.000010	< 0.000010	0.000011	0.000012	0.000017
Chromium	mg/L	*0.0115*	*0.0166*	0.0013	0.0051	0.0012	0.0043	0.0045	0.0011	< 0.0010	< 0.0010	0.0605	0.0029	0.0016	0.0012	0.0019	0.0045	0.0162	0.0078	0.0103
Copper	mg/L	*0.0033*	*0.0034*	0.0019	0.0036	0.0013	0.0024	0.0019	0.0009	0.0019	0.0012	0.0171	0.0014	0.0020	0.0013	0.0017	0.0059	0.0034	0.0015	0.0039
Iron	mg/L	*1.98*	*2.69*	1.15	1.81	1.26	1.54	1.92	0.72	0.70	1.37	16.40	1.26	1.37	1.09	1.40	1.25	1.49	1.20	1.59
Lead	mg/L	*0.00065*	*0.00204*	0.00053	0.00110	0.00043	0.00087	0.00104	0.00025	0.00031	0.00042	0.00614	0.00065	0.00054	0.00048	0.00067	0.00106	0.00328	0.00167	0.00207
Manganese	mg/L	*0.370*	*0.330*	0.217	0.277	0.214	0.177	0.339	0.213	0.265	0.252	1.500	0.265	0.268	0.233	0.240	0.213	0.184	0.189	0.207
Mercury	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0055*	*0.0048*	0.0035	0.0082	0.0035	0.0076	0.0055	0.0025	0.0052	0.0021	0.0064	0.0036	0.0040	0.0039	0.0031	0.0051	0.0055	0.0065	0.0035
Nickel	mg/L	*0.0175*	*0.0146*	0.0027	0.0066	0.0028	0.0060	0.0055	0.0035	0.0041	0.0019	0.0406	0.0029	0.0030	0.0026	0.0024	0.0072	0.0081	0.0113	0.0092
Selenium	mg/L	*0.00088*	*0.00028*	< 0.00010	0.00013	< 0.00010	0.00016	< 0.00010	< 0.00010	< 0.00010	< 0.00010	0.00023	< 0.00010	< 0.00010	0.00012	0.00011	0.00033	0.00031	0.00016	0.00020
Silver	mg/L	*0.000097*	*0.000022*	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000084	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Thallium	mg/L	*0.00019*	*0.00003*	< 0.000010	0.000024	< 0.000010	0.000023	0.00002	0.000019	0.000016	< 0.000010	0.000111	0.000013	0.000013	0.000012	0.000012	0.000022	0.000029	0.000025	0.000028
Zinc	mg/L	*0.0041*	*0.0075*	< 0.0050	0.0055	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0302	< 0.0050	< 0.0050	0.0052	0.0055	< 0.0050	< 0.0050	< 0.0050	< 0.0050

ST-WT-1	Unit	*Annual Average*		5/17/2021	5/27/2021	5/31/2021	6/7/2021	6/14/2021	6/21/2021	6/28/2021	8/3/2021	8/16/2021	8/31/2021	9/6/2021	9/20/2021	10/4/2021	10/18/2021
Parameter		*2020*	*2021*														
Field Measured																	
Temperature	°C	*4.4*	*2.0*	0.9	1.0	1.1	0.6	4.2	2.1	4.7	8.0	6.7	8.6	8.9	2.1	3.8	2.0
pH	pH units	*7.54*	*7.37*	7.46	7.43	7.38	7.51	7.4	7.56	7.34	7.81	7.29	7.22	7.51	7.39	7.32	7.16
Conductivity	uS/cm	*337.5*	*280.5*	249.0	257.0	222.0	257.0	247.0	263.0	274.0	459.0	456.0	323.0	546.0	390.0	392.0	268.0
Turbidity	NTU	*63.9*	*60.1*	34.9	63.0	85.0	100.0	212.0	140.0	71.0	141.0	42.0	77.9	33.5	30.1	66.8	55.6
Conventional Parameters																	
Hardness, as $CaCO_3$	mg/L	*156*	*107*	97.2	99.9	88.7	100	98.2	97.2	101	182	170	132	191	153	145	114
Total alkalinity, as $CaCO_3$	mg/L	*59*	*49*	52	53	48	47	44	46	48	63	53	50	68	56	54	42
TDS	mg/L	*212*	*174*	175	175	165	180	45	190	200	285	285	180	375	240	230	160
TSS	mg/L	*67*	*64*	25	40	49	87	130	160	64	230	51	56	43	35	140	110
Major Ions																	
Chloride	mg/L	*52.8*	*30.5*	29	33	27	26	25	28	29	38	30	33	34	31	34	26
Fluoride	mg/L	*0.12*	*0.14*	0.12	0.15	0.11	0.10	0.10	0.11	0.15	0.16	0.13	0.12	0.18	0.15	0.16	0.13
Sulfate	mg/L	*28.9*	*34.0*	20	20	18	29	35	38	35	88	89	45	110	74	65	43
Nutrients and Chlorophyll a																	
Ammonia (NH_3)	mg/L	*1.35*	*1.10*	1.00	0.80	0.56	2.00	0.78	0.65	0.85	2.80	1.40	0.32	3.10	1.00	0.92	0.25
Ammonia Nitrogen	mg N/L	*0.02*	*0.90*	0.86	0.66	0.46	1.70	0.64	0.53	0.70	2.30	1.10	0.26	2.60	0.83	0.75	0.21
Nitrate	mg N/L	*2.47*	*1.80*	1.38	0.80	1.08	2.24	1.59	1.48	1.70	5.86	4.65	1.45	9.53	3.69	2.87	0.69
Nitrite	mg N/L	*0.14*	*0.12*	0.10	0.08	0.08	0.16	0.11	0.19	0.18	0.83	0.34	0.06	0.46	0.22	0.18	0.04
Total phosphorus	mg P/L	*0.05*	*0.06*	0.03	0.04	0.06	0.07	0.12	0.13	0.07	0.22	0.05	0.04	0.04	0.03	0.12	0.09
Total Metals																	
Aluminum	mg/L	*0.801*	*1.080*	0.779	1.180	1.560	2.460	2.950	1.660	1.350	3.420	1.150	1.930	0.710	0.349	1.820	1.740
Arsenic	mg/L	*0.0304*	*0.0399*	0.0153	0.0138	0.0343	0.0421	0.0328	0.0396	0.0347	0.0713	0.2130	0.0289	0.1220	0.1520	0.1530	0.0264
Barium	mg/L	*0.0817*	*0.0655*	0.0665	0.0755	0.0689	0.0706	0.0703	0.0600	0.0643	0.1120	0.0741	0.0798	0.0652	0.0625	0.0768	0.0644
Cadmium	mg/L	*0.000028*	*0.000021*	0.000019	0.000014	0.000019	0.000026	0.000034	0.000026	0.000025	0.000034	0.000031	0.000044	0.000019	0.000024	0.000019	0.000031
Chromium	mg/L	*0.0115*	*0.0166*	0.0203	0.0225	0.0357	0.0484	0.0335	0.0195	0.0240	0.0411	0.0247	0.0552	0.0134	0.0051	0.0249	0.0192
Copper	mg/L	*0.0033*	*0.0034*	0.0038	0.0028	0.0037	0.0068	0.0086	0.0038	0.0044	0.0049	0.0025	0.0026	0.0016	0.0017	0.0028	0.0026
Iron	mg/L	*1.98*	*2.69*	1.94	2.37	3.00	4.27	5.29	3.35	2.77	6.55	2.19	3.74	1.72	1.21	3.76	3.63
Lead	mg/L	*0.00065*	*0.00204*	0.00339	0.00236	0.00294	0.00909	0.00725	0.00304	0.00378	0.00295	0.00129	0.00099	0.00085	0.00061	0.00169	0.00146
Manganese	mg/L	*0.370*	*0.330*	0.208	0.196	0.208	0.236	0.291	0.311	0.347	0.649	0.451	0.466	0.345	0.341	0.539	0.379
Mercury	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0055*	*0.0048*	0.0045	0.0053	0.0039	0.0043	0.0049	0.0037	0.0044	0.0071	0.0057	0.0038	0.0081	0.0049	0.0046	0.0034
Nickel	mg/L	*0.0175*	*0.0146*	0.0104	0.0116	0.0175	0.0268	0.0235	0.0180	0.0174	0.0389	0.0320	0.0282	0.0284	0.0284	0.0358	0.0149
Selenium	mg/L	*0.00088*	*0.00028*	0.00023	0.00020	0.00018	0.00031	0.00035	0.00037	0.00031	0.00095	0.00085	0.00031	0.00094	0.00057	0.00035	0.00025
Silver	mg/L	*0.000097*	*0.000022*	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000022	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Thallium	mg/L	*0.00019*	*0.00003*	0.000037	0.000041	0.000045	0.000053	0.000057	0.000036	0.000033	0.000058	0.000032	0.000051	0.000025	0.000019	0.000034	0.000032
Zinc	mg/L	*0.0041*	*0.0075*	< 0.0050	0.0056	0.007	0.0125	0.0188	0.0086	0.0078	0.0141	0.0059	0.0088	< 0.0050	< 0.0050	0.0078	0.0092

Table 8-46 Whale Tail 2021 IVR Attenuation Pond Water Quality Monitoring (ST-WT-23)

ST-WT-23 Parameter	Unit	*Annual Average*	6/7/2021	6/14/2021	6/21/2021	6/28/2021	7/5/2021	7/19/2021	8/2/2021	8/16/2021	8/31/2021	9/6/2021	9/20/2021	10/4/2021	10/18/2021	11/22/2021
Field Measured																
Temperature	°C	*5.8*	0.6	7.7	7.4	4.9	5.0	9.2	10.7	7.4	10.6	8.9	2.6	4.4	1.5	0.1
pH	pH units	*7.31*	7.19	7.54	7.62	7.08	7.35	7.24	7.58	7.43	7.14	7.47	7.46	7.00	7.20	7.02
Conductivity	uS/cm	*335.1*	200.6	168.4	169.7	213.2	277.0	307.0	441.0	476.0	376.0	452.0	452.0	395.0	383.0	380.0
Turbidity	NTU	*44.7*	23.8	48.0	13.8	10.4	139.0	30.5	12.6	34.1	240.0	17.0	15.8	11.2	16.0	13.9
Conventional Parameters																
Hardness, as $CaCO_3$	mg/L	*127*	75	64	60	77	112	111	153	176	159	168	180	148	151	147
Total alkalinity, as $CaCO_3$	mg/L	*44*	44	36	32	32	44	43	44	49	45	52	50	45	46	55
TDS	mg/L	*232*	160	75	135	190	220	145	400	290	255	315	275	290	225	270
TSS	mg/L	*28*	17	28	10	12	120	15	7	20	110	11	9	13	14	6
Major Ions																
Chloride	mg/L	*35*	25	23	25	34	31	33	48	33	45	44	43	40	35	37
Fluoride	mg/L	*0.12*	< 0.10	< 0.10	< 0.10	< 0.10	0.12	0.13	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.17
Sulfate	mg/L	*50*	16	13	13	14	38	40	60	98	48	75	82	66	77	66
Nutrients and Chlorophyll a																
Ammonia (NH_3)	mg/L	*0.97*	1.00	0.89	0.70	0.79	1.10	1.00	1.50	1.50	0.57	1.40	1.10	0.54	0.58	< 0.01
Ammonia Nitrogen	mg N/L	*0.77*	0.83	0.73	0.58	0.65	0.87	0.85	1.20	1.20	0.47	1.10	0.91	0.44	0.47	0.54
Nitrate	mg N/L	*2.26*	0.51	0.53	0.49	0.61	1.72	1.62	3.50	4.58	2.13	4.52	3.87	3.01	2.42	2.09
Nitrite	mg N/L	*0.136*	0.106	0.069	0.046	0.052	0.168	0.182	0.257	0.316	0.057	0.200	0.163	0.083	0.065	0.140
Total phosphorus	mg P/L	*0.0220*	0.0083	0.0220	0.0063	0.0042	0.0140	0.0130	0.0076	0.0370	0.1400	0.0086	0.0083	0.0085	0.0100	0.0200
Total Metals																
Aluminum	mg/L	*0.748*	0.409	0.827	0.172	0.167	2.820	0.401	0.184	0.494	4.010	0.255	0.161	0.243	0.217	0.117
Arsenic	mg/L	*0.07119*	0.02370	0.01890	0.00968	0.01150	0.03900	0.05440	0.06770	0.25300	0.12600	0.13500	0.08130	0.04650	0.04720	0.08280
Barium	mg/L	*0.0554*	0.0430	0.0424	0.0276	0.0362	0.0775	0.0437	0.0573	0.0651	0.1030	0.0634	0.0601	0.0515	0.0530	0.0523
Cadmium	mg/L	*0.00003*	0.000021	0.000017	< 0.00001	< 0.00001	0.000035	0.000016	0.000016	0.000061	0.000068	0.000015	0.000046	0.000022	0.000025	< 0.00002
Chromium	mg/L	*0.0125*	0.0085	0.0150	0.0033	0.0026	0.0370	0.0069	0.0033	0.0101	0.0720	0.0055	0.0026	0.0042	0.0024	0.0019
Copper	mg/L	*0.00264*	0.00300	0.00317	0.00133	0.00162	0.00482	0.00164	0.00129	0.00314	0.00759	0.00217	0.00353	0.00121	0.00138	0.00110
Iron	mg/L	*1.77*	1.10	2.11	0.66	0.61	5.27	0.96	0.53	1.15	8.89	0.76	0.72	0.72	0.66	0.65
Lead	mg/L	*0.00124*	0.00164	0.00139	0.00054	0.00068	0.00357	0.00089	0.00037	0.00172	0.00324	0.00086	0.00104	0.00037	0.00086	< 0.00017
Manganese	mg/L	*0.266*	0.173	0.196	0.040	0.056	0.457	0.162	0.169	0.506	0.482	0.220	0.388	0.229	0.256	0.389
Mercury	mg/L	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0031*	0.0011	0.0010	0.0010	0.0012	0.0042	0.0034	0.0038	0.0050	0.0035	0.0045	0.0040	0.0033	0.0034	0.0046
Nickel	mg/L	*0.0281*	0.0130	0.0180	0.0068	0.0057	0.0248	0.0118	0.0150	0.0742	0.0453	0.0228	0.0463	0.0248	0.0270	0.0577
Selenium	mg/L	*0.00039*	0.00013	0.00012	0.00010	< 0.00010	0.00038	0.00039	0.00060	0.00085	0.00040	0.00057	0.00053	0.00036	0.00036	< 0.0005
Silver	mg/L	*0.00003*	< 0.00002	0.000023	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.000044	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001
Thallium	mg/L	*0.000039*	0.000016	0.000017	< 0.00001	< 0.00001	0.000052	0.000026	0.000018	0.000028	0.000084	0.000023	0.000023	0.000018	0.000014	< 0.0002
Zinc	mg/L	*0.0072*	0.0081	0.0071	< 0.0050	0.006	0.0115	< 0.0050	< 0.0050	0.0083	0.0208	< 0.0050	0.0055	< 0.0050	< 0.0050	0.0040

Table 8-47 Whale Tail 2021 Waste Rock Storage Facility Pond Water Quality Monitoring (ST-WT-3)

ST-WT-3	Unit	*Annual Average*				6/8/2021	6/13/2021	6/20/2021	6/27/2021	7/4/2021	8/1/2021	9/5/2021	10/3/2021
Parameter		*2018*	*2019*	*2020*	*2021*								
Field Measured													
Temperature	°C	-	*8.6*	*8.6*	*5.4*	0.7	4.8	4.6	4.7	7.3	9.8	8.3	3.0
pH	pH units	*6.84*	*7.08*	*7.18*	*7.41*	7.62	7.86	7.40	7.44	7.16	7.64	7.22	6.93
Conductivity	uS/cm	-	*501.8*	*280.8*	*184.8*	81.2	104.2	182.9	178.4	215.2	217.2	231.0	268.0
Turbidity	NTU	*222.45*	*27.53*	*23.89*	*26.19*	53.50	126.00	8.08	5.28	4.40	4.57	3.50	4.20
Conventional Parameters													
Hardness, as $CaCO_3$	mg/L	*64*	*485*	*135*	*74*	40	52	70	66	79	83	101	103
Total alkalinity, as $CaCO_3$	mg/L	*15*	*44*	*42*	*23*	29	29	24	20	22	24	17	21
TDS	mg/L	-	*354*	*185-*	*132*	110	10	130	135	170	175	170	155
TSS	mg/L	*47*	*14*	*16*	*31*	42	180	7	4	4	3	3	2
Major Ions													
Chloride	mg/L	*16.5*	*24.7*	*11.4*	*4.9*	2.0	2.8	5.5	5.2	5.7	5.0	5.8	6.8
Fluoride	mg/L	*0.05*	*0.15*	*0.05*	*0.10*	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	*38.0*	*148.2*	*79.9*	*46.9*	7.5	14.0	58.0	43.0	54.0	56.0	70.0	73.0
Nutrients and Chlorophyll a													
Ammonia (NH_3)	mg/L	-	-	-	*0.17*	0.21	0.19	0.28	0.23	0.29	< 0.061	< 0.061	< 0.061
Ammonia Nitrogen	mg N/L	*0.08*	*0.90*	*0.28*	*0.14*	0.17	0.16	0.23	0.19	0.24	< 0.050	< 0.050	< 0.050
Nitrate	mg N/L	*2.44*	*8.90*	*2.31*	*2.05*	0.50	0.43	2.04	1.74	2.40	2.76	3.26	3.23
Nitrite	mg N/L	*0.01*	*0.45*	*0.03*	*0.01*	< 0.010	< 0.010	0.010	< 0.010	0.016	< 0.010	0.013	< 0.010
Total phosphorus	mg P/L	-	*0.044*	*0.030*	*0.030*	0.037	0.170	0.011	0.006	0.003	0.005	0.004	0.003
Total Metals													
Aluminum	mg/L	*2.792*	*0.676*	*0.627*	*0.792*	1.510	4.000	0.263	0.152	0.147	0.099	0.074	0.094
Arsenic	mg/L	*0.0110*	*0.0079*	*0.0113*	*0.0087*	0.0196	0.0304	0.00452	0.00342	0.00292	0.00443	0.00198	0.00248
Barium	mg/L	*0.0569*	*0.0830*	*0.0563*	*0.0349*	0.0251	0.0518	0.0299	0.0304	0.0347	0.0353	0.0349	0.0369
Cadmium	mg/L	*0.000020*	*0.000042*	*0.000024*	*0.000021*	0.000016	0.000045	0.000022	0.000019	0.000029	0.000011	0.000012	< 0.000010
Chromium	mg/L	*0.0135*	*0.0054*	*0.0100*	*0.0141*	0.0411	0.0591	0.0036	0.0022	0.0024	0.0018	0.0011	0.0017
Copper	mg/L	*0.0082*	*0.0030*	*0.0032*	*0.0029*	0.0032	0.0091	0.0021	0.0020	0.0019	0.0020	0.0017	0.0016
Iron	mg/L	*5.22*	*1.29*	*4.42*	*1.58*	2.84	7.48	0.56	0.40	0.47	0.31	0.27	0.36
Lead	mg/L	*0.0033*	*0.0004*	*0.0005*	*0.0010*	0.00177	0.00452	0.00035	0.00027	0.00022	0.00024	< 0.00020	< 0.00020
Manganese	mg/L	*0.1957*	*0.4912*	*0.3027*	*0.1069*	0.1030	0.3010	0.1470	0.0742	0.1450	0.0384	0.0218	0.0250
Mercury	mg/L	*0.00001*	*0.00002*	*0.00001*	*0.00001*	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0010	< 0.0010
Nickel	mg/L	*0.0243*	*0.0361*	*0.0277*	*0.0166*	0.0208	0.0384	0.0163	0.0141	0.0176	0.0095	0.0080	0.0083
Selenium	mg/L	*0.00050*	*0.00349*	*0.00122*	*0.00048*	0.00025	0.00031	0.00042	0.00025	0.00048	0.00065	0.00086	0.00061
Silver	mg/L	*0.00010*	*0.00016*	*0.00010*	*0.00002*	< 0.000020	0.000032	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Thallium	mg/L	*0.000200*	*0.000320*	*0.000200*	*0.000030*	0.000033	0.000083	0.000022	0.000017	0.000029	0.000024	0.000017	0.000015
Zinc	mg/L	*0.0165*	*0.0049*	*0.0032*	*0.0067*	0.0056	0.0182	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Dissolved Metals													
Aluminum	mg/L	-	*0.0167*	*0.0060*	*0.0388*	0.0093	0.0184	0.2160	0.0105	0.0145	0.0116	0.0182	0.0118
Arsenic	mg/L	-	*0.00411*	*0.00621*	*0.00473*	0.00987	0.01310	0.00404	0.00230	0.00183	0.00322	0.00192	0.00153
Barium	mg/L	-	*0.0699*	*0.0457*	*0.0283*	0.0137	0.0188	0.0313	0.0297	0.0332	0.0340	0.0307	0.0350
Cadmium	mg/L	-	*0.000116*	*0.000024*	*0.000017*	< 0.000010	0.000016	0.000021	0.000015	0.000039	0.000012	0.000011	< 0.000010
Chromium	mg/L	-	*0.0009*	*0.0006*	*0.0012*	< 0.0010	< 0.0010	0.0026	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Copper	mg/L	-	*0.00173*	*0.00126*	*0.00180*	0.00073	0.00195	0.00197	0.00179	0.00188	0.00261	0.00194	0.00152
Iron	mg/L	-	*0.09*	*0.03*	*0.20*	0.02	0.15	0.49	0.12	0.16	0.10	0.43	0.15
Lead	mg/L	-	*0.00035*	*0.00024*	*0.00024*	< 0.00020	0.00024	0.00034	< 0.00020	< 0.00020	< 0.00020	0.00037	< 0.00020
Manganese	mg/L	-	*0.4582*	*0.2381*	*0.0844*	0.0590	0.1830	0.1500	0.0699	0.1380	0.0364	0.0171	0.0221
Mercury	mg/L	-	*0.00002*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	-	*0.0017*	*0.0008*	*0.0010*	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Nickel	mg/L	-	*0.033*	*0.021*	*0.011*	0.0061	0.011	0.0166	0.0131	0.016	0.0091	0.0079	0.0077
Selenium	mg/L	-	*0.00333*	*0.00117*	*0.00045*	0.00025	0.00028	0.00043	0.00025	0.00051	0.00065	0.00061	0.00058
Silver	mg/L	-	*0.00011*	*0.00010*	*0.00002*	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Thallium	mg/L	-	*0.00021*	*0.00020*	*0.00002*	< 0.000010	0.0000150	0.0000240	0.0000160	0.0000290	0.0000230	0.0000160	0.000015
Zinc	mg/L	-	*0.0019*	*0.0014*	*0.0050*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050

Table 8-48 Whale Tail Pit Sump 2021 Water Quality Monitoring (ST-WT-4)

ST-WT-4	Unit	*Annual Average*			1/9/2021	1/19/2021	1/24/2021	1/31/2021	2/10/2021	2/15/2021	2/27/2021	3/10/2021	3/14/2021	3/21/2021	3/28/2021	4/4/2021	4/13/2021	4/20/2021	5/1/2021	5/5/2021	5/9/2021	5/16/2021
Parameter		*2019*	*2020*	*2021*																		
Field Measured																						
Temperature	°C	*6.1*	*4.0*	*1.9*	0.1	0.0	0.1	0.4	0.0	0.3	0.2	0.0	0.0	0.2	0.1	0.7	0.0	0.5	1.0	0.3	0.3	1.0
pH	pH units	*7.49*	*7.81*	*7.48*	7.33	7.78	7.48	7.29	6.94	7.74	7.07	8.19	8.03	8.07	7.11	7.45	7.44	7.35	7.61	7.09	7.11	7.60
Conductivity	uS/cm	*952*	*701*	*417*	393	398	381	349	530	336	331	369	376	302	362	335	332	358	327	313	357	387
Turbidity	NTU	*42.8*	*65.8*	*77.9*	14.0	7.8	1.7	1.2	4.5	9.3	2.5	32.2	520.0	17.3	36.9	12.9	22.8	19.5	218.0	28.6	9.6	749.0
Conventional Parameters																						
Hardness, as $CaCO_3$	mg/L	*323*	*353*	*255*	149	148	131	124	130	127	139	139	246	127	127	126	135	135	179	134	127	175
Total alkalinity, as $CaCO_3$	mg/L	*71*	*118*	*67*	67	65	68	62	65	61	57	59	68	57	60	58	59	68	60	58	68	71
TDS	mg/L	*559-*	*454*	*275*	220	180	220	160	180	190	215	225	255	215	230	290	185	245	245	160	235	285
TSS	mg/L	*90*	*1953*	*1813*	13	6	1	1	3	7	2	17	460	16	8	7	21	13	51	49	8	130
Major Ions																						
Chloride	mg/L	*105*	*112*	*49*	59	66	61	57	65	56	44	43	45	44	45	44	47	46	44	44	44	44
Fluoride	mg/L	*0.15*	*0.20*	*0.21*	0.21	0.28	0.23	0.21	0.24	0.22	0.19	0.20	0.19	0.19	0.22	0.19	0.23	0.21	0.21	0.24	0.19	0.19
Sulfate	mg/L	*123*	*59*	*54*	36	25	24	23	25	24	38	38	34	28	24	26	27	25	23	30	32	33
Nutrients and Chlorophyll a																						
Ammonia (NH_3)	mg/L	-	-	*1.64*	1.80	2.40	3.00	1.60	1.90	0.90	0.45	0.46	3.60	0.92	1.60	1.10	2.20	2.60	0.82	0.78	1.10	3.20
Ammonia Nitrogen	mg N/L	-	*4.79*	*1.38*	1.50	1.90	2.50	1.30	1.60	0.74	0.37	0.38	3.00	0.75	1.30	0.91	1.80	2.20	0.67	0.64	0.87	2.60
Nitrate	mg N/L	*16.33*	*9.76*	*2.76*	0.89	1.47	1.83	0.64	1.12	0.24	0.12	< 0.10	2.88	0.50	1.49	0.78	1.58	2.49	0.30	0.74	1.16	4.09
Nitrite	mg N/L	*0.760*	*0.499*	*0.219*	0.053	0.079	0.087	0.038	0.061	0.026	< 0.010	0.014	0.093	0.024	0.057	0.045	0.098	0.120	0.023	0.027	0.128	0.326
Total phosphorus	mg P/L	*0.06*	*0.06*	*0.93*	0.008	0.0065	0.0024	< 0.0010	0.0023	0.0085	0.0037	0.028	0.32	0.018	0.021	0.005	0.031	0.0098	0.21	0.041	0.0083	0.073
Total Metals																						
Aluminum	mg/L	*1.500*	*4.890*	*8.252*	0.439	0.185	0.027	0.020	0.091	0.221	0.087	0.990	17.000	0.476	0.918	0.465	1.550	0.687	8.830	2.180	0.404	5.400
Arsenic	mg/L	*0.0400*	*0.0533*	*0.1453*	0.0142	0.0155	0.0165	0.0176	0.0190	0.0290	0.0266	0.0446	0.0130	0.0198	0.0397	0.0270	0.0262	0.0256	0.0410	0.0304	0.0310	0.0347
Barium	mg/L	*0.122*	*0.282*	*0.183*	0.087	0.082	0.075	0.074	0.082	0.073	0.086	0.087	0.317	0.087	0.100	0.084	0.099	0.118	0.265	0.119	0.106	0.199
Cadmium	mg/L	*0.000032*	*0.000031*	*0.000067*	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000011	0.000017	0.000034	0.000119	0.000010	< 0.000010	0.000012	0.000012	< 0.000010	0.000029	0.000024	< 0.000010	0.000042
Chromium	mg/L	*0.0369*	*0.1593*	*0.2670*	0.0126	0.0051	< 0.0010	< 0.0010	0.0028	0.0065	0.0025	0.0309	0.6250	0.0153	0.0262	0.0154	0.0464	0.0255	0.3400	0.0819	0.0134	0.2200
Copper	mg/L	*0.00951*	*0.02253*	*0.01390*	0.00461	0.00292	0.00958	0.00581	0.00816	0.00648	0.00113	0.00735	0.04120	0.00525	0.00275	0.00287	0.00802	0.00945	0.01330	0.00668	0.00212	0.01700
Iron	mg/L	*2.71*	*6.43*	*15.09*	0.74	0.32	0.12	0.07	0.21	0.40	0.18	1.82	25.50	0.75	1.77	0.76	2.24	1.09	12.70	3.27	0.65	8.23
Lead	mg/L	*0.00125*	*0.00762*	*0.01095*	0.00142	0.00114	0.00069	0.00064	0.00138	0.00261	0.00055	0.01090	0.05160	0.00215	0.00309	0.00150	0.00304	0.00322	0.01130	0.00974	0.00268	0.02040
Manganese	mg/L	*0.377*	*0.442*	*0.590*	0.169	0.124	0.105	0.109	0.113	0.138	0.224	0.263	0.396	0.183	0.181	0.155	0.176	0.109	0.313	0.185	0.127	0.197
Mercury	mg/L	*0.00004*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0092*	*0.0214*	*0.0093*	0.0099	0.0127	0.0106	0.0095	0.0102	0.0096	0.0085	0.0084	0.0103	0.0087	0.0102	0.0098	0.0098	0.0101	0.0105	0.0098	0.0085	0.0091
Nickel	mg/L	*0.0410*	*0.0735*	*0.1237*	0.0061	0.0050	0.0045	0.0032	0.0055	0.0073	0.0085	0.0233	0.1510	0.0085	0.0116	0.0074	0.0154	0.0140	0.0865	0.0274	0.0083	0.0594
Selenium	mg/L	*0.00427*	*0.00282*	*0.00048*	0.00013	0.00017	0.00016	< 0.00010	0.00014	0.00011	0.00011	0.00016	0.00043	0.00014	0.00020	0.00022	0.00048	0.00062	0.00037	0.00041	0.00030	0.00048
Silver	mg/L	*0.00010*	*0.00024*	*0.00004*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00002	0.00009	< 0.00002	< 0.000020	< 0.000020	< 0.00002	< 0.00002	0.00004	< 0.00002	< 0.00002	0.00003
Thallium	mg/L	*0.000200*	*0.000586*	*0.000258*	0.000023	0.000023	0.000020	0.000017	0.000021	0.000018	0.000018	0.000030	0.000359	0.000027	0.000036	0.000026	0.000043	0.000042	0.000227	0.000078	0.000055	0.000192
Zinc	mg/L	*0.0043*	*0.0199*	*0.0226*	0.0078	< 0.0050	0.0061	0.0058	0.0063	0.0060	< 0.0050	0.0058	0.0450	0.0104	< 0.0050	< 0.0050	0.0065	0.0056	0.0177	0.0084	< 0.0050	0.0208

ST-WT-4	Unit	*Annual Average*			5/26/2021	5/30/2021	6/13/2021	7/17/2021	8/20/2021	8/30/2021	9/5/2021	9/21/2021	10/8/2021	10/17/2021	11/2/2021	11/15/2021	11/29/2021	12/14/2021
Parameter		***2019***	***2020***	***2021***														
Field Measured																		
Temperature	°C	*6.1*	*4.0*	*1.9*	1.7	0.9	4.4	5.3	4.2	7.6	4.5	1.2	5.9	2.6	1.1	0.9	0.5	0.2
pH	pH units	*7.49*	*7.81*	*7.48*	7.43	8.23	7.49	6.95	7.84	8.36	7.74	7.35	6.80	7.13	7.37	7.28	7.21	7.06
Conductivity	uS/cm	*952*	*701*	*417*	320	379	378	429	908	383	954	573	452	388	580	472	482	345
Turbidity	NTU	*42.8*	*65.8*	*77.9*	29.0	43.4	4.0	74.3	13.9	-	6.2	513.0	6.5	2.5	3.3	43.0	13.3	21.3
Conventional Parameters																		
Hardness, as $CaCO_3$	mg/L	*323*	*353*	*255*	129	141	140	197	282	3210	317	277	168	160	154	182	164	112
Total alkalinity, as $CaCO_3$	mg/L	*71*	*118*	*67*	62	64	54	63	97	72	90	79	62	58	85	70	68	60
TDS	mg/L	*559-*	*454*	*275*	260	320	180	345	605	230	640	375	255	235	335	290	318	270
TSS	mg/L	*90*	*1953*	*1813*	22	40	2	200	9	60000	2	350	5	3	2	72	10	13
Major Ions																		
Chloride	mg/L	*105*	*112*	*49*	45	55	37	47	44	41	44	46	48	42	55	56	55	50
Fluoride	mg/L	*0.15*	*0.20*	*0.21*	0.20	0.21	0.16	0.22	0.25	0.21	0.26	0.20	0.21	0.21	0.23	0.24	0.25	0.14
Sulfate	mg/L	*123*	*59*	*54*	26	32	48	58	210	56	240	95	64	63	63	65	51	37
Nutrients and Chlorophyll a																		
Ammonia (NH_3)	mg/L	*-*	*-*	*1.64*	1.00	1.30	0.23	0.63	4.20	0.95	5.00	0.96	0.67	0.30	2.50	1.30	0.01	< 0.01
Ammonia Nitrogen	mg N/L	*-*	*4.79*	*1.38*	0.83	1.10	0.19	0.52	3.50	0.78	4.10	0.79	0.55	0.24	2.10	1.00	0.70	0.23
Nitrate	mg N/L	*16.33*	*9.76*	*2.76*	0.68	2.20	< 0.10	0.96	16.50	1.12	22.30	5.27	1.55	0.25	6.10	2.62	1.00	0.25
Nitrite	mg N/L	*0.760*	*0.499*	*0.219*	0.104	0.218	< 0.010	0.406	1.240	0.082	1.030	0.386	0.279	0.023	0.411	0.320	0.130	0.040
Total phosphorus	mg P/L	*0.06*	*0.06*	*0.93*	0.026	0.033	0.012	0.13	0.024	32	0.016	0.24	0.008	0.0048	0.0048	0.093	0.04	0.03
Total Metals																		
Aluminum	mg/L	*1.500*	*4.890*	*8.252*	0.958	1.470	0.038	4.650	0.191	232.000	0.132	10.600	0.146	0.043	0.065	1.530	0.189	0.184
Arsenic	mg/L	*0.0400*	*0.0533*	*0.1453*	0.0272	0.0270	0.0186	0.0443	0.4430	2.2100	0.2800	0.2070	0.0487	0.0409	0.1500	0.3870	0.3005	0.1154
Barium	mg/L	*0.122*	*0.282*	*0.183*	0.107	0.123	0.098	0.164	0.063	2.730	0.056	0.241	0.101	0.109	0.038	0.069	0.079	0.060
Cadmium	mg/L	*0.000032*	*0.000031*	*0.000067*	0.000012	0.000019	< 0.000010	0.000019	0.000012	0.001710	< 0.000010	0.000039	< 0.000010	< 0.000010	< 0.000010	0.000019	< 0.00002	0.000070
Chromium	mg/L	*0.0369*	*0.1593*	*0.2670*	0.0346	0.0469	0.0012	0.1950	0.0019	7.2200	0.0017	0.4090	0.0056	0.0013	0.0023	0.0398	0.0070	0.0097
Copper	mg/L	*0.00951*	*0.02253*	*0.01390*	0.00460	0.00485	< 0.00050	0.00190	0.00160	0.27500	< 0.00050	0.00990	0.00252	0.00080	0.00101	0.00167	0.02350	< 0.0005
Iron	mg/L	*2.71*	*6.43*	*15.09*	1.58	2.39	1.04	7.25	0.72	435.00	0.61	18.00	0.55	0.55	0.44	4.46	0.69	0.92
Lead	mg/L	*0.00125*	*0.00762*	*0.01095*	0.00731	0.00502	< 0.00020	0.00140	0.00230	0.22900	< 0.00020	0.00451	0.00044	0.00038	0.00042	0.00113	0.00176	0.00018
Manganese	mg/L	*0.377*	*0.442*	*0.590*	0.110	0.139	0.321	0.353	0.273	13.800	0.193	0.561	0.274	0.325	0.088	0.246	0.204	0.184
Mercury	mg/L	*0.00004*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0092*	*0.0214*	*0.0093*	0.0079	0.0086	0.0045	0.0070	0.0118	< 0.010	0.0211	0.0064	0.0066	0.0054	0.0111	0.0086	0.0068	0.0045
Nickel	mg/L	*0.0410*	*0.0735*	*0.1237*	0.0130	0.0183	0.0010	0.0461	0.0730	3.3500	0.0269	0.1370	0.0113	0.0097	0.0398	0.0619	0.0577	0.0339
Selenium	mg/L	*0.00427*	*0.00282*	*0.00048*	0.00026	0.00039	0.00011	0.00056	0.00194	< 0.0010	0.00230	0.00111	0.00035	< 0.00010	0.00039	0.00037	< 0.0005	< 0.0005
Silver	mg/L	*0.00010*	*0.00024*	*0.00004*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00033	< 0.00002	0.00004	< 0.00002	< 0.00002	< 0.00002	0.00002	< 0.0001	< 0.0001
Thallium	mg/L	*0.000200*	*0.000586*	*0.000258*	0.000066	0.000077	< 0.000010	0.000135	0.000015	0.006860	< 0.000010	0.000232	0.000018	0.000010	< 0.000010	0.000042	< 0.0002	< 0.0002
Zinc	mg/L	*0.0043*	*0.0199*	*0.0226*	< 0.0050	0.0058	< 0.0050	0.0081	< 0.0050	0.5280	< 0.0050	0.0270	< 0.0050	< 0.0050	< 0.0050	0.0070	< 0.001	< 0.001

Table 8-49 IVR Pit Sump 2021 Water Quality Monitoring (ST-WT-18)

ST-WT-18 Parameter	Unit	*Annual Average*		7/5/2021	8/20/2021	8/30/2021	9/5/2021	10/18/2021
		2020	*2021*					
Field Measured								
Temperature	°C	*2.8*	*4.3*	4.7	2.1	4.4	9.1	1.1
pH	pH units	*7.39*	*7.77*	8.10	7.75	7.66	7.61	7.71
Conductivity	uS/cm	*1009*	*1971.8*	996	1460	1350	1503	4550
Turbidity	NTU	*36*	*450*	-	350	-	800	201
Conventional Parameters								
Hardness, as $CaCO_3$	mg/L	*610*	*1400*	1090	929	2020	1080	1880
Total alkalinity, as $CaCO_3$	mg/L	*78*	*105*	110	110	98	110	99
TDS	mg/L	*723*	*1173*	725	1030	810	1080	2220
TSS	mg/L	*28*	*7872*	8400	4000	21000	5700	260
Major Ions								
Chloride	mg/L	*297*	*378*	130	200	190	170	1200
Fluoride	mg/L	*0.12*	*0.18*	0.20	0.19	0.17	0.21	0.12
Sulfate	mg/L	*35*	*198*	130	230	210	310	110
Nutrients and Chlorophyll a								
Ammonia (NH_3)	mg/L	*-*	*10.7*	14.0	9.1	11.0	10.0	9.2
Ammonia Nitrogen	mg N/L	*1.4*	*9.0*	12.0	7.5	9.4	8.5	7.5
Nitrate	mg N/L	*2.1*	*15.4*	20.4	14.1	12.8	16.0	13.9
Nitrite	mg N/L	*0.19*	*1.51*	1.76	1.89	1.31	1.79	0.79
Total phosphorus	mg P/L	*0.02*	*3.84*	1.30	2.60	13.00	2.20	0.09
Total Metals								
Aluminum	mg/L	*0.6*	*48.2*	73.0	22.9	122.0	19.5	3.8
Arsenic	mg/L	*0.00*	*3.42*	2.47	3.08	4.74	5.18	1.61
Barium	mg/L	*0.304*	*0.736*	0.645	0.443	1.490	0.356	0.744
Cadmium	mg/L	*0.00002*	*0.00036*	0.00029	0.00022	0.00086	0.00026	0.00015
Chromium	mg/L	*0.009*	*1.903*	4.170	0.826	3.570	0.759	0.190
Copper	mg/L	*0.0044*	*0.0610*	0.1020	0.0120	0.1240	0.0623	0.0046
Iron	mg/L	*1.1*	*81.0*	112.0	43.0	201.0	42.9	6.0
Lead	mg/L	*0.0002*	*0.0402*	0.0679	0.0254	0.0843	0.0222	0.0013
Manganese	mg/L	*2.36*	*3.16*	1.99	2.19	6.49	2.96	2.16
Mercury	mg/L	*0.000010*	*0.000064*	< 0.00001	< 0.00010	< 0.00010	< 0.00010	< 0.00001
Molybdenum	mg/L	*0.0019*	*0.0082*	< 0.0050	< 0.0050	< 0.010	< 0.010	0.0112
Nickel	mg/L	*0.032*	*1.031*	1.280	0.711	1.960	0.801	0.401
Selenium	mg/L	*0.00075*	*0.00289*	0.00356	0.00256	0.00160	0.00330	0.00344
Silver	mg/L	*0.00010*	*0.00127*	0.00352	0.00048	0.00196	0.00031	< 0.00010
Thallium	mg/L	*0.000200*	*0.001706*	0.002320	0.001200	0.004030	0.000800	0.000182
Zinc	mg/L	*0.006*	*0.110*	0.112	0.057	0.273	0.081	< 0.025

8.5.3.2.7 Whale Tail South Channel / Lake A45 (ST-WT-13)

In 2021, water from the Whale Tail South Channel (former Lake A45) (ST-WT-13) was sampled on a monthly bases during open water as per the requirements in the NWB Water License (sampling station ST-WT-13 on Figure 4). Weekly samples were collected in the month of June. Monthly samples were collected in July, August, September, and October. Applicable licence limits for this station include effluent water quality limits for TSS of 15 mg/L for the maximum authorized monthly mean and 30 mg/L for the maximum authorized concentration in a grab sample. Results are presented in Table 8-50. Flow monitoring for the Whale Tail Channel is conducted monthly, flows are presented in Table 8-51.

Table 8-50 Whale Tail 2021 Whale Tail South Channel Water Quality Monitoring (ST-WT-13)

ST-WT-13 Parameter	MAX GRAB	MONTHLY MEAN	Unit	*Annual Average*			6/12/2021	6/14/2021	6/20/2021	7/4/2021	8/1/2021	9/5/2021	10/4/2021
				*2019 **	*2020*	*2021*							
Field Measured													
Temperature			°C	*6.1*	*5.8*	*5.5*	1.6	2.7	3.1	5.8	10.8	10.5	4.0
pH			pH units	*7.40*	*7.52*	*7.75*	7.78	7.25	7.62	7.63	7.95	7.84	8.16
Conductivity			uS/cm	*22.7*	*52.3*	*44.0*	35.5	37.1	39.3	42.0	45.8	52.2	55.9
Turbidity			NTU	*0.98*	*1.59*	*2.25*	5.98	4.75	1.63	0.90	0.64	1.09	0.78
Conventional Parameters													
TSS	30	15	mg/L	*2*	*3*	*2*	6	3	1	2	2	1	2
Major Ions													
Sulfate			mg/L	*1.3*	*3.5*	*2.3*	< 1.0	1.1	2.1	2.3	2.4	3.6	3.8
Nutrients and Chlorophyll a													
Ammonia Nitrogen			mg N/L	-	-	*0.066*	0.053	0.086	< 0.050	0.120	< 0.050	< 0.050	< 0.050
Un-Ionized Ammonia, calculated**			mg/L	-	-	*0.00079*	< 0.00061	< 0.00061	< 0.00061	0.00082	< 0.0011	< 0.00080	< 0.0010
Total Metals													
Aluminum			mg/L	*0.0098*	*0.0472*	*0.0589*	0.1890	0.1410	0.0340	0.0190	0.0070	0.0125	0.0095
Arsenic			mg/L	*0.00050*	*0.00336*	*0.00148*	0.00255	0.00233	0.00116	0.00125	0.00041	0.00132	0.00137
Copper			mg/L	*0.00050*	*0.00106*	*0.00055*	0.00061	0.00055	< 0.00050	< 0.00050	< 0.00050	0.0006	0.00057
Lead			mg/L	*0.00030*	*0.00020*	*0.00020*	0.00021	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Nickel			mg/L	*0.0005*	*0.0010*	*0.0018*	0.0034	0.0033	0.0017	0.0010	< 0.0010	< 0.0010	< 0.0010
Zinc			mg/L	*0.0013*	*0.0010*	*0.0050*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050

* Prior to Whale Tail South Channel construction
**Un-ionized ammonia added as part of MDMER required parameters on June 1st, 2021

Table 8-51 Whale Tail South Channel Flow 2021

Month-Year	Total Monthly Flow (m^3)
Jan-21	-
Feb-21	-
Mar-21	-
Apr-21	-
May-21	-
Jun-21	528,975
Jul-21	312,790
Aug-21	349,377
Sep-21	239,967
Oct-21	211,140
Nov-21	40,474
Dec-21	-
Total	**1,682,723**

8.5.3.2.8 Lake A16 Outlet (ST-WT-14)

In 2021, water from the Lake A16 outlet (ST-WT-14) was sampled in July, August and September during open water as per the monthly requirements in the NWB Water License (sampling station ST-WT-14 on Figure 4). There are no applicable license limits. Results are presented in Table 8-52.

8.5.3.2.9 Lake A15 (ST-WT-15)

In In 2021, water from the Lake A15 (ST-WT-15) was sampled in July, August and September during open water as per the monthly requirements in the NWB Water License (sampling station ST-WT-15 on Figure 4). There are no applicable license limits. Results are presented in Table 8-53.

Table 8-52 Whale Tail 2021 Lake A16 Outlet Water Quality Monitoring (ST-WT-14)

ST-WT-14	Unit	*Annual Average*				7/9/2021	8/8/2021	9/12/2021
Parameter		***2018***	***2019***	***2020***	***2021***			
Field Measured								
Temperature	°C	*13.7*	*7.3*	*8.8*	*10.8*	10.2	10.3	12.0
pH	pH units	*6.68*	*6.87*	*7.28*	*7.66*	7.62	7.79	7.56
Conductivity	uS/cm	*57.3*	*75.0*	*203.0*	*107.1*	112.4	105.3	103.7
Turbidity	NTU	*0.29*	*0.50*	*0.64*	*0.75*	1.29	0.60	0.35
Conventional Parameters								
Hardness, as $CaCO_3$	mg/L	*19.0*	*22.3*	*86.5*	*39.6*	40.7	37.0	41.1
Total alkalinity, as $CaCO_3$	mg/L	*7*	*10*	*49*	*11*	11	11	11
Carbonate, as $CaCO_3$	mg/L	*2*	*2*	*4*	*1*	< 1	< 1	< 1
Bicarbonate, as $CaCO_3$	mg/L	*7*	*10*	*49*	*11*	11	11	11
TDS	mg/L	*38*	*50*	*142*	*70*	95	50	65
TSS	mg/L	*1*	*1*	*2*	*2*	1	2	< 1
Total organic carbon	mg/L	*1.2*	*1.6*	*2.9*	*1.9*	2.3	1.9	1.5
Dissolved organic carbon	mg/L	*1.1*	*1.8*	*3.3*	*1.7*	2	1.7	1.4
Major Ions								
Chloride	mg/L	*11*	*12*	*37*	*16*	18	15	14
Silica	mg/L	*0.6*	*0.8*	*15.9*	*0.9*	0.9	0.6	1.1
Sulfate	mg/L	*4*	*5*	*19*	*12*	11	11	14
Nutrients and Chlorophyll a								
Ammonia (NH_3)	mg/L	-	-	-	*0.061*	< 0.061	< 0.061	< 0.061
Ammonia Nitrogen	mg N/L	*0.01*	*0.03*	*0.03*	*0.05*	< 0.05	< 0.05	< 0.05
Nitrate	mg N/L	*0.01*	*0.01*	*0.56*	*0.35*	0.37	0.28	0.39
Nitrite	mg N/L	*0.01*	*0.01*	*0.01*	*0.01*	< 0.01	< 0.01	< 0.01
Total Kjeldahl nitrogen	mg N/L	*0.11*	*0.26*	*0.27*	*0.12*	0.15	< 0.10	0.10
Total phosphorus	mg P/L	*0.010*	*0.010*	*0.019*	*0.002*	0.0029	< 0.0010	0.0015
Orthophosphate (P)	mg/L	*0.01*	*0.01*	*0.02*	*0.01*	< 0.01	< 0.01	< 0.01
Total Metals								
Aluminum	mg/L	*0.0050*	*0.0077*	*0.0060*	*0.0109*	0.0219	0.0038	0.0070
Antimony	mg/L	*0.0001*	*0.0001*	*0.0001*	*0.0005*	< 0.0005	< 0.0005	< 0.0005
Arsenic	mg/L	*0.00050*	*0.00050*	*0.00063*	*0.00059*	0.00086	0.00067	0.00025
Barium	mg/L	*0.0093*	*0.0076*	*0.0473*	*0.0171*	0.0175	0.0145	0.0194
Beryllium	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0001*	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	*0.01*	*0.01*	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05
Cadmium	mg/L	*0.000020*	*0.000020*	*0.000033*	*0.000010*	< 0.000010	< 0.000010	0.000011
Chromium	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	< 0.001	< 0.001	< 0.001
Copper	mg/L	*0.00050*	*0.00067*	*0.00130*	*0.00061*	0.00066	< 0.00050	0.00068
Iron	mg/L	*0.010*	*0.023*	*0.025*	*0.028*	0.061	0.014	< 0.010
Lead	mg/L	*0.0003*	*0.0003*	*0.0003*	*0.0002*	< 0.0002	< 0.0002	< 0.0002
Lithium	mg/L	*0.005*	*0.005*	*0.006*	*0.002*	< 0.002	< 0.002	< 0.002
Manganese	mg/L	*0.0007*	*0.0012*	*0.0084*	*0.0035*	0.0082	0.0012	< 0.001
Mercury	mg/L	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0010*	< 0.0010	< 0.0010	< 0.0010
Nickel	mg/L	*0.0012*	*0.0011*	*0.0029*	*0.0014*	0.0012	< 0.0010	0.0021
Selenium	mg/L	*0.0005*	*0.0005*	*0.0010*	*0.0001*	< 0.0001	< 0.0001	< 0.0001
Silver	mg/L	-	*0.0001*	*0.0001*	*0.00002*	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	*0.05*	-	-	*0.0732*	0.0806	0.0724	0.0666
Thallium	mg/L	*0.00020*	*0.00020*	*0.00020*	*0.00001*	0.000012	< 0.000010	< 0.000010
Tin	mg/L	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005
Titanium	mg/L	*0.01*	*0.01*	*0.01*	*0.01*	< 0.005	< 0.005	< 0.005
Uranium	mg/L	*0.001*	*0.001*	*0.001*	*0.0001*	< 0.0001	< 0.0001	< 0.0001
Vanadium	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0050*	< 0.005	< 0.005	< 0.005
Zinc	mg/L	*0.001*	*0.012*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005
Dissolved Metals								
Aluminum	mg/L	*0.0050*	*0.0005*	*0.0060*	*0.0047*	0.0060	0.0032	0.0048
Antimony	mg/L	*0.0001*	*0.0001*	*0.0001*	*0.0005*	< 0.0005	< 0.0005	< 0.0005
Arsenic	mg/L	*0.00050*	*0.00050*	*0.00050*	*0.00099*	0.00089	0.00055	0.00152
Barium	mg/L	*0.0093*	*0.0071*	*0.0421*	*0.0173*	0.0175	0.0147	0.0196
Beryllium	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0001*	< 0.00010	< 0.00010	< 0.00010
Boron	mg/L	*0.01*	*0.01*	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05
Cadmium	mg/L	*0.00002*	-	-	*0.000011*	< 0.000010	< 0.000010	0.000012
Chromium	mg/L	*0.0000*	*0.0006*	*0.0006*	*0.0010*	< 0.001	< 0.001	< 0.001
Copper	mg/L	*0.00060*	*0.00057*	*0.00065*	*0.00057*	0.00048	0.00037	0.00086
Iron	mg/L	*0.002*	*0.010*	*0.010*	*0.009*	0.017	0.006	< 0.005
Lead	mg/L	*0.0100*	*0.0011*	*0.0003*	*0.0002*	< 0.0002	< 0.0002	< 0.0002
Lithium	mg/L	*0.005*	*0.005*	*0.005*	*0.002*	0.002	< 0.002	< 0.002
Manganese	mg/L	*0.0005*	*0.0005*	*0.0047*	*0.0019*	0.0028	< 0.0010	0.0018
Mercury	mg/L	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0010*	< 0.001	< 0.001	< 0.001
Nickel	mg/L	*0.0005*	*0.0008*	*0.0025*	*0.0015*	< 0.0010	< 0.0010	0.0025
Selenium	mg/L	*0.001*	*0.001*	*0.001*	*0.0001*	< 0.0001	< 0.0001	< 0.0001
Silver	mg/L	-	*0.0001*	*0.0001*	*0.00002*	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	*0.005*	-	-	*0.0732*	0.0821	0.071	0.0664
Thallium	mg/L	*0.0002*	*0.0002*	*0.0002*	*0.00001*	< 0.00001	< 0.00001	< 0.00001
Tin	mg/L	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005
Titanium	mg/L	*0.010*	*0.010*	*0.010*	*0.005*	< 0.005	< 0.005	< 0.005
Uranium	mg/L	*0.001*	*0.001*	*0.001*	*0.0001*	< 0.0001	< 0.0001	< 0.0001
Vanadium	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0050*	< 0.005	< 0.005	< 0.005
Zinc	mg/L	*0.001*	*0.002*	*0.002*	*0.005*	< 0.005	< 0.005	< 0.005

Table 8-53 Whale Tail 2021 Lake A15 Outlet Water Quality Monitoring (ST-WT-15)

ST-WT-15	Unit	*Annual Average*				7/9/2021	8/8/2021	9/12/2021
Parameter		***2018***	***2019***	***2020***	***2021***			
Field Measured								
Temperature	°C	*10.0*	*7.8*	*9.1*	*11.2*	10.2	10.2	13.1
pH	pH units	*6.75*	*6.88*	*7.44*	*7.56*	7.52	7.73	7.43
Conductivity	uS/cm	*57.9*	*73.0*	*145.9*	*110.0*	108.8	117.2	103.9
Turbidity	NTU	-	*0.76*	*0.48*	*0.71*	0.61	0.76	0.75
Conventional Parameters								
Hardness, as $CaCO_3$	mg/L	*20*	*22*	*58*	*39*	41	37	39
Total alkalinity, as $CaCO_3$	mg/L	*7*	*10*	*43*	*11*	11	11	12
Carbonate, as $CaCO_3$	mg/L	*2*	*2*	*4*	*1*	< 1	< 1	< 1
Bicarbonate, as $CaCO_3$	mg/L	*7*	*10*	*43*	*11*	11	11	12
TDS	mg/L	*39*	*48*	*100*	*58*	90	< 10	75
TSS	mg/L	*1*	*1*	*2*	*1*	< 1	1	1
Total organic carbon	mg/L	*1.5*	*1.6*	*2.4*	*2.0*	1.8	1.8	2.5
Dissolved organic carbon	mg/L	*1.5*	*1.6*	*2.4*	*2.0*	1.8	1.7	2.4
Major Ions								
Chloride	mg/L	*10.9*	*10.7*	*22.9*	*15.7*	18	15	14
Silica	mg/L	*0.59*	*0.85*	*1.71*	*0.70*	0.97	0.65	0.49
Sulfate	mg/L	*3*	*5*	*14*	*12*	11	11	13
Nutrients and Chlorophyll a								
Ammonia (NH_3)	mg/L	-	-	-	*0.061*	< 0.061	< 0.061	< 0.061
Ammonia Nitrogen	mg N/L	*0.02*	*0.01*	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05
Nitrate	mg N/L	*0.04*	*0.02*	*0.59*	*0.33*	0.38	0.27	0.34
Nitrite	mg N/L	*0.01*	*0.01*	*0.01*	*0.01*	< 0.01	< 0.01	< 0.01
Total Kjeldahl nitrogen	mg N/L	*0.07*	*0.28*	*0.25*	*0.13*	0.15	0.13	0.11
Total phosphorus	mg P/L	*0.0100*	*0.0100*	*0.0175*	*0.0021*	0.0016	0.0028	0.0020
Orthophosphate (P)	mg/L	*0.01*	*0.01*	*0.02*	*0.01*	< 0.01	< 0.01	< 0.01
Total Metals								
Aluminum	mg/L	*0.0050*	*0.0050*	*0.0060*	*0.0078*	0.0099	0.0079	0.0057
Antimony	mg/L	*0.00010*	*0.00010*	*0.00010*	*0.00063*	< 0.00050	< 0.00050	0.00088
Arsenic	mg/L	*0.00050*	*0.00050*	*0.00050*	*0.00076*	0.00068	0.00055	0.00104
Barium	mg/L	*0.0081*	*0.0071*	*0.0261*	*0.0160*	0.0174	0.0147	0.0159
Beryllium	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0001*	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	*0.01*	*0.01*	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05
Cadmium	mg/L	*0.00002*	*0.00002*	*0.00002*	*0.00001*	< 0.00001	< 0.00001	< 0.00001
Chromium	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	< 0.001	< 0.001	< 0.001
Copper	mg/L	*0.00050*	*0.00057*	*0.00068*	*0.00052*	0.00051	0.00054	0.00052
Iron	mg/L	*0.01*	*0.02*	*0.02*	*0.02*	0.027	0.019	0.018
Lead	mg/L	*0.0003*	*0.0003*	*0.0003*	*0.0002*	< 0.0002	< 0.0002	< 0.0002
Lithium	mg/L	*0.005*	*0.005*	*0.005*	*0.002*	< 0.002	< 0.002	< 0.002
Manganese	mg/L	*0.0005*	*0.0010*	*0.0018*	*0.0016*	0.0011	0.0011	0.0026
Mercury	mg/L	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0010*	< 0.0010	< 0.0010	< 0.0010
Nickel	mg/L	*0.0009*	*0.0010*	*0.0016*	*0.0011*	< 0.0010	< 0.0010	0.0012
Selenium	mg/L	*0.001*	*0.001*	*0.001*	*0.0001*	< 0.0001	< 0.0001	< 0.0001
Silver	mg/L	-	*0.0001*	*0.0001*	*0.00002*	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	*0.049*	-	-	*0.0755*	0.0808	0.0694	0.0762
Thallium	mg/L	*0.0002*	*0.0002*	*0.0002*	*0.00001*	0.00001	< 0.00001	< 0.00001
Tin	mg/L	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005
Titanium	mg/L	*0.01*	*0.01*	*0.01*	*0.01*	< 0.005	< 0.005	< 0.005
Uranium	mg/L	*0.001*	*0.001*	*0.001*	*0.0001*	< 0.00010	< 0.00010	< 0.00010
Vanadium	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0050*	< 0.005	< 0.005	< 0.005
Zinc	mg/L	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005
Dissolved Metals								
Aluminum	mg/L	*0.0050*	*0.0005*	*0.0060*	*0.0037*	0.0044	0.0036	< 0.0030
Antimony	mg/L	*0.0001*	*0.0001*	*0.0001*	*0.0006*	< 0.0005	< 0.0005	0.0009
Arsenic	mg/L	*0.00050*	*0.00050*	*0.00063*	*0.00074*	0.00070	0.00052	0.00100
Barium	mg/L	*0.0083*	*0.0059*	*0.0246*	*0.0161*	0.0172	0.0143	0.0168
Beryllium	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0001*	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	*0.01*	*0.01*	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05
Cadmium	mg/L	*0.00002*	-	-	*0.00001*	< 0.00001	< 0.00001	< 0.00001
Chromium	mg/L	*0.0000*	*0.0006*	*0.0006*	*0.0010*	< 0.001	< 0.001	< 0.001
Copper	mg/L	*0.00070*	*0.00063*	*0.00050*	*0.00047*	0.00045	0.00039	0.00056
Iron	mg/L	*0.0007*	*0.0100*	*0.0100*	*0.0083*	0.0129	0.0062	0.0057
Lead	mg/L	*0.0100*	*0.0003*	*0.0003*	*0.0002*	< 0.0002	< 0.0002	< 0.0002
Lithium	mg/L	*0.005*	*0.005*	*0.005*	*0.002*	< 0.002	< 0.002	< 0.002
Manganese	mg/L	*0.0005*	*0.0005*	*0.0013*	*0.0012*	0.0014	< 0.0010	0.0011
Mercury	mg/L	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0010*	< 0.0010	< 0.0010	< 0.0010
Nickel	mg/L	*0.0010*	*0.0010*	*0.0016*	*0.0011*	< 0.0010	< 0.0010	0.0012
Selenium	mg/L	*0.001*	*0.001*	*0.001*	*0.0001*	< 0.0001	< 0.0001	< 0.0001
Silver	mg/L	-	*0.0001*	*0.00010*	*0.00002*	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	*0.047*	-	-	*0.0757*	0.0786	0.0707	0.0777
Thallium	mg/L	*0.00020*	*0.00020*	*0.00020*	*0.00001*	< 0.00001	< 0.00001	< 0.00001
Tin	mg/L	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005
Titanium	mg/L	*0.010*	*0.010*	*0.010*	*0.005*	< 0.005	< 0.005	< 0.005
Uranium	mg/L	*0.001*	*0.001*	*0.001*	*0.0001*	< 0.0001	< 0.0001	< 0.0001
Vanadium	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0050*	< 0.005	< 0.005	< 0.005
Zinc	mg/L	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005

8.5.3.2.10 Whale Tail Dike Seepage (ST-WT-17)

As discussed in Section 8.5.8.2.2 below, during dewatering operations of the Whale Tail North Basin, a small inflow of water was observed out of the downstream toe of Whale Tail Dike (WTD) in a low spot. Once the dewatering of the Whale Tail North Basin was complete in 2020, the seepage water was directed to the Whale Tail Attenuation Pond and managed as part of this infrastructure. The same water management strategy was used in 2021.

Water quality sampling was conducted at a minimum on a monthly basis as per the seepage requirements of the NWB water license in 2021. Sample results are presented in Table 8-54. See Figure 4 for the location of ST-WT-17. Refer to Section 8.5.8.2.2 for details on the Whale Tail Dike seepage regarding consequence and mitigation measure in place.

8.5.3.2.11 Whale Tail South Transfer (ST-WT-26)

Water transfer from Whale Tail South to Mammoth lake was not done in 2021 as the Whale Tail South Channel construction was operational. The channel facilitates the passive flow of water from Whale Tail South to Mammoth Lake.

8.5.3.2.12 Water Ponding Around Whale Tail WRSF (ST-WT-30, ST-WT-31, WT-WT-32, ST-WT-33)

There are four monitoring stations for water ponding around the Whale Tail WRSF. These locations are outlined in Figure 4. Water quality monitoring was conducted minimally on a monthly basis as per the during open water season. There are no applicable licence limits for these monitoring stations. Sample results are presenting in Table 8-55 for ST-WT-30, Table 8-56 for ST-WT-31, Table 8-57 for ST-WT-32, and Table 8-58 for ST-WT-33.

8.5.3.2.13 Water Ponding Around IVR WRSF (ST-WT-34, ST-WT-35, ST-WT-36)

There are three monitoring stations for water ponding around the IVR WRSF. These locations are outlined in Figure 4. Water quality monitoring was conducted minimally on a monthly basis as per the during open water season. There are no applicable licence limits for these monitoring stations. Sample results are presenting in Table 8-59 for ST-WT-34, Table 8-60 for ST-WT-35, and Table 8-61 for ST-WT-36.

8.5.3.2.14 IVR Diversion Channel (ST-WT-37)

The IVR Diversion Channel was constructed in Q3 2020 and was commissioned during Freshet in 2021. The purpose of the channel is to direct non-contact water from the North-East watershed to Nemo Lake. Applicable licence limits for this station include effluent water quality limits for TSS of 15 mg/L for the maximum authorized monthly mean and 30 mg/L for the maximum authorized concentration in a grab sample. Results from samples collected in 2021 are provided in Table 8-62.

Table 8-54 Whale Tail Dike Seepage 2021 Water Quality Monitoring (ST-WT-17)

ST-WT-17	Unit	*Annual Average*			1/3/2021	2/2/2021	3/10/2021	4/5/2021	5/9/2021	6/7/2021	6/13/2021	6/20/2021	6/27/2021	7/4/2021	7/18/2021	7/25/2021	8/1/2021	8/15/2021
Parameter		*2019*	*2020*	*2021*														
Field Measured																		
Temperature	°C	*6.6*	*3.5*	*3.1*	0.1	0.1	0.0	0.4	0.0	1.0	4.8	3.4	3.8	4.4	5.3	5.9	6.4	7.2
pH	pH units	*8.10*	*9.65*	*9.24*	9.37	9.44	9.41	8.80	8.98	8.68	8.87	8.90	9.07	9.26	9.28	9.62	9.69	9.42
Conductivity	uS/cm	*126.7*	*171.2*	*145.9*	222.0	135.2	160.0	158.8	158.2	152.2	150.2	149.7	148.1	143.5	145.3	153.4	144.2	148.2
Turbidity	NTU	*21.7*	*5.5*	*7.2*	2.3	8.0	41.6	9.2	12.4	59.7	17.9	2.4	1.2	2.2	0.9	1.3	1.5	1.1
Conventional Parameters																		
Hardness, as $CaCO_3$	mg/L	*44*	*64*	*57*	57	59	63	60	61	64	60	58	55	56	52	60	52	55
Total alkalinity, as $CaCO_3$	mg/L	*30*	*56*	*37*	35	37	35	37	36	38	40	37	36	35	35	36	36	34
TDS	mg/L	*87*	*87*	*93*	80	85	130	150	80	70	55	95	130	95	105	115	130	90
TSS	mg/L	*17*	*5*	*14*	2	**44**	**59**	8	**78**	**54**	13	1	1	2	1	1	< 1	2
Major Ions																		
Chloride	mg/L	*18*	*16*	*14*	15	18	19	19	19	15	16	16	16	15	14	14	13	12
Fluoride	mg/L	*0.10*	*0.11*	*0.11*	0.13	0.11	< 0.10	< 0.10	0.13	< 0.10	0.10	0.11	0.14	0.11	0.11	0.12	< 0.10	< 0.10
Sulfate	mg/L	*7.3*	*9.8*	*11.7*	9	9	10	10	11	11	12	13	11	12	12	16	12	14
Nutrients and Chlorophyll a																		
Ammonia (NH_3)	mg/L	*-*	*-*	*0.059*	< 0.061	< 0.061	< 0.061	< 0.061	< 0.061	< 0.061	< 0.061	< 0.061	< 0.061	< 0.061	< 0.061	< 0.061	< 0.061	< 0.061
Ammonia Nitrogen	mg N/L	*0.03*	*0.021*	*0.051*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Nitrate	mg N/L	*0.12*	*0.21*	*0.34*	0.33	0.37	0.34	0.34	0.34	0.42	0.56	0.41	0.42	0.38	0.34	0.59	0.43	0.42
Nitrite	mg N/L	*0.02*	*0.02*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total phosphorus	mg P/L	*0.023*	*0.021*	*0.013*	0.003	0.034	0.042	0.005	0.040	0.038	0.015	0.005	0.001	0.001	0.004	< 0.0010	0.006	0.002
Total Metals																		
Aluminum	mg/L	*0.310*	*0.110*	*0.163*	0.025	0.381	0.703	0.141	0.521	1.330	0.417	0.041	0.029	0.046	0.018	0.029	0.025	0.028
Arsenic	mg/L	*0.0113*	*0.0112*	*0.0076*	0.0053	0.0053	0.0047	0.0042	0.0052	0.0175	0.0119	0.0068	0.0053	0.0055	0.0059	0.0067	0.0067	0.0074
Barium	mg/L	*0.0262*	*0.0315*	*0.0261*	0.0268	0.0300	0.0358	0.0323	0.0360	0.0447	0.0325	0.0266	0.0255	0.0236	0.0205	0.0228	0.0218	0.0226
Cadmium	mg/L	*0.000048*	*0.000022*	*0.000013*	< 0.000010	< 0.000010	0.000018	< 0.000010	< 0.000010	0.000015	0.000011	0.000012	< 0.000010	0.000011	< 0.000010	0.000010	< 0.000010	< 0.000010
Chromium	mg/L	*0.003*	*0.002*	*0.003*	< 0.0010	0.0025	0.0025	0.0013	0.0028	0.0283	0.0102	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Copper	mg/L	*0.009*	*0.002*	*0.002*	0.00128	0.00167	0.00238	0.00137	0.00185	0.00289	0.00168	0.00112	0.00107	0.00114	0.00108	0.00124	0.0012	0.0012
Iron	mg/L	*0.77*	*0.23*	*0.33*	0.09	0.804	1.66	0.371	1.13	2.6	0.768	0.094	0.076	0.092	0.044	0.066	0.059	0.061
Lead	mg/L	*0.0004*	*0.0003*	*0.0003*	0.00022	0.00056	0.00105	0.00031	0.00068	0.00146	0.00065	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Manganese	mg/L	*0.078*	*0.044*	*0.091*	0.02	0.0375	0.176	0.168	0.132	0.17	0.11	0.0987	0.0847	0.0807	0.0779	0.0795	0.0599	0.0538
Mercury	mg/L	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0025*	*0.0019*	*0.0020*	0.0013	0.0013	0.0017	0.0017	0.0018	0.0016	0.0018	0.0019	0.0016	0.0016	0.0018	0.0024	0.0021	0.0024
Nickel	mg/L	*0.0030*	*0.0019*	*0.0019*	< 0.0010	0.0019	0.0027	0.0013	0.0025	0.0118	0.0052	0.0013	0.0011	0.0012	< 0.0010	0.0011	< 0.0010	< 0.0010
Selenium	mg/L	*0.00099*	*0.00089*	*0.00025*	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	0.0001	< 0.00010	< 0.00010	0.00011	0.00011	0.00017	0.00011	0.00012
Silver	mg/L	*0.00049*	*0.00010*	*0.00003*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Thallium	mg/L	*-*	*0.00020*	*0.00003*	< 0.00001	0.000011	0.000016	< 0.00001	0.000015	0.000030	0.000017	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Zinc	mg/L	*0.002*	*0.004*	*0.005*	< 0.0050	< 0.0050	0.0063	< 0.0050	0.0055	0.0065	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050

ST-WT-17	Unit	*Annual Average*			8/29/2021	9/5/2021	9/13/2021	9/19/2021	9/26/2021	10/4/2021	10/11/2021	10/18/2021	10/24/2021	10/31/2021	11/15/2021	11/30/2021	12/5/2021	12/27/2021
Parameter		*2019*	*2020*	*2021*														
Field Measured																		
Temperature	°C	*6.6*	*3.5*	*3.1*	6.8	7.2	5.9	4.1	4.4	4.2	3.6	2.2	2.4	0.9	0.8	0.7	0.3	0.3
pH	pH units	*8.10*	*9.65*	*9.24*	9.63	9.62	9.11	8.77	9.44	9.08	9.64	9.31	9.13	9.12	9.70	9.66	9.25	8.53
Conductivity	uS/cm	*126.7*	*3920.5*	*145.9*	134.3	141.3	136.2	136.3	128.0	131.4	136.3	137.8	133.5	131.4	131.6	139.4	140.5	159.4
Turbidity	NTU	*21.7*	*5.5*	*7.2*	1.4	1.3	9.7	4.1	3.0	2.3	2.0	2.2	1.5	1.3	1.9	2.7	5.0	1.9
Conventional Parameters																		
Hardness, as $CaCO_3$	mg/L	*44*	*64*	*57*	51	56	52	54	52	51	54	53	53	57	55	54	64	67
Total alkalinity, as $CaCO_3$	mg/L	*30*	*56*	*37*	35	35	37	38	38	40	40	37	37	37	39	36	40	39
TDS	mg/L	*87*	*87*	*93*	95	90	70	80	85	80	70	95	65	80	95	104	95	100
TSS	mg/L	*17*	*5*	*14*	< 1	< 1	3	< 1	< 1	< 1	2	2	< 1	< 1	1	3	7	2
Major Ions																		
Chloride	mg/L	*18*	*16*	*14*	12	12	13	13	12	12	12	12	12	12	12	12	12	14
Fluoride	mg/L	*0.10*	*0.11*	*0.11*	0.10	0.10	0.13	0.12	0.12	0.12	0.12	0.10	0.10	< 0.10	0.11	0.08	0.07	0.07
Sulfate	mg/L	*7.3*	*9.8*	*11.7*	11	13	11	10	9.6	9.7	11	12	14	12	12	13	14	13
Nutrients and Chlorophyll a																		
Ammonia (NH_3)	mg/L	-	-	*0.059*	< 0.061	< 0.061	0.11	< 0.061	< 0.061	< 0.061	0.074	< 0.061	< 0.061	0.064	0.084	0.01	0.02	< 0.01
Ammonia Nitrogen	mg N/L	*0.03*	*0.021*	*0.051*	< 0.050	< 0.050	0.093	< 0.050	< 0.050	< 0.050	0.061	< 0.050	< 0.050	0.053	0.069	0.03	0.05	0.02
Nitrate	mg N/L	*0.12*	*0.21*	*0.34*	0.26	0.35	0.23	0.22	0.23	0.20	0.25	0.26	0.29	0.29	0.29	0.32	0.30	0.32
Nitrite	mg N/L	*0.02*	*0.02*	*0.01*	< 0.01	< 0.01	0.044	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total phosphorus	mg P/L	*0.023*	*0.021*	*0.013*	0.002	0.002	0.007	0.008	0.007	0.007	0.007	0.007	0.007	0.006	0.006	0.060	0.030	< 0.01
Total Metals																		
Aluminum	mg/L	*0.310*	*0.110*	*0.163*	0.027	0.031	0.157	0.059	0.054	0.053	0.053	0.059	0.041	0.035	0.047	0.041	0.106	0.056
Arsenic	mg/L	*0.0113*	*0.0112*	*0.0076*	0.0067	0.0073	0.0095	0.0090	0.0090	0.0090	0.0089	0.0086	0.0082	0.0082	0.0074	0.0070	0.0085	0.0064
Barium	mg/L	*0.0262*	*0.0315*	*0.0261*	0.0218	0.0226	0.0277	0.0233	0.0223	0.0230	0.0228	0.0226	0.0218	0.0223	0.0219	0.0218	0.0260	0.0288
Cadmium	mg/L	*0.000048*	*0.000022*	*0.000013*	< 0.000010	< 0.000010	0.000013	< 0.000010	< 0.000010	0.00002	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.00002	0.00003	< 0.00002
Chromium	mg/L	*0.003*	*0.002*	*0.003*	< 0.0010	< 0.0010	0.0025	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0007	0.0022	0.0053
Copper	mg/L	*0.009*	*0.002*	*0.002*	0.00113	0.00127	0.00174	0.0015	0.00299	0.00157	0.00137	0.00143	0.00127	0.00132	0.0013	0.0017	0.0016	0.0019
Iron	mg/L	*0.77*	*0.23*	*0.33*	0.063	0.072	0.286	0.108	0.085	0.081	0.082	0.098	0.059	0.058	0.081	0.08	0.19	0.11
Lead	mg/L	*0.0004*	*0.0003*	*0.0003*	< 0.00020	< 0.00020	0.00034	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00017	< 0.00017	< 0.00017
Manganese	mg/L	*0.078*	*0.044*	*0.091*	0.0508	0.0595	0.144	0.134	0.12	0.107	0.0986	0.0876	0.0727	0.0674	0.0567	0.0472	0.0648	0.0762
Mercury	mg/L	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00002	0.00001	0.00001
Molybdenum	mg/L	*0.0025*	*0.0019*	*0.0020*	0.002	0.0023	0.0029	0.0029	0.0027	0.0027	0.0026	0.0026	0.0023	0.0023	0.0021	0.001	0.0016	0.0016
Nickel	mg/L	*0.0030*	*0.0019*	*0.0019*	< 0.0010	< 0.0010	0.0016	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0005	0.002	0.0048
Selenium	mg/L	*0.00099*	*0.00089*	*0.00025*	0.00011	0.00012	0.00018	0.00016	0.00018	0.00018	0.00016	0.00016	0.00015	0.00016	0.00014	0.0005	0.001	0.0022
Silver	mg/L	*0.00049*	*0.00010*	*0.00003*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L	-	*0.00020*	*0.00003*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.0002	-	< 0.0002
Zinc	mg/L	*0.002*	*0.004*	*0.005*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0111	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0010	0.0010	0.0020

Table 8-55 Whale Tail WRSF Ponding 2021 Water Quality Monitoring (ST-WT-30)

ST-WT-30 Parameter	Unit	*Annual Average*		6/12/2021	7/4/2021	8/1/2021	9/5/2021	10/3/2021
		*2020**	*2021*					
Field Measured								
Temperature	°C	*4.9*	*7.7*	5.2	9.3	11.7	9.0	3.4
pH	pH units	*7.07*	*7.35*	7.29	7.22	7.59	7.47	7.19
Conductivity	uS/cm	*209.1*	*172.5*	54.6	124.7	167.4	230.0	286.0
Turbidity	NTU	*4.3*	*8.7*	34.8	3.1	1.7	2.0	2.0
Conventional Parameters								
Hardness, as $CaCO_3$	mg/L	*103*	*70*	25	49	66	92	116
Total alkalinity, as $CaCO_3$	mg/L	*65*	*33*	22	32	37	33	41
TDS	mg/L	*-*	*113*	< 10	105	140	160	150
TSS	mg/L	*7*	*3*	12	2	1	1	1
Major Ions								
Chloride	mg/L	*7.4*	*4.2*	1.5	2.7	4.0	5.4	7.3
Fluoride	mg/L	*0.04*	*0.10*	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	*31.5*	*31.9*	5.3	25.0	31.0	43.0	55.0
Nutrients and Chlorophyll a								
Ammonia (NH_3)	mg/L	*-*	*0.185*	0.094	0.170	0.082	0.340	0.240
Ammonia Nitrogen	mg N/L	*0.240*	*0.153*	0.078	0.140	0.067	0.280	0.200
Nitrate	mg N/L	*1.93*	*2.71*	0.33	0.27	1.51	5.18	6.25
Nitrite	mg N/L	*0.090*	*0.029*	< 0.010	< 0.010	0.032	0.065	0.030
Total Metals								
Aluminum	mg/L	*0.1465*	*0.1980*	0.7110	0.1090	0.0482	0.0735	0.0481
Arsenic	mg/L	*0.0171*	*0.0115*	-	0.0187	0.0109	0.0087	0.0076
Barium	mg/L	*0.0626*	*0.0441*	0.0231	0.0355	0.0406	0.0572	0.0642
Cadmium	mg/L	*0.000020*	*0.000016*	0.000011	0.000018	< 0.000010	0.000021	0.000019
Chromium	mg/L	*0.0021*	*0.0057*	0.0216	0.0025	0.0013	0.0018	0.0013
Copper	mg/L	*0.00290*	*0.00204*	0.00217	0.00222	0.00177	0.00215	0.00188
Iron	mg/L	*0.705*	*0.388*	1.240	0.267	0.121	0.176	0.135
Lead	mg/L	*0.00017*	*0.00047*	0.00121	0.00028	< 0.00020	< 0.00020	0.00047
Manganese	mg/L	*1.386*	*0.117*	0.118	0.087	0.035	0.184	0.162
Mercury	mg/L	*0.00003*	*0.00001*	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.001*	*0.001*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Nickel	mg/L	*0.0169*	*0.0125*	0.0131	0.0131	0.0083	0.0139	0.0139
Selenium	mg/L	*0.00100*	*0.00119*	0.00028	0.00043	0.00087	0.00234	0.00202
Silver	mg/L	*0.00010*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Thallium	mg/L	*0.000200*	*0.000022*	0.000023	0.000019	0.000020	0.000025	0.000023
Zinc	mg/L	*0.0025*	*0.0055*	< 0.0050	0.0077	< 0.0050	< 0.0050	< 0.0050

**2020 Annual average from Perim-0.*

Table 8-56 Whale Tail WRSF Ponding 2021 Water Quality Monitoring (ST-WT-31)

ST-WT-31	Unit	*Annual Average*		6/12/2021	7/4/2021	8/1/2021	9/5/2021	10/3/2021
Parameter		***2020****	***2021***					
Field Measured								
Temperature	°C	*5.4*	*6.7*	5.6	6.5	9.2	8.7	3.3
pH	pH units	*7.27*	*7.33*	7.23	7.25	7.53	7.40	7.26
Conductivity	uS/cm	*130.5*	*163.0*	54.4	105.6	186.1	231.0	238.0
Turbidity	NTU	*21.3*	*11.0*	34.7	6.6	4.4	2.9	6.3
Conventional Parameters								
Turbidity	NTU	*18*	*4*	11	2	1	1	3
Total alkalinity, as $CaCO_3$	mg/L	*35*	*30*	20	23	33	36	36
TDS	mg/L	*-*	*104*	< 10	95	160	125	130
TSS	mg/L	*16*	*6*	18	5	2	< 1	2
Major Ions								
Chloride	mg/L	*5.7*	*3.8*	1.7	3.1	4.5	4.6	5.1
Fluoride	mg/L	*0.03*	*0.10*	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	*41.6*	*31.0*	5.8	22.0	37.0	45.0	45.0
Nutrients and Chlorophyll a								
Ammonia (NH_3)	mg/L	*-*	*0.119*	0.094	0.190	< 0.061	0.150	0.100
Ammonia Nitrogen	mg N/L	*0.065*	*0.096*	0.077	0.150	< 0.050	0.120	0.085
Nitrate	mg N/L	*0.34*	*2.68*	0.35	0.69	2.59	4.82	4.97
Nitrite	mg N/L	*0.030*	*0.015*	< 0.010	0.01	0.017	0.026	< 0.010
Total Metals								
Aluminum	mg/L	*0.7625*	*0.2896*	0.8360	0.2310	0.1370	0.0989	0.1450
Arsenic	mg/L	*0.0622*	*0.0132*	-	0.0081	0.0132	0.0198	0.0118
Barium	mg/L	*0.0375*	*0.0371*	0.0242	0.0286	0.0384	0.0505	0.0439
Cadmium	mg/L	*0.000020*	*0.000021*	< 0.000010	0.000021	0.000042	0.000021	< 0.000010
Chromium	mg/L	*0.0183*	*0.0076*	0.0235	0.0057	0.0037	0.0019	0.0032
Copper	mg/L	*0.00275*	*0.00221*	0.00212	0.00184	0.00206	0.00231	0.00272
Iron	mg/L	*1.400*	*0.464*	1.360	0.353	0.209	0.155	0.243
Lead	mg/L	*0.00039*	*0.00049*	0.00119	0.00037	< 0.00020	0.00029	0.00041
Manganese	mg/L	*0.436*	*0.035*	0.086	0.045	0.015	0.017	0.011
Mercury	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.001*	*0.0015*	< 0.0010	< 0.0010	0.0015	0.0027	0.0013
Nickel	mg/L	*0.0441*	*0.0105*	0.0120	0.0092	0.0097	0.0115	0.0102
Selenium	mg/L	*0.00100*	*0.00094*	0.00030	0.00052	0.00127	0.00150	0.00111
Silver	mg/L	*0.00010*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Thallium	mg/L	*0.000200*	*0.000020*	0.000025	0.000016	0.000019	0.000022	0.000018
Zinc	mg/L	*0.0020*	*0.0050*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

**2020 Annual average from Perim-1.*

Table 8-57 Whale Tail WRSF Ponding 2021 Water Quality Monitoring (ST-WT-32)

ST-WT-32	Unit	*Annual Average*		6/12/2021	7/4/2021	8/1/2021	9/5/2021
Parameter		***2020****	***2021***				
Field Measured							
Temperature	°C	*3.4*	*6.9*	5.1	8.0	6.1	8.4
pH	pH units	*7.05*	*7.16*	7.19	7.26	7.16	7.02
Conductivity	uS/cm	*177.4*	*128.9*	54.6	113.5	145.5	202.1
Turbidity	NTU	*13.1*	*14.0*	48.3	5.0	1.0	1.8
Conventional Parameters							
Hardness, as $CaCO_3$	mg/L	*80*	*51*	26	45	53	80
Total alkalinity, as $CaCO_3$	mg/L	*33*	*22*	21	23	13	31
TDS	mg/L	*-*	*86*	< 10	85	130	120
TSS	mg/L	*10*	*9*	29	3	< 1	< 1
Major Ions							
Chloride	mg/L	*6.0*	*4.0*	1.8	4.3	4.8	5.1
Fluoride	mg/L	*0.03*	*0.10*	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	*49.6*	*27.2*	5.7	25.0	33.0	45.0
Nutrients and Chlorophyll a							
Ammonia (NH_3)	mg/L	*-*	*0.112*	0.087	0.180	0.062	0.120
Ammonia Nitrogen	mg N/L	*0.575*	*0.093*	0.072	0.150	0.051	0.100
Nitrate	mg N/L	*3.69*	*1.45*	0.34	0.57	2.57	2.31
Nitrite	mg N/L	*0.025*	*0.018*	< 0.010	0.013	0.04	< 0.010
Total Metals							
Aluminum	mg/L	*0.2640*	*0.3610*	1.1400	0.2260	0.0359	0.0422
Arsenic	mg/L	*0.0151*	*0.0084*	-	0.0131	0.0017	0.0103
Barium	mg/L	*0.0571*	*0.0420*	0.0288	0.0424	0.0391	0.0576
Cadmium	mg/L	*0.000020*	*0.000016*	0.000016	0.000025	< 0.000010	0.000013
Chromium	mg/L	*0.0058*	*0.0097*	0.0309	0.0057	< 0.0010	< 0.0010
Copper	mg/L	*0.00105*	*0.00145*	0.00239	0.00150	0.00079	0.00111
Iron	mg/L	*0.575*	*0.594*	1.940	0.316	0.058	0.061
Lead	mg/L	*0.00024*	*0.00061*	0.00165	0.00040	< 0.00020	< 0.00020
Manganese	mg/L	*0.130*	*0.066*	0.104	0.097	0.024	0.041
Mercury	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.001*	*0.00125*	< 0.0010	< 0.0010	0.0011	0.0019
Nickel	mg/L	*0.0216*	*0.0107*	0.0154	0.0109	0.0055	0.0109
Selenium	mg/L	*0.00100*	*0.00085*	0.00029	0.00057	0.00100	0.00154
Silver	mg/L	*0.00010*	*0.00002*	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Thallium	mg/L	*0.000200*	*0.000020*	0.000031	0.000022	0.000010	0.000017
Zinc	mg/L	*0.003*	*0.006*	0.007	< 0.005	< 0.005	< 0.005

**2020 Annual average from Perim-2.*

Table 8-58 Whale Tail WRSF Ponding 2021 Water Quality Monitoring (ST-WT-33)

ST-WT-33	Unit	*Annual Average*		6/12/2021	8/21/2021	9/5/2021	10/3/2021
Parameter		***2020****	***2021***				
Field Measured							
Temperature	°C	*7.9*	*5.2*	4.8	4.7	8.9	2.5
pH	pH units	*6.87*	*7.12*	7.18	7.18	6.97	7.16
Conductivity	uS/cm	*307.0*	*207.5*	45.8	201.0	263.0	320.0
Turbidity	NTU	*12.6*	*9.0*	19.9	6.5	4.5	4.9
Conventional Parameters							
Hardness, as $CaCO_3$	mg/L	*166*	*88*	21	87	112	130
Total alkalinity, as $CaCO_3$	mg/L	*52*	*42*	17	51	42	56
TDS	mg/L	*-*	*135*	< 10	145	190	195
TSS	mg/L	*10*	*6*	14	4	2	3
Major Ions							
Chloride	mg/L	*10.5*	*6.2*	2.4	6.3	7.8	8.1
Fluoride	mg/L	*0.06*	*0.10*	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	*87.6*	*42.3*	< 1.0	39.0	59.0	70.0
Nutrients and Chlorophyll a							
Ammonia (NH_3)	mg/L	*-*	*0.138*	< 0.061	0.150	0.240	0.100
Ammonia Nitrogen	mg N/L	*0.115*	*0.114*	< 0.050	0.120	0.200	0.084
Nitrate	mg N/L	*1.31*	*1.80*	< 0.10	1.47	3.65	1.98
Nitrite	mg N/L	*0.030*	*0.055*	< 0.010	0.133	0.062	0.013
Total Metals							
Aluminum	mg/L	*0.3570*	*0.3038*	0.7840	0.1810	0.1470	0.1030
Arsenic	mg/L	*0.0170*	*0.0148*	-	0.0222	0.0126	0.0096
Barium	mg/L	*0.0770*	*0.0597*	0.0277	0.0647	0.0668	0.0796
Cadmium	mg/L	*0.000020*	*0.000028*	0.000012	0.000029	0.000042	0.000029
Chromium	mg/L	*0.0030*	*0.0086*	0.0251	0.0046	0.0018	0.0029
Copper	mg/L	*0.00325*	*0.00189*	0.00150	0.00229	0.00204	0.00171
Iron	mg/L	*0.875*	*0.586*	1.270	0.498	0.328	0.247
Lead	mg/L	*0.00017*	*0.00058*	0.00082	0.00072	0.00036	0.00041
Manganese	mg/L	*0.860*	*0.294*	0.119	0.420	0.345	0.292
Mercury	mg/L	*0.00002*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.001*	*0.00135*	< 0.0010	0.0019	0.0015	< 0.0010
Nickel	mg/L	*0.0279*	*0.0149*	0.0134	0.0141	0.0167	0.0154
Selenium	mg/L	*0.00100*	*0.00065*	< 0.00010	0.00078	0.00107	0.00065
Silver	mg/L	*0.00010*	*0.00002*	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Thallium	mg/L	*0.000200*	*0.000031*	0.000024	0.000036	0.000030	0.000032
Zinc	mg/L	*0.009*	*0.005*	< 0.0050	< 0.0050	< 0.0050	< 0.0050

**2020 Annual average from Perim-3.*

Table 8-59 Whale Tail IVR WRSF Ponding 2021 Water Quality Monitoring (ST-WT-34)

ST-WT-34 Parameter	Unit	*Annual Average*	9/7/2021	10/3/2021
Field Measured				
Temperature	**°C**	6.5	9.3	3.7
pH	pH units	6.935	7.070	6.800
Conductivity	uS/cm	1309	1399	1219
Turbidity	NTU	8.4	9.3	7.5
Conventional Parameters				
Hardness, as $CaCO_3$	mg/L	523	558	487
Total alkalinity, as $CaCO_3$	mg/L	51	42	59
TDS	mg/L	878	855	900
TSS	mg/L	4	4	3
Major Ions				
Chloride	mg/L	310	350	270
Fluoride	mg/L	0.10	< 0.10	< 0.10
Sulfate	mg/L	79	63	94
Nutrients and Chlorophyll a				
Ammonia (NH_3)	mg/L	1.5	1.4	1.6
Ammonia Nitrogen	mg N/L	1.2	1.1	1.3
Nitrate	mg N/L	2.73	2.27	3.18
Nitrite	mg N/L	0.257	0.262	0.252
Total Metals				
Aluminum	mg/L	*0.05865*	0.06280	0.05450
Arsenic	mg/L	*0.0228*	0.0249	0.0206
Barium	mg/L	*0.272*	0.306	0.237
Cadmium	mg/L	*0.000051*	0.000054	0.000047
Chromium	mg/L	*0.0017*	0.0017	0.0017
Copper	mg/L	*0.00091*	0.00078	0.00104
Iron	mg/L	*1.094*	1.310	0.878
Lead	mg/L	*0.00022*	< 0.00020	0.00023
Manganese	mg/L	*1.14*	1.21	1.07
Mercury	mg/L	*0.00001*	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0021*	0.0017	0.0024
Nickel	mg/L	*0.0229*	0.0214	0.0244
Selenium	mg/L	*0.00053*	0.00049	0.00057
Silver	mg/L	*0.00002*	< 0.00002	< 0.00002
Thallium	mg/L	*0.000043*	0.000040	0.000046
Zinc	mg/L	*0.005*	< 0.005	< 0.005

Table 8-60 Whale Tail IVR WRSF Ponding 2021 Water Quality Monitoring (ST-WT-35)

ST-WT-35 Parameter	Unit	*Annual Average*	9/7/2021	10/3/2021
Field Measured				
Temperature	°C	6.2	9.1	3.2
pH	pH units	7.35	7.350	7.350
Conductivity	uS/cm	236	222	250
Turbidity	NTU	2.8	2.6	3.0
Conventional Parameters				
Hardness, as $CaCO_3$	mg/L	92	89	96
Total alkalinity, as $CaCO_3$	mg/L	50	46	54
TDS	mg/L	138	140	135
TSS	mg/L	3	3	2
Major Ions				
Chloride	mg/L	10	9	10
Fluoride	mg/L	0.10	< 0.10	< 0.10
Sulfate	mg/L	51	44	57
Nutrients and Chlorophyll a				
Ammonia (NH_3)	mg/L	0.4	0.3	0.4
Ammonia Nitrogen	mg N/L	0.3	0.3	0.4
Nitrate	mg N/L	0.54	0.62	0.46
Nitrite	mg N/L	0.065	0.083	0.047
Total Metals				
Aluminum	mg/L	*0.08145*	0.10000	0.06290
Arsenic	mg/L	*0.1365*	0.1330	0.1400
Barium	mg/L	*0.072*	0.077	0.067
Cadmium	mg/L	*0.000020*	0.000021	0.000019
Chromium	mg/L	*0.0019*	0.0023	0.0015
Copper	mg/L	*0.00099*	0.00098	0.00099
Iron	mg/L	*0.306*	0.296	0.316
Lead	mg/L	*0.00031*	0.00023	0.00039
Manganese	mg/L	*0.41*	0.358	0.463
Mercury	mg/L	*0.00001*	0.00001	0.00001
Molybdenum	mg/L	*0.0019*	0.0018	0.0019
Nickel	mg/L	*0.0177*	0.0158	0.0195
Selenium	mg/L	*0.00038*	0.00043	0.00032
Silver	mg/L	*0.00002*	< 0.00002	< 0.00002
Thallium	mg/L	*0.000031*	0.000034	0.000028
Zinc	mg/L	*0.005*	< 0.005	< 0.005

Table 8-61 Whale Tail IVR WRSF Ponding 2021 Water Quality Monitoring (ST-WT-36)

ST-WT-36 Parameter	Unit	*Annual Average*	6/27/2021	7/4/2021	8/1/2021	9/5/2021	10/3/2021
Field Measured							
Temperature	°C	6.6	4.6	7.4	9.6	8.0	3.5
pH	pH units	7.450	7.740	7.630	7.520	7.100	7.260
Conductivity	uS/cm	209	155	166	212	221	290
Turbidity	NTU	6.9	9.0	7.3	4.0	4.5	9.6
Conventional Parameters							
Hardness, as $CaCO_3$	mg/L	82	64	68	81	85	110
Total alkalinity, as $CaCO_3$	mg/L	46	53	51	47	33	45
TDS	mg/L	148	115	120	190	135	180
TSS	mg/L	4	7	8	2	2	3
Major Ions							
Chloride	mg/L	7	3	4	7	8	11
Fluoride	mg/L	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	27	5	10	34	40	48
Nutrients and Chlorophyll a							
Ammonia (NH_3)	mg/L	0.6	0.5	0.8	0.5	0.7	0.6
Ammonia Nitrogen	mg N/L	0.5	0.4	0.7	0.4	0.5	0.5
Nitrate	mg N/L	4.25	3.79	4.54	2.63	3.71	6.57
Nitrite	mg N/L	0.070	0.069	0.135	0.049	0.078	0.019
Total Metals							
Aluminum	mg/L	*0.21000*	0.34700	0.27700	0.10500	0.13600	0.18500
Arsenic	mg/L	*0.1355*	-	0.0153	0.0396	0.3600	0.1270
Barium	mg/L	*0.067*	0.048	0.056	0.068	0.076	0.086
Cadmium	mg/L	*0.000010*	< 0.000010	< 0.000010	< 0.000010	0.000011	< 0.000010
Chromium	mg/L	*0.0059*	0.0098	0.0091	0.0032	0.0027	0.0048
Copper	mg/L	*0.00123*	0.00174	0.00130	0.00088	0.00115	0.00106
Iron	mg/L	*0.327*	0.516	0.426	0.174	0.206	0.313
Lead	mg/L	*0.00030*	0.00046	0.00036	< 0.00020	0.00021	0.00028
Manganese	mg/L	*0.03*	0.0617	0.0377	0.0254	0.0289	0.0134
Mercury	mg/L	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0013*	< 0.0010	< 0.0010	0.0010	0.0019	0.0015
Nickel	mg/L	*0.0112*	0.0073	0.0083	0.0107	0.0173	0.0125
Selenium	mg/L	*0.00058*	< 0.00010	0.00011	0.00048	0.00057	0.00165
Silver	mg/L	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Thallium	mg/L	*0.000021*	0.000016	0.000021	0.000022	0.000025	0.000019
Zinc	mg/L	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

Table 8-62 Whale Tail IVR Diversion Ditch 2021 Water Quality Monitoring (ST-WT-37)

ST-WT-37 Parameter	MAX GRAB	MONTHLY MEAN	Unit	*Annual Average*	6/7/2021	6/12/2021	6/14/2021	6/20/2021	7/4/2021	8/1/2021	9/5/2021	10/3/2021
Field Measured												
Temperature			°C	*6.6*	1.0	7.9	10.5	4.4	6.0	10.4	9.9	2.8
pH			pH units	*7.81*	8.03	7.52	7.85	7.71	7.80	8.28	7.76	7.56
Conductivity			uS/cm	*41.9*	19.1	21.6	22.4	34.9	54.3	52.8	56.6	73.3
Turbidity			NTU	*3.79*	9.60	9.26	4.67	1.98	1.77	0.89	1.10	1.04
Conventional Parameters												
TSS	30	15	mg/L	*2*	5	3	2	1	< 1	< 1	< 1	1
Major Ions												
Sulfate			mg/L	*2.8*	< 1.0	< 1.0	< 1.0	1.5	3.9	3.4	4.4	6.4
Nutrients and Chlorophyll a												
Ammonia Nitrogen			mg N/L	*0.07*	< 0.05	< 0.05	0.097	< 0.05	0.13	< 0.05	< 0.05	< 0.05
Un-Ionized Ammonia, calculated			mg/L	*0.00102*	< 0.00058	< 0.00061	0.0016	< 0.00061	0.00130	< 0.0022	< 0.00064	< 0.00061
Total Metals												
Aluminum			mg/L	*0.111*	0.303	0.210	0.131	0.070	0.050	0.037	0.043	0.047
Arsenic			mg/L	*0.00231*	0.00491	0.00243	0.00160	0.00167	0.00196	0.00231	0.00187	0.00175
Copper			mg/L	*0.0010*	0.0007	0.0008	0.0008	0.0009	0.0010	0.0010	0.0013	0.0011
Lead			mg/L	*0.00020*	0.00022	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Nickel			mg/L	*0.0025*	0.0042	0.003	0.0022	0.0019	0.002	0.0019	0.0022	0.0022
Zinc			mg/L	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

8.5.3.2.15 Whale Tail / IVR Attenuation Pond Discharge

8.5.3.2.15.1 Mammoth Lake (ST-WT-2 and ST-WT-2a)

There are two active submerged diffusers to facilitate discharge from the Whale Tail and IVR Attenuation Ponds to Mammoth Lake, the East and West Diffusers. As per Water Licence 2AM-WTP1830, the discharge from the East and West diffusers are to be sampled weekly during discharge.

The West diffuser sampling station is ST-WT-2 and discharged occurred from June 9th to July 5th, July 18th to August 26th, August 29th to September 11th, and September 16th to 28th. A total volume of 916,198 m^3 was discharged in 2021. The results for ST-WT-2 are provided in Table 8-63. There were no exceedances of Water Licence criteria in 2021.

The East diffuser sampling station is ST-WT-2a and discharge occurred June 18th to July 5th, and July 18th to August 26th. The total volume of water discharge via this diffuser in 2021 was 513,859 m^3. The results for ST-WT-2a are provided in Table 8-64. There were no exceedances of Water Licence criteria in 2021.

Effluents have demonstrated to be non-acutely lethal. Refer to Section 8.3.2 (MDMER-7 and MDMER-8) above for the results.

8.5.3.2.15.2 Whale Tail South (ST-WT-24 and ST-WT-24a)

In 2021, water from Whale Tail and IVR Attenuation Ponds was discharged back to Whale Tail South. As per Water Licence 2AM-WTP1830 the discharge are sampled on a weekly bases during discharge.

The temporary diffuser sampling station is ST-WT-24a and discharge from this diffuser occurred on from March 1st to 7th, March 11th to 14th, March 20th to 23rd, March 30th to April 2nd, April 8th to 11th, April 15th to 22nd, April 25th to May 3rd, May 14th to 22nd, and May 26th to June 8th. A total volume of 472,563 m^3 was discharged. Results from ST-WT-24a are presented in Table 8-65. There were no Water Licence criteria exceedance in 2021.

The permanent diffuser sampling station is ST-WT-24b and was discharging January 1st to 5th, January 9th to 13th, January 16th to 18th, January 21st to 26th, February 1st to 4th, February 9th to 13th, June 6th to 17th, October 2nd to 26th, and November 18th to 23rd. A total volume of 785,410 m^3 was discharged. The results from ST-WT-24b are provided in Table 8-66.

Effluents have demonstrated to be non-acutely lethal. Refer to Section 8.3.2 (MDMER-5 and MDMER-11) above for the results.

Table 8-63 Whale Tail / IVR Attenuation Pond Discharge to Mammoth Lake West Diffuser (ST-WT-2)

ST-WT-2	MAX	MONTHLY	Unit	*Annual Average*		6/10/2021	6/14/2021	6/21/2021	6/28/2021	7/5/2021	7/19/2021	7/26/2021	8/2/2021	8/9/2021	8/16/2021	8/23/2021	8/31/2021	9/6/2021	9/18/2021	9/20/2021	9/27/2021
Parameter	**GRAB**	**MEAN**		*2020*	*2021*																
Field Measured																					
Temperature			°C	*4.4*	*6.5*	2.6	4.7	5.4	5.6	5.9	9.3	6.3	10.1	7.7	9.1	6.3	10.5	9.3	5.2	3.2	2.3
pH	9.5	9.5	pH units	*6.93*	*7.14*	7.21	7.11	7.38	6.94	7.22	7.05	6.91	7.44	7.41	6.78	7.04	7.28	7.34	7.32	7.00	6.75
Conductivity			uS/cm	*442.4*	*364.3*	210.7	222.0	203.3	254.0	275.0	304.0	362.0	440.0	373.0	478.0	547.0	383.0	448.0	434.0	443.0	451.0
Turbidity			NTU	*2.4*	*1.2*	5.0	0.6	0.8	0.9	1.1	0.7	0.7	0.7	0.7	1.3	0.6	2.1	0.8	1.7	1.3	1.1
Conventional Parameters																					
Hardness, as $CaCO_3$			mg/L	*197*	*132*	83	77.4	72.8	90	101	107	131	156	129	169	183	138	167	168	176	169
Total alkalinity, as $CaCO_3$			mg/L	*44*	*38*	33	31	30	34	36	35	35	38	36	39	42	41	42	44	43	41
Carbonate, as $CaCO_3$			mg/L	*4*	*1*	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bicarbonate, as $CaCO_3$			mg/L	*43*	*37*	33	31	30	34	36	34	35	38	36	39	42	41	42	43	42	41
TDS			mg/L	*-*	*231*	180	45	140	190	185	150	240	390	175	250	355	230	325	265	280	295
TSS	30	15	mg/L	*6*	*2*	6	1	1	2	< 1	< 1	< 1	2	1	1	1	< 1	< 1	3	2	2
Total organic carbon			mg/L	*3.3*	*3.3*	3.5	4.1	3.2	3.2	3.4	3.0	3.3	3.3	3.4	3.9	3.3	2.9	3.4	2.9	2.9	2.7
Dissolved organic carbon			mg/L	*4.0*	*3.1*	3.0	4.1	2.8	2.7	3.3	2.6	2.9	2.9	3.0	3.7	3.6	2.6	3.2	3.0	3.0	2.7
Major Ions																					
Chloride			mg/L	*78*	*38*	24	24	25	31	31	33	40	46	37	33	70	46	45	38	43	42
Silica			mg/L	*5.8*	*5.9*	4.5	3.9	3.8	5.0	5.9	5.6	5.6	6.4	5.9	6.8	6.6	6.5	6.8	7.0	7.1	6.7
Sulfate			mg/L	*49*	*63*	35	36	31	35	41	48	53	71	58	110	85	52	82	89	90	87
Nutrients and Chlorophyll a																					
Ammonia (NH_3)			mg/L	*-*	*1.01*	0.88	0.77	0.70	0.85	1.00	0.97	1.20	1.50	0.98	1.50	1.20	0.54	1.20	1.10	1.10	0.71
Ammonia Nitrogen	32	16	mg N/L	*1.44*	*0.84*	0.72	0.64	0.57	0.70	0.85	0.79	0.96	1.20	0.81	1.30	1.00	0.45	0.99	0.94	0.88	0.58
Nitrate			mg N/L	*3.02*	*2.63*	0.77	1.13	0.83	1.29	1.64	1.59	2.44	3.43	2.63	4.53	4.40	1.93	4.11	3.97	3.85	3.57
Nitrite			mg N/L	*0.153*	*0.165*	0.096	0.090	0.094	0.126	0.157	0.174	0.208	0.256	0.185	0.303	0.259	0.087	0.184	0.164	0.162	0.098
Total Kjeldahl nitrogen			mg N/L	*1.9*	*1.1*	0.88	0.89	0.63	0.77	1.1	0.88	1.1	1.6	1.2	2	1.4	0.4	1.5	1.2	1.1	0.75
Total phosphorus	0.6	0.3	mg P/L	*0.0100*	*0.0020*	0.0059	0.0039	0.0034	< 0.0010	0.0030	0.0011	< 0.0010	0.0019	0.0013	< 0.0010	0.0026	0.0012	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Dissolved phosphorus			mg P/L	*0.0100*	*0.0011*	0.0024	0.0013	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0010	< 0.0010
Orthophosphate (P)			mg/L	*0.011*	*0.010*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Metals																					
Aluminum	1	0.5	mg/L	*0.027*	*0.015*	0.087	0.011	0.008	0.011	0.011	0.006	0.005	0.012	0.008	0.011	0.007	0.010	0.013	0.018	0.009	0.015
Antimony			mg/L	*0.0011*	*0.0084*	0.0026	0.0030	0.0032	0.0041	0.0061	0.0047	0.0064	0.0122	0.0070	0.0206	0.0169	0.0064	0.0110	0.0104	0.0109	0.0082
Arsenic	0.2	0.1	mg/L	*0.00831*	*0.00809*	0.00491	0.00332	0.00368	0.00591	0.00400	0.00503	0.00346	0.00579	0.00506	0.02660	0.01510	0.00622	0.01150	0.01240	0.00918	0.00729
Barium			mg/L	*0.0905*	*0.0503*	0.0439	0.0435	0.0330	0.0445	0.0535	0.0377	0.0402	0.0538	0.0516	0.0579	0.0711	0.0589	0.0593	0.0509	0.0551	0.0499
Beryllium			mg/L	*0.00050*	*0.00010*	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Boron			mg/L	*0.01*	*0.05*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cadmium	0.004	0.002	mg/L	*0.000020*	*0.000021*	0.000016	0.000014	< 0.000010	< 0.000010	0.000012	< 0.000010	0.000011	0.000011	0.000013	0.000052	0.000033	0.000022	0.000025	0.000042	0.000032	0.000028
Chromium	0.04	0.02	mg/L	*0.0009*	*0.0011*	0.0018	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Copper	0.2	0.1	mg/L	*0.00283*	*0.00171*	0.0013	0.00125	0.00107	0.0021	0.00092	0.00121	0.00067	0.00295	0.00097	0.00189	0.00129	0.00108	0.0062	0.0019	0.00132	0.00118
Iron	2	1	mg/L	*0.528*	*0.223*	0.526	0.169	0.238	0.206	0.070	0.064	0.120	0.133	0.162	0.145	0.182	0.157	0.191	0.469	0.311	0.421
Lead	0.1	0.05	mg/L	*0.00023*	*0.00021*	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	0.0003	< 0.00020	< 0.00020	< 0.00020
Lithium			mg/L	*0.0091*	*0.0065*	0.0037	0.0036	0.0032	0.0049	0.0035	0.0043	0.0058	0.0090	0.0061	0.0076	0.0127	0.0087	0.0099	0.0059	0.0071	0.0072
Manganese			mg/L	*0.527*	*0.267*	0.202	0.231	0.144	0.231	0.407	0.161	0.152	0.182	0.258	0.522	0.280	0.275	0.232	0.368	0.395	0.233
Mercury	0.008	0.004	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum			mg/L	*0.0037*	*0.0029*	0.0019	0.0019	0.0015	0.0025	0.0035	0.0026	0.0028	0.0033	0.0028	0.0041	0.0036	0.0029	0.0036	0.0034	0.0035	0.0029
Nickel	0.5	0.25	mg/L	*0.0207*	*0.0214*	0.0098	0.0111	0.0075	0.0075	0.0115	0.0092	0.0093	0.0141	0.0118	0.0705	0.0351	0.0134	0.0204	0.0438	0.0433	0.0247
Selenium			mg/L	*0.00100*	*0.00041*	0.00018	0.00021	0.00017	0.00019	0.00031	0.00036	0.00047	0.00058	0.00039	0.00082	0.00065	0.00031	0.00052	0.00044	0.00046	0.00050
Strontium			mg/L	*0.354*	*0.293*	0.187	0.174	0.158	0.220	0.215	0.239	0.276	0.371	0.287	0.310	0.486	0.320	0.360	0.341	0.390	0.353
Thallium			mg/L	*0.000200*	*0.000017*	0.000018	0.000014	0.000010	0.000014	0.000015	0.000016	0.000013	0.000015	0.000015	0.000022	0.000025	0.000018	0.000019	0.000019	0.000019	0.000016
Tin			mg/L	*0.0010*	*0.0050*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Titanium			mg/L	*0.0100*	*0.0050*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Uranium			mg/L	*0.00120*	*0.00134*	0.00062	0.00044	0.00042	0.00081	0.00144	0.00086	0.00115	0.00157	0.00120	0.00166	0.00218	0.00119	0.00164	0.00204	0.00219	0.00195

ST-WT-2 Parameter	MAX GRAB	MONTHLY MEAN	Unit	Annual Average 2020	Annual Average 2021	6/10/2021	6/14/2021	6/21/2021	6/28/2021	7/5/2021	7/19/2021	7/26/2021	8/2/2021	8/9/2021	8/16/2021	8/23/2021	8/31/2021	9/6/2021	9/18/2021	9/20/2021	9/27/2021
Vanadium			mg/L	*0.0005*	*0.0050*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Zinc	0.2	0.1	mg/L	*0.0133*	*0.0070*	0.0069	0.0064	0.0058	0.0063	< 0.0050	0.005	< 0.0050	0.008	0.007	0.009	0.0068	0.0059	0.0105	0.0081	0.0069	0.0086
Dissolved Metals																					
Aluminum			mg/L	-	*0.0062*	0.0372	< 0.0030	0.0069	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	0.0166	< 0.0030	< 0.0030
Antimony			mg/L	*0.00112*	*0.00830*	0.00285	0.00302	0.00333	0.00413	0.00578	0.00487	0.00624	0.01190	0.00694	0.02040	0.01740	0.00649	0.01070	0.01010	0.01030	0.00838
Arsenic			mg/L	*0.00598*	*0.00591*	0.00471	0.00296	0.00347	0.00500	0.00351	0.00458	0.00304	0.00369	0.00413	0.02120	0.00882	0.00459	0.00799	0.01110	0.00421	0.00155
Barium			mg/L	*0.08349*	*0.05081*	0.04520	0.04340	0.03480	0.04450	0.05110	0.03860	0.04100	0.05380	0.05160	0.05710	0.07560	0.06150	0.05930	0.05020	0.05310	0.05210
Beryllium			mg/L	*0.00050*	*0.00010*	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Boron			mg/L	*0.010*	*0.050*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cadmium			mg/L	*0.000020*	*0.000021*	0.000013	0.000015	< 0.000010	< 0.000010	0.000022	< 0.000010	< 0.000010	0.000012	0.000021	0.000052	0.000028	0.000026	0.000023	0.000035	0.000032	0.000024
Chromium			mg/L	*0.0006*	*0.0010*	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Copper			mg/L	*0.00237*	*0.00157*	0.00168	0.00116	0.00104	0.00149	0.00143	0.00116	0.00089	0.00185	0.00144	0.00302	0.00167	0.00116	0.00153	0.00336	0.00130	0.00100
Iron			mg/L	*0.012*	*0.107*	0.400	0.089	0.228	0.046	0.024	0.016	0.056	0.032	0.065	0.085	0.057	0.046	0.048	0.406	0.056	0.066
Lead			mg/L	*0.00026*	*0.00020*	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	0.00023	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Lithium			mg/L	*0.0083*	*0.0062*	0.0032	0.0035	0.0033	0.0051	0.0033	0.0043	0.0058	0.0075	0.0061	0.0063	0.0133	0.0085	0.0082	0.0064	0.0075	0.0070
Manganese			mg/L	*0.4042*	*0.2674*	0.1920	0.2300	0.1420	0.2280	0.3950	0.1690	0.1500	0.1820	0.2570	0.5360	0.2850	0.2890	0.2490	0.3460	0.3750	0.2540
Mercury			mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum			mg/L	*0.0041*	*0.0029*	0.0019	0.0019	0.0016	0.0024	0.0031	0.0026	0.0028	0.0033	0.0028	0.0040	0.0039	0.0031	0.0035	0.0033	0.0032	0.0030
Nickel			mg/L	*0.0179*	*0.0210*	0.0098	0.0114	0.0075	0.0077	0.0113	0.0093	0.0091	0.0138	0.0114	0.0722	0.0343	0.0129	0.0193	0.0414	0.0402	0.0249
Selenium			mg/L	*0.00100*	*0.00041*	0.00024	0.00022	0.00017	0.00020	0.00037	0.00037	0.00043	0.00055	0.00039	0.00078	0.00062	0.00027	0.00052	0.00047	0.00046	0.00049
Strontium			mg/L	*0.3184*	*0.2955*	0.1760	0.1670	0.1640	0.2170	0.1930	0.2350	0.3050	0.3720	0.2920	0.3160	0.5090	0.3510	0.3680	0.3220	0.3570	0.3840
Thallium			mg/L	*0.000200*	*0.000017*	0.000015	0.000013	0.000011	0.000013	0.000013	0.000016	0.000015	0.000021	0.000015	0.000022	0.000024	0.000018	0.000019	0.000020	0.000019	0.000017
Tin			mg/L	*0.0010*	*0.0050*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Titanium			mg/L	*0.0100*	*0.0050*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Uranium			mg/L	*0.0012*	*0.0013*	0.0005	0.0004	0.0004	0.0008	0.0014	0.0008	0.0011	0.0015	0.0012	0.0016	0.0021	0.0013	0.0014	0.0020	0.0020	0.0019
Vanadium			mg/L	*0.0005*	*0.0050*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Zinc			mg/L	*0.0121*	*0.0070*	0.0070	0.0058	0.0050	0.0137	0.0058	0.0069	< 0.0050	0.0063	0.0060	0.0094	0.0066	0.0056	0.0079	0.0085	0.0065	0.0066
Volatile Organics																					
Petroleum Hydrocarbons F (C10-C50)	6	3	mg/L	*0.1*	*0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Table 8-64 Whale Tail / IVR Attenuation Pond Discharge to Mammoth Lake East Diffuser (ST-WT-2a)

ST-WT-2A	MAX GRAB	MONTHLY MEAN	Unit	*Annual Average*		6/19/2021	6/21/2021	6/28/2021	7/5/2021	7/19/2021	7/26/2021	8/2/2021	8/9/2021	8/16/2021	8/23/2021
Parameter				*2020*	*2021*										
Field Measured															
Temperature			°C	*7.4*	*7.1*	6.9	5.4	5.2	5.0	9.3	6.3	10.9	7.7	9.0	5.5
pH	9.5	9.5	pH units	*6.89*	*7.11*	7.15	7.56	6.80	7.22	6.98	6.96	7.44	7.25	6.62	7.16
Conductivity			uS/cm	*437.2*	*315.8*	195.1	206.1	250.0	278.0	45.7	363.0	441.0	368.0	469.0	542.0
Turbidity			NTU	*7.6*	*1.1*	0.9	1.0	1.7	1.1	1.5	0.7	0.5	0.8	0.8	1.7
Conventional Parameters															
Hardness, as $CaCO_3$			mg/L	*205*	*121*	70.5	71.7	89.1	99.7	108	128	151	134	174	188
Total alkalinity, as $CaCO_3$			mg/L	*47*	*36*	31	30	38	36	36	35	38	37	40	42
Carbonate, as $CaCO_3$			mg/L	*5*	*1*	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bicarbonate, as $CaCO_3$			mg/L	*47*	*36*	31	30	37	36	35	34	38	37	40	42
TDS			mg/L	-	*232*	115	145	200	190	145	225	400	205	270	420
TSS	30	15	mg/L	*6*	*1*	1	1	3	1	< 1	1	< 1	< 1	1	2
Total organic carbon			mg/L	*3.0*	*3.4*	3.3	3.3	3.3	3.4	3.1	3.4	3.2	3.5	3.9	3.2
Dissolved organic carbon			mg/L	*3.5*	*3.1*	3.0	3.0	2.7	3.2	2.7	2.9	3.0	3.1	3.6	3.4
Major Ions															
Chloride			mg/L	*78*	*37*	22	25	31	31	33	40	48	37	32	69
Silica			mg/L	*5.9*	*5.5*	3.6	3.7	4.8	5.9	5.7	5.6	6.3	5.9	6.7	6.7
Sulfate			mg/L	*48*	*55*	30	32	35	38	48	51	65	58	110	85
Nutrients and Chlorophyll a															
Ammonia (NH_3)			mg/L	-	*1.07*	0.73	0.85	0.83	1.00	0.96	1.10	1.50	0.99	1.50	1.20
Ammonia Nitrogen	32	16	mg N/L	*1.63*	*0.89*	0.60	0.70	0.69	0.85	0.79	0.95	1.20	0.82	1.30	0.99
Nitrate			mg N/L	*3.21*	*2.36*	0.77	0.83	1.28	1.63	1.59	2.46	3.44	2.63	4.54	4.43
Nitrite			mg N/L	*0.180*	*0.185*	0.081	0.092	0.128	0.156	0.172	0.209	0.262	0.185	0.303	0.263
Total Kjeldahl nitrogen			mg N/L	*2.13*	*1.14*	0.88	1.10	0.82	0.99	0.92	1.20	1.30	0.97	1.80	1.40
Total phosphorus	0.6	0.3	mg P/L	*0.0141*	*0.0025*	0.0038	0.0040	< 0.0010	< 0.0010	0.0032	< 0.0010	< 0.0010	0.0017	< 0.0010	0.0073
Dissolved phosphorus			mg P/L	*0.0150*	*0.0012*	0.0010	0.0020	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0013	< 0.0010	< 0.0010	0.0013
Orthophosphate (P)			mg/L	*0.01*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Metals															
Aluminum	1	0.5	mg/L	*0.026*	*0.011*	0.010	0.010	0.030	0.011	0.008	0.006	0.005	0.006	0.011	0.011
Antimony			mg/L	*0.0013*	*0.0085*	0.0031	0.0032	0.0042	0.0058	0.0048	0.0061	0.0118	0.0072	0.0208	0.0176
Arsenic	0.2	0.1	mg/L	*0.00456*	*0.00847*	0.00352	0.00372	0.00643	0.00388	0.00522	0.00344	0.00499	0.00520	0.02780	0.02050
Barium			mg/L	*0.0902*	*0.0479*	0.0332	0.0332	0.0450	0.0534	0.0379	0.0390	0.0521	0.0522	0.0569	0.0757
Beryllium			mg/L	*0.0005*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron			mg/L	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium	0.004	0.002	mg/L	*0.000020*	*0.000017*	< 0.000010	< 0.000010	0.000013	0.000014	0.000014	0.000013	0.000024	0.000011	0.000044	0.000021
Chromium	0.04	0.02	mg/L	*0.0007*	*0.0010*	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Copper	0.2	0.1	mg/L	*0.00297*	*0.00174*	0.00072	0.00105	0.00482	0.0009	0.00245	0.00068	0.00239	0.00108	0.00207	0.00128
Iron	2	1	mg/L	*0.568*	*0.181*	0.254	0.241	0.336	0.067	0.079	0.120	0.148	0.155	0.152	0.260
Lead	0.1	0.05	mg/L	*0.00023*	*0.00021*	< 0.00020	0.00022	0.00022	< 0.00020	< 0.00020	< 0.00020	0.00027	< 0.00020	< 0.00020	< 0.00020
Lithium			mg/L	*0.0091*	*0.0062*	0.0029	0.0032	0.0050	0.0034	0.0044	0.0058	0.0089	0.0062	0.0076	0.0142
Manganese			mg/L	*0.558*	*0.247*	0.156	0.143	0.234	0.396	0.161	0.146	0.176	0.261	0.519	0.280
Mercury	0.008	0.004	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum			mg/L	*0.0033*	*0.0029*	0.0015	0.0016	0.0027	0.0033	0.0027	0.0028	0.0032	0.0029	0.0042	0.0039
Nickel	0.5	0.25	mg/L	*0.0221*	*0.0185*	0.0082	0.0073	0.0079	0.0113	0.0092	0.0090	0.0135	0.0121	0.0714	0.0352
Selenium			mg/L	*0.00097*	*0.00040*	0.00016	0.00017	0.00019	0.00032	0.00037	0.00045	0.00056	0.00039	0.00080	0.00063
Strontium			mg/L	*0.384*	*0.274*	0.150	0.159	0.227	0.208	0.237	0.274	0.358	0.298	0.313	0.517
Thallium			mg/L	*0.000200*	*0.000015*	0.000011	< 0.000010	0.000012	0.000013	0.000017	0.000011	0.000014	0.000015	0.000024	0.000025
Tin			mg/L	*0.0010*	*0.0050*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Titanium			mg/L	*0.0100*	*0.0050*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Uranium			mg/L	*0.00112*	*0.00116*	0.00039	0.00043	0.00088	0.00137	0.00088	0.00111	0.00150	0.00121	0.00170	0.00215

ST-WT-2A	MAX GRAB	MONTHLY MEAN	Unit	*Annual Average*		6/19/2021	6/21/2021	6/28/2021	7/5/2021	7/19/2021	7/26/2021	8/2/2021	8/9/2021	8/16/2021	8/23/2021
Parameter				*2020*	*2021*										
Vanadium			**mg/L**	*0.0005*	*0.0050*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.2	0.1	**mg/L**	*0.0096*	*0.0081*	0.0084	0.0075	0.0163	< 0.0050	0.0104	< 0.0050	0.0066	0.0065	0.0089	0.0065
Dissolved Metals															
Aluminum			mg/L	*0.0060*	*0.0042*	0.0054	0.0087	< 0.0030	< 0.0030	0.0049	0.0050	< 0.0030	0.0030	< 0.0030	< 0.0030
Antimony			mg/L	*0.00123*	*0.00843*	0.00330	0.00331	0.00409	0.00566	0.00490	0.00641	0.01220	0.00687	0.02070	0.01690
Arsenic			mg/L	*0.00214*	*0.00622*	0.00318	0.00358	0.00520	0.00348	0.00511	0.00345	0.00365	0.00413	0.02150	0.00893
Barium			mg/L	*0.08053*	*0.04832*	0.03500	0.03510	0.04420	0.05050	0.03940	0.04110	0.05470	0.05100	0.05750	0.07470
Beryllium			mg/L	*0.0005*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron			mg/L	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium			mg/L	*0.000020*	*0.000018*	< 0.000010	< 0.000010	0.000011	0.000022	0.000011	< 0.000010	0.000020	0.000013	0.000045	0.000025
Chromium			mg/L	*0.0006*	*0.0010*	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Copper			mg/L	*0.00259*	*0.00169*	0.00145	0.00084	0.00238	0.00107	0.00257	0.00092	0.00203	0.00117	0.00297	0.00147
Iron			mg/L	*0.019*	*0.085*	0.188	0.230	0.051	0.023	0.065	0.107	0.041	0.065	0.052	0.033
Lead			mg/L	*0.00023*	*0.00021*	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	0.00026	0.00025	< 0.00020	< 0.00020
Lithium			mg/L	*0.0083*	*0.0059*	0.0028	0.0033	0.0051	0.0033	0.0043	0.0058	0.0087	0.0061	0.0063	0.0132
Manganese			mg/L	*0.6743*	*0.2490*	0.1500	0.1420	0.2270	0.3990	0.1710	0.1510	0.1860	0.2570	0.5250	0.2820
Mercury			mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum			mg/L	*0.0029*	*0.0029*	0.0015	0.0016	0.0025	0.0032	0.0026	0.0029	0.0033	0.0029	0.0041	0.0039
Nickel			mg/L	*0.0184*	*0.0186*	0.0080	0.0075	0.0075	0.0113	0.0103	0.0091	0.0143	0.0116	0.0718	0.0346
Selenium			mg/L	*0.00097*	*0.00041*	0.00015	0.00016	0.00021	0.00036	0.00037	0.00046	0.00058	0.00041	0.00078	0.00062
Strontium			mg/L	*0.3472*	*0.2770*	0.1550	0.1660	0.2210	0.1950	0.2370	0.2940	0.3810	0.2900	0.3220	0.5090
Thallium			mg/L	*0.000200*	*0.000016*	0.000012	0.000012	0.000013	0.000015	0.000014	0.000014	0.000021	0.000014	0.000023	0.000024
Tin			mg/L	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Titanium			mg/L	*0.010*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Uranium			mg/L	*0.0011*	*0.0011*	0.0004	0.0004	0.0008	0.0014	0.0008	0.0011	0.0015	0.0012	0.0017	0.0020
Vanadium			mg/L	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Zinc			mg/L	*0.0084*	*0.0093*	0.0063	0.0078	0.0280	0.0057	0.0131	< 0.0050	0.0062	0.0057	0.0095	0.0058
Volatile Organics															
Petroleum Hydrocarbons F (C10-C50)	6	3	mg/L	*0.1*	*0.5*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Table 8-65 Whale Tail/ IVR Attenuation Pond Discharge to Whale Tail South Temporary Diffuser (ST-WT-24a)

ST-WT-24A	MAX	MONTHLY	Unit	*Annual Average*		3/2/2021	3/11/2021	3/14/2021	3/22/2021	4/1/2021	4/9/2021	4/16/2021	4/19/2021	4/26/2021	5/2/2021	5/15/2021	5/17/2021	5/27/2021	5/31/2021	6/7/2021
Parameter	**GRAB**	**MEAN**		***2020***	***2021***															
Field Measured																				
Temperature			°C	*1.8*	*0.7*	0.5	0.6	1.0	0.7	0.5	0.6	0.7	0.6	1.0	0.5	0.2	1.1	1.0	0.2	1.1
pH	9.5	9.5	pH units	*7.03*	*7.09*	6.76	6.98	7.11	6.82	7.01	7.11	7.04	7.12	7.08	7.13	7.21	7.21	7.34	7.27	7.16
Conductivity			uS/cm	*321.5*	*238.5*	269.0	204.6	312.0	210.5	208.9	262.0	185.6	188.0	262.0	223.0	197.5	306.0	286.0	219.3	243.0
Turbidity			NTU	*1.3*	*0.9*	0.4	0.8	1.1	1.1	0.8	0.5	0.6	0.4	0.6	0.7	0.9	1.1	0.9	0.5	3.8
Conventional Parameters																				
Hardness, as $CaCO_3$			mg/L	*123*	*86*	101	61.8	115	79.2	80.5	81.9	74.5	98.9	90.3	81.6	83.8	95.6	91.1	77.9	81.9
Total alkalinity, as $CaCO_3$			mg/L	*43*	*42*	41	29	52	37	38	39	34	50	44	40	43	48	45	41	42
Carbonate, as $CaCO_3$			mg/L	*4*	*1*	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bicarbonate, as $CaCO_3$			mg/L	*39*	*41*	40	29	51	37	38	39	34	49	44	40	43	47	44	41	42
TDS			mg/L	*178*	*152*	185	85	140	210	115	140	95	115	135	145	180	165	235	175	155
TSS	30	15	mg/L	*6*	*1*	1	1	1	< 1	1	1	< 1	< 1	< 1	< 1	1	1	1	1	1
Total organic carbon			mg/L	*4.3*	*2.8*	2.4	2.0	2.9	2.2	2.7	2.1	2.3	2.5	2.3	1.9	4.4	3.7	2.0	4.4	4.9
Dissolved organic carbon			mg/L	*4.2*	*2.5*	2.1	1.8	2.6	2.1	2.3	2.1	2.3	2.3	2.0	1.9	3.6	2.7	1.7	4.3	4.3
Major Ions																				
Chloride			mg/L	*49*	*29*	35	19	38	26	27	27	24	31	33	31	25	28	34	27	26
Silica			mg/L	*6.6*	*7.2*	9.3	6.2	9.8	7.3	7.3	7.8	6.6	7.7	7.6	7.7	5.8	6.6	7.4	5.8	4.7
Sulfate			mg/L	*31*	*27*	36	18	35	26	22	24	23	25	27	24	24	28	27	27	33
Nutrients and Chlorophyll a																				
Ammonia (NH_3)			mg/L	*-*	*0.99*	0.55	0.18	2.90	0.46	0.57	0.41	0.53	2.50	1.40	0.59	0.88	1.00	0.79	0.55	1.60
Ammonia Nitrogen	32	16	mg N/L	*1.01*	*0.82*	0.45	0.15	2.40	0.38	0.47	0.34	0.44	2.10	1.10	0.49	0.72	0.85	0.65	0.45	1.30
Nitrate			mg N/L	*1.98*	*1.07*	0.48	0.23	2.63	0.44	0.59	0.53	0.55	2.92	1.54	0.36	1.06	1.34	0.80	0.89	1.69
Nitrite			mg N/L	*0.070*	*0.051*	0.015	< 0.010	0.061	0.011	0.021	0.020	0.017	0.109	0.060	0.016	0.055	0.093	0.072	0.069	0.139
Total Kjeldahl nitrogen			mg N/L	*1.36*	*1.04*	0.66	0.35	2.60	0.59	0.70	0.62	0.68	2.10	1.50	0.57	0.91	0.98	0.71	0.63	2.00
Total phosphorus	0.6	0.3	mg P/L	*0.0330*	*0.0014*	< 0.0010	0.0023	0.0014	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0021	0.0012	0.0037	< 0.0010
Dissolved phosphorus			mg P/L	*0.0178*	*0.0013*	< 0.0010	< 0.0010	< 0.0010	0.0055	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0012	0.0012	0.0011	< 0.0010	< 0.0010	< 0.0010
Orthophosphate (P)			mg/L	*0.01*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Metals																				
Aluminum	1	0.5	mg/L	*0.026*	*0.012*	0.009	0.059	0.011	0.003	0.006	0.006	0.004	0.004	0.006	0.007	0.010	0.007	0.010	0.021	0.012
Antimony			mg/L	*0.00060*	*0.00144*	0.00082	< 0.00050	0.00147	< 0.00050	0.00052	0.00052	< 0.00050	0.00105	0.00183	0.00137	0.00130	0.00192	0.00233	0.00258	0.00433
Arsenic	0.2	0.1	mg/L	*0.00318*	*0.00233*	0.00147	0.00198	0.00258	0.00193	0.00276	0.00203	0.00164	0.00201	0.00192	0.00193	0.00234	0.00295	0.00136	0.00272	0.00538
Barium			mg/L	*0.0672*	*0.0520*	0.0568	0.0311	0.0662	0.0430	0.0455	0.0446	0.0415	0.0657	0.0692	0.0568	0.0468	0.0568	0.0601	0.0506	0.0457
Beryllium			mg/L	*0.0005*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron			mg/L	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium	0.004	0.002	mg/L	*0.000020*	*0.000010*	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000012
Chromium	0.04	0.02	mg/L	*0.0013*	*0.0010*	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0017	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Copper	0.2	0.1	mg/L	*0.00263*	*0.00205*	0.00191	0.00108	0.00344	0.00097	0.00234	0.00118	0.00110	0.00481	0.00261	0.00163	0.00227	0.00215	0.00185	0.00115	0.00226
Iron	2	1	mg/L	*0.485*	*0.126*	0.124	0.546	0.123	0.041	0.114	0.110	0.058	0.090	0.056	0.067	0.136	0.059	0.077	0.122	0.168
Lead	0.1	0.05	mg/L	*0.0002*	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Lithium			mg/L	*0.0054*	*0.0038*	0.0039	0.0025	0.0050	0.0036	0.0036	0.0033	0.0031	0.0048	0.0041	0.0038	0.0037	0.0041	0.0039	0.0033	0.0036
Manganese			mg/L	*0.267*	*0.242*	0.281	0.264	0.402	0.300	0.283	0.250	0.257	0.224	0.194	0.194	0.207	0.209	0.184	0.192	0.188
Mercury	0.008	0.004	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum			mg/L	*0.004*	*0.004*	0.0041	0.0019	0.0064	0.0033	0.0037	0.0036	0.0027	0.0046	0.0074	0.0052	0.0034	0.0042	0.0046	0.0033	0.0027
Nickel	0.5	0.25	mg/L	*0.008*	*0.005*	0.0042	0.002	0.0049	0.0025	0.0027	0.0025	0.0022	0.0057	0.0114	0.0054	0.0053	0.0053	0.005	0.0062	0.0099
Selenium			mg/L	*0.0007*	*0.0001*	< 0.00010	< 0.00010	0.00016	< 0.00010	< 0.00010	< 0.00010	0.0001	0.00028	0.00029	0.00013	0.00012	0.00017	0.00013	0.00012	0.0002
Strontium			mg/L	*0.246*	*0.231*	0.254	0.205	0.251	0.218	0.241	0.238	0.236	0.267	0.251	0.228	0.215	0.233	0.225	0.2	0.198
Thallium			mg/L	*0.000200*	*0.000016*	0.000015	< 0.000010	0.000015	0.000011	0.000011	< 0.000010	< 0.000010	0.000016	0.000021	0.000019	0.000018	0.000022	0.000023	0.000022	0.000015
Tin			mg/L	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Titanium			mg/L	*0.010*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Uranium			mg/L	*0.00138*	*0.00089*	0.00077	0.00038	0.00158	0.00052	0.00065	0.00068	0.00043	0.00100	0.00087	0.00076	0.00093	0.00152	0.00142	0.00094	0.00090

ST-WT-24A	MAX GRAB	MONTHLY MEAN	Unit	*Annual Average*		3/2/2021	3/11/2021	3/14/2021	3/22/2021	4/1/2021	4/9/2021	4/16/2021	4/19/2021	4/26/2021	5/2/2021	5/15/2021	5/17/2021	5/27/2021	5/31/2021	6/7/2021
Parameter				*2020*	*2021*															
Vanadium			mg/L	*0.0005*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.2	0.1	mg/L	*0.0113*	*0.0055*	0.0066	0.0059	< 0.0050	< 0.0050	0.0054	0.0053	0.0061	< 0.0050	< 0.0050	< 0.0050	0.0059	0.0066	0.0061	< 0.0050	< 0.0050
Dissolved Metals																				
Aluminum			mg/L	*0.0055*	*0.0035*	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	0.0080	0.0056	< 0.0030	< 0.0030	< 0.0030
Antimony			mg/L	*0.00075*	*0.00145*	0.00075	< 0.00050	0.00142	0.00050	0.00053	< 0.00050	< 0.00050	0.00104	0.00179	0.00143	0.00134	0.00194	0.00242	0.00268	0.00447
Arsenic			mg/L	*0.0021*	*0.0020*	0.0010	0.0013	0.0022	0.0019	0.0024	0.0016	0.0014	0.0018	0.0018	0.0016	0.0022	0.0027	0.0011	0.0022	0.0043
Barium			mg/L	*0.0660*	*0.0523*	0.0562	0.0314	0.0656	0.0442	0.0448	0.0430	0.0395	0.0638	0.0700	0.0586	0.0465	0.0575	0.0612	0.0521	0.0494
Beryllium			mg/L	*0.0005*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron			mg/L	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium			mg/L	*0.000024*	*0.000010*	0.000011	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000011
Chromium			mg/L	*0.0006*	*0.0010*	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Copper			mg/L	*0.0016*	*0.0027*	0.00213	0.00103	0.00318	0.00136	0.00234	0.00172	0.00128	0.01	0.00261	0.00109	0.00428	0.00448	0.00225	0.00114	0.00183
Iron			mg/L	*0.02*	*0.03*	0.0393	0.0391	0.0355	0.0216	0.0303	0.0197	0.0181	0.0346	0.0155	0.0114	0.12	0.0519	0.0178	0.0236	0.0465
Lead			mg/L	*0.0002*	*0.0002*	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	0.0003
Lithium			mg/L	*0.006*	*0.004*	0.0038	0.0025	0.0051	0.0037	0.0036	0.0035	0.003	0.0048	0.0041	0.0037	0.0034	0.0038	0.0039	0.0037	0.0038
Manganese			mg/L	*0.1062*	*0.2402*	0.282	0.268	0.399	0.304	0.27	0.242	0.243	0.224	0.191	0.203	0.194	0.198	0.183	0.192	0.21
Mercury			mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum			mg/L	*0.0046*	*0.0039*	0.0036	0.0020	0.0063	0.0033	0.0037	0.0034	0.0026	0.0046	0.0054	0.0046	0.0034	0.0042	0.0047	0.0033	0.0028
Nickel			mg/L	*0.0073*	*0.0043*	0.0043	0.0017	0.0047	0.0026	0.0026	0.0023	0.0021	0.0057	0.0042	0.0026	0.0051	0.0049	0.0051	0.0062	0.0102
Selenium			mg/L	*0.00075*	*0.00015*	< 0.00010	< 0.00010	0.00014	< 0.00010	< 0.00010	< 0.00010	< 0.00010	0.00028	0.0003	0.00012	0.00012	0.00015	0.00014	0.00013	0.00023
Strontium			mg/L	*0.232*	*0.230*	0.236	0.216	0.263	0.222	0.237	0.235	0.232	0.258	0.241	0.227	0.204	0.219	0.234	0.218	0.209
Thallium			mg/L	*0.000200*	*0.000015*	0.000015	< 0.000010	0.000016	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000014	0.000017	0.000018	0.000018	0.000021	0.000021	0.000021	0.000017
Tin			mg/L	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Titanium			mg/L	*0.01*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Uranium			mg/L	*0.00138*	*0.00086*	0.00075	0.0003	0.00156	0.00053	0.00065	0.00063	0.0004	0.00095	0.0008	0.00078	0.00087	0.00138	0.00145	0.00092	0.00086
Vanadium			mg/L	*0.0005*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Zinc			mg/L	*0.0063*	*0.0078*	0.0063	0.0067	< 0.0050	< 0.0050	0.0065	0.006	0.0067	0.0122	< 0.0050	0.0068	0.0072	0.0157	0.012	0.0051	0.0104
Volatile Organics																				
Petroleum Hydrocarbons F (C10-C50)	6	3	mg/L	*0.1*	*0.5*	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Table 8-66 Whale Tail / IVR Attenuation Pond Discharge to Whale Tail South Permanent Diffuser (ST-WT-24)

ST-WT-24	MAX GRAB	MONTHLY MEAN	Unit	*Annual Average*		1/4/2021	1/11/2021	1/18/2021	1/25/2021	2/1/2021	2/10/2021	6/7/2021	6/14/2021	10/2/2021	10/4/2021	10/11/2021	10/18/2021	10/25/2021	11/19/2021	11/22/2021
Parameter				*2020*	*2021*															
Field Measured																				
Temperature			°C	*0.8*	*1.4*	0.4	0.0	0.2	0.7	0.9	0.3	1.1	4.2	4.3	4.5	2.0	1.5	0.4	0.0	0.0
pH	9.5	9.5	pH units	*7.09*	*7.01*	7.12	7.16	7.20	6.95	7.02	7.09	7.08	7.13	6.46	7.23	7.85	6.66	6.53	6.77	6.88
Conductivity			uS/cm	*239*	*308*	220	332	199	306	260	197	247	221	405	407	382	389	320	362	379
Turbidity			NTU	*1.0*	*0.8*	0.7	0.7	0.5	0.7	0.8	0.7	0.9	1.1	1.3	0.6	0.9	0.6	0.8	1.2	1.0
Conventional Parameters																				
Hardness, as $CaCO_3$			mg/L	*104*	*116*	80.4	129	75	113	92.1	76	85.2	75.1	145	149	148	154	126	155	136
Total alkalinity, as $CaCO_3$			mg/L	*52*	*41*	37	60	37	50	44	30	43	32	38	38	37	35	39	47	42
Carbonate, as $CaCO_3$			mg/L	*4*	*1*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2	< 2
Bicarbonate, as $CaCO_3$			mg/L	*51*	*40*	37	60	37	50	44	30	42	32	38	38	37	35	38	47	42
TDS			mg/L	-	*196*	145	195	175	165	115	95	200	35	290	310	230	200	235	282	275
TSS	30	15	mg/L	*3*	*2*	2	1	2	< 1	< 1	1	5	< 1	2	2	< 1	2	3	2	< 1
Total organic carbon			mg/L	*4.0*	*2.6*	2.2	2.5	2.1	2.7	2	2.1	4.9	4.1	2.5	2.4	2.7	2.2	1.9	2.2	2.5
Dissolved organic carbon			mg/L	*3.0*	*2.5*	2.2	2.3	2	2.3	2	2.1	4.3	3.8	2.2	2.3	2.4	2.2	2	2.4	2.5
Major Ions																				
Chloride			mg/L	*33.5*	*33.5*	25	46	27	41	36	23	26	23	40	39	37	34	31	38.4	36.5
Silica			mg/L	*7.8*	*7.2*	6.9	10.0	8.1	9.5	8.8	6.6	4.7	4.0	6.7	6.8	6.5	7.2	8.2	-	-
Sulfate			mg/L	*31*	*51*	26	39	22	25	24	30	32	36	74	74	76	87	67	75	77
Nutrients and Chlorophyll a																				
Ammonia (NH_3)			mg/L	-	*0.83*	0.99	1.90	0.45	2.10	1.00	0.25	1.70	0.80	0.60	0.57	0.69	0.54	0.23	0.39	0.25
Ammonia Nitrogen	32	16	mg N/L	-	*0.73*	0.82	1.50	0.37	1.70	0.83	0.20	1.40	0.65	0.49	0.47	0.57	0.44	0.19	0.78	0.50
Nitrate			mg N/L	*1.33*	*1.65*	0.85	1.26	0.35	1.41	0.68	0.41	1.69	1.14	3.04	3.01	2.92	2.36	1.12	2.50	2.05
Nitrite			mg N/L	*0.048*	*0.064*	0.020	0.043	0.010	0.063	0.031	< 0.010	0.139	0.090	0.080	0.082	0.063	0.060	0.029	0.130	0.110
Total Kjeldahl nitrogen			mg N/L	*1.54*	*0.90*	1.10	1.60	0.53	2.00	1.00	0.47	1.70	0.95	0.46	0.56	0.64	0.53	0.31	0.86	0.83
Total phosphorus	0.6	0.3	mg P/L	*0.027*	*0.009*	0.001	< 0.001	0.054	0.002	< 0.001	0.002	0.002	0.004	0.006	< 0.001	< 0.001	< 0.001	< 0.001	0.020	0.030
Dissolved phosphorus			mg P/L	*0.0200*	*0.0052*	< 0.0010	< 0.0010	< 0.0010	0.0013	0.0011	< 0.0010	0.0011	0.0014	0.0029	0.0030	< 0.0010	0.0012	< 0.0010	0.0300	0.0300
Orthophosphate (P)			mg/L	*0.01*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Metals																				
Aluminum	1	0.5	mg/L	*0.0270*	*0.0149*	0.0068	0.0072	0.0049	0.0062	0.0070	0.0175	0.1070	0.0118	0.0094	0.0081	0.0091	0.0052	0.0058	0.0080	0.0100
Antimony			mg/L	*0.00026*	*0.00414*	< 0.00050	0.00126	< 0.00050	0.00166	0.00121	< 0.00050	0.00457	0.00294	0.00796	0.00852	0.00836	0.00767	0.00258	0.00780	0.00600
Arsenic	0.2	0.1	mg/L	*0.00199*	*0.00373*	0.00232	0.00225	0.00182	0.00237	0.00150	0.00149	0.00762	0.00335	0.00593	0.00550	0.00270	0.00353	0.00291	0.00810	0.00450
Barium			mg/L	*0.05634*	*0.04894*	0.03970	0.06600	0.03680	0.05820	0.04960	0.04160	0.04730	0.04200	0.04650	0.04860	0.04460	0.05060	0.05610	0.05820	0.04830
Beryllium			mg/L	*0.0006*	*0.0002*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0005
Boron			mg/L	*0.028*	*0.044*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.002	< 0.002
Cadmium	0.004	0.002	mg/L	*0.000029*	*0.000018*	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000012	0.000014	0.000025	0.000018	0.000019	0.000026	0.000023	0.000050	< 0.00002
Chromium	0.04	0.02	mg/L	*0.0006*	*0.0010*	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0023	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0006	< 0.0006
Copper	0.2	0.1	mg/L	*0.0025*	*0.0014*	0.0017	0.0029	0.0013	0.0020	0.0009	0.0009	0.0022	0.0008	0.0010	0.0009	0.0009	0.0008	0.0007	0.0019	0.0016
Iron	2	1	mg/L	*0.393*	*0.231*	0.158	0.088	0.092	0.148	0.067	0.255	0.524	0.181	0.308	0.203	0.211	0.238	0.365	0.410	0.220
Lead	0.1	0.05	mg/L	*0.000174*	*0.000196*	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	0.000200	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00017	< 0.00017
Lithium			mg/L	*0.0060*	*0.0048*	0.0035	0.0060	0.0034	0.0047	0.0040	0.0029	0.0039	0.0035	0.0061	0.0062	0.0060	0.0053	0.0056	0.0060	0.0050
Manganese			mg/L	*0.249*	*0.261*	0.232	0.276	0.231	0.194	0.336	0.231	0.199	0.222	0.183	0.245	0.214	0.291	0.337	0.351	0.379
Mercury	0.008	0.004	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum			mg/L	*0.0047*	*0.0037*	0.0036	0.0079	0.0033	0.0073	0.0055	0.0019	0.0029	0.0019	0.0025	0.0029	0.0029	0.0025	0.0023	0.0047	0.0033
Nickel	0.5	0.25	mg/L	*0.0045*	*0.0157*	0.0025	0.0043	0.0025	0.0048	0.0033	0.0037	0.0107	0.0107	0.0183	0.0218	0.0236	0.0245	0.0175	0.0381	0.0491
Selenium			mg/L	*0.00057*	*0.00033*	< 0.00010	0.00013	< 0.00010	0.00012	< 0.00010	< 0.00010	0.00022	0.00020	0.00038	0.00037	0.00033	0.00035	0.00021	< 0.0005	0.00170
Strontium			mg/L	*0.218*	*0.254*	0.229	0.280	0.192	0.234	0.225	0.201	0.205	0.166	0.322	0.333	0.333	0.307	0.261	0.278	0.249
Thallium			mg/L	*0.000177*	*0.000038*	< 0.000010	0.000016	< 0.000010	0.000018	0.000011	0.000017	0.000018	0.000012	0.000014	0.000014	0.000013	0.000012	0.000011	< 0.0002	< 0.0002
Tin			mg/L	*0.002*	*0.004*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001
Titanium			mg/L	*0.009*	*0.006*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.01
Uranium			mg/L	*0.00098*	*0.00117*	0.00078	0.00207	0.00064	0.00194	0.00139	0.00025	0.00103	0.00044	0.00128	0.00149	0.00155	0.00105	0.00060	0.00200	0.00100

ST-WT-24	MAX GRAB	MONTHLY MEAN	Unit	*Annual Average*		1/4/2021	1/11/2021	1/18/2021	1/25/2021	2/1/2021	2/10/2021	6/7/2021	6/14/2021	10/2/2021	10/4/2021	10/11/2021	10/18/2021	10/25/2021	11/19/2021	11/22/2021
Parameter				*2020*	*2021*															
Vanadium			mg/L	0.00050	0.00440	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0005	< 0.0005
Zinc	0.2	0.1	mg/L	0.0058	0.0073	< 0.0050	0.0051	< 0.0050	< 0.0050	< 0.0050	0.0058	0.0091	0.0074	0.0098	0.0065	0.0057	0.0092	0.0083	0.0140	0.0090
Dissolved Metals																				
Aluminum			mg/L	*0.0048*	*0.0034*	0.0051	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.005	< 0.005
Antimony			mg/L	*0.00036*	*0.00405*	< 0.00050	0.00125	< 0.00050	0.00160	0.00123	< 0.00050	0.00454	0.00299	0.00794	0.00813	0.00806	0.00739	0.00253	0.00710	0.00650
Arsenic			mg/L	*0.00092*	*0.00226*	0.00208	0.00189	0.00169	0.00209	0.00136	0.00106	0.00430	0.00298	0.00206	0.00267	0.00137	0.00225	0.00149	0.00320	0.00340
Barium			mg/L	*0.0562*	*0.0486*	0.0387	0.0657	0.0377	0.0557	0.0503	0.0406	0.0466	0.0434	0.0463	0.0468	0.0435	0.0481	0.0545	0.0573	0.0540
Beryllium			mg/L	*0.0004*	*0.0002*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0005
Boron			mg/L	*0.0157*	*0.0436*	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.002	< 0.002
Cadmium			mg/L	*0.000024*	*0.000016*	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	0.000011	0.000013	0.000034	0.000021	0.000016	0.000027	0.000016	< 0.00002	< 0.00002
Chromium			mg/L	*0.0007*	*0.0009*	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0006	< 0.0006
Copper			mg/L	*0.00206*	*0.00132*	0.00264	0.00244	0.00110	0.00139	0.00085	0.00077	0.00202	0.00086	0.00105	0.00075	0.00094	0.00114	0.00100	0.00070	0.00210
Iron			mg/L	*0.0298*	*0.0691*	0.1330	0.0157	0.0213	0.0192	0.0111	0.0560	0.0478	0.0905	0.0654	0.0468	0.0660	0.1150	0.1290	0.1100	0.1100
Lead			mg/L	*0.00017*	*0.00020*	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00017	< 0.00017
Lithium			mg/L	*0.0049*	*0.0047*	0.0035	0.0062	0.0034	0.0050	0.0040	0.0026	0.0038	0.0035	0.0059	0.0058	0.0052	0.0058	0.0053	0.0050	0.0050
Manganese			mg/L	*0.246*	*0.241*	0.213	0.283	0.217	0.186	0.333	0.218	0.193	0.231	0.188	0.234	0.209	0.297	0.332	-	-
Mercury			mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum			mg/L	*0.0046*	*0.0036*	0.0033	0.0081	0.0034	0.0071	0.0055	0.0017	0.0028	0.0020	0.0025	0.0027	0.0028	0.0023	0.0022	0.0043	0.0031
Nickel			mg/L	*0.0037*	*0.0163*	0.0025	0.0043	0.0023	0.0045	0.0033	0.0034	0.0098	0.0115	0.0187	0.0214	0.0229	0.0251	0.0180	0.0355	0.0610
Selenium			mg/L	*0.00047*	*0.00031*	< 0.00010	0.00014	< 0.00010	0.00014	< 0.00010	< 0.00010	0.00022	0.00020	0.00039	0.00037	0.00032	0.00034	0.00020	0.00140	< 0.0005
Strontium			mg/L	*0.219*	*0.251*	0.221	0.291	0.209	0.237	0.221	0.186	0.204	0.169	0.321	0.311	0.301	0.296	0.241	0.277	0.274
Thallium			mg/L	*0.000173*	*0.000038*	< 0.000010	0.000016	< 0.000010	0.000015	0.000011	0.000017	0.000015	0.000014	0.000016	0.000016	0.000014	0.000012	< 0.000010	< 0.0002	< 0.0002
Tin			mg/L	*0.002*	*0.004*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001
Titanium			mg/L	*0.009*	*0.006*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.01
Uranium			mg/L	*0.00096*	*0.00104*	0.00073	0.00206	0.00062	0.00186	0.00145	0.00022	0.00084	0.00041	0.00116	0.00137	0.00147	0.00094	0.00049	0.00100	0.00100
Vanadium			mg/L	*0.0011*	*0.0044*	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0005	< 0.0005
Zinc			mg/L	*0.0059*	*0.0079*	0.0071	< 0.0050	< 0.0050	< 0.0050	0.0095	0.0055	0.0086	0.0079	0.0121	0.0059	0.0062	0.0104	0.0086	0.0110	0.0100
Volatile Organics																				
Petroleum Hydrocarbons F (C10-C50)	6	3	mg/L	*0.4*	*0.4*	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.2	< 0.2	< 0.2	<0.5	< 0.2	< 0.1	< 0.1

8.5.3.2.16 Groundwater Storage Pond Effluent – GSP-1 (ST-WT-20)

The management of underground water was transferred from the Water License 2BB-MEA1828 to the 2AM-WTP1830 Licence in 2020. Groundwater Storage Pond One (GSP-1) formally A-P5 (MEA-4) is used to store water from the underground operations. A total volume of 935 m^3 was pumped from underground to GSP-1 (ST-WT-20) in 2021 during June to August. As per the Water Licence, sampling is conducted four times per year minimum. Agnico Eagle was collecting samples weekly, however, in July 2021 has switched to currently sampling GSP-1 on a monthly basis during open water conditions. Results are provided in Table 8-67 below.

Table 8-67 Whale Tail Groundwater Storage Pond (GSP-1) 2021 Water Quality Monitoring (ST-WT-20)

ST-WT-20	Unit	*Annual Average*		6/8/2021	6/13/2021	6/20/2021	6/27/2021	7/4/2021	8/1/2021	9/5/2021	10/4/2021
Parameter		*2020*	*2021*								
Field Measured											
Temperature	°C	*9.4*	*6.9*	1.7	5.0	5.3	7.7	10.1	11.3	10.5	3.9
pH	pH units	*7.43*	*7.25*	6.81	7.28	7.62	7.11	7.25	7.47	7.21	7.28
Conductivity	uS/cm	*2070*	*12673*	1850	2004	3030	4210	4270	6260	6860	72900
Turbidity	NTU	*17.4*	*5.1*	7.5	15.9	3.1	1.7	2.0	1.8	2.8	6.2
Conventional Parameters											
Hardness, as $CaCO_3$	mg/L	*1209*	*1778*	687	755	1120	1640	1760	2480	2790	2990
Total alkalinity, as $CaCO_3$	mg/L	*47*	*40*	38	36	36	39	41	43	43	44
TDS	mg/L	*1446*	*2643*	990	1000	1760	2110	2300	3530	5020	4430
TSS	mg/L	*18*	*10*	13	20	4	3	6	10	6	21
Major Ions											
Chloride	mg/L	*672*	*1285*	490	540	850	1300	1400	1700	1900	2100
Fluoride	mg/L	*0.07*	*0.10*	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	*24*	*35*	14	17	28	32	37	43	53	54
Nutrients and Chlorophyll a											
Ammonia (NH_3)	mg/L	-	*14.5*	3.8	5.0	9.1	13.0	13.0	20.0	24.0	28.0
Ammonia Nitrogen	mg N/L	*7.0*	*12.0*	3.1	4.1	7.5	11.0	11.0	17.0	19.0	23.0
Un-Ionized Ammonia, calculated	mg/L	*0.07*	*0.05*	0.00	-	0.05	0.03	0.04	0.12	0.07	0.06
Nitrate	mg N/L	*17.75*	*34.37*	9.08	12.70	20.10	30.00	32.20	47.50	60.40	63.00
Nitrite	mg N/L	*0.23*	*0.52*	0.19	0.24	0.42	0.53	0.55	0.60	0.72	0.94
Total Metals											
Aluminum	mg/L	*0.243*	*0.161*	0.329	0.304	0.073	0.048	0.075	0.095	0.063	0.301
Arsenic	mg/L	*0.0084*	*0.0402*	0.0914	0.0714	0.0492	0.0428	0.0336	0.0160	0.0097	0.0073
Barium	mg/L	*0.353*	*0.379*	0.182	0.211	0.286	0.373	0.38	0.478	0.529	0.595
Cadmium	mg/L	*0.000327*	*0.000824*	0.000131	0.000212	0.000402	0.000652	0.000871	0.001130	0.001460	0.001730
Chromium	mg/L	*0.0034*	*0.0058*	0.0112	0.0075	< 0.0020	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0059
Copper	mg/L	*0.0027*	*0.0021*	0.00093	0.0013	0.0014	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.0031
Iron	mg/L	*0.49*	*0.26*	0.54	0.51	0.10	0.06	0.09	0.15	0.10	0.52
Lead	mg/L	*0.00041*	*0.00080*	0.00034	0.00065	< 0.00040	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Manganese	mg/L	*1.91*	*1.81*	0.48	0.70	1.09	1.57	1.68	2.35	3.06	3.52
Mercury	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.0035*	*0.0042*	0.0024	0.0024	0.0031	< 0.0050	< 0.0050	0.0053	< 0.0050	< 0.0050
Nickel	mg/L	*0.0537*	*0.0843*	0.0467	0.0477	0.0612	0.0722	0.0837	0.107	0.122	0.134
Selenium	mg/L	*0.00097*	*0.00055*	0.00022	0.00025	0.00039	< 0.00050	0.00056	0.00072	0.00085	0.00092
Silver	mg/L	*0.00010*	*0.00008*	< 0.00002	< 0.00004	< 0.00004	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Thallium	mg/L	*0.00021*	*0.00017*	0.00007	0.00007	0.00010	0.00013	0.00020	0.00026	0.00028	0.00029
Zinc	mg/L	*0.009*	*0.019*	< 0.0050	< 0.010	< 0.010	< 0.025	< 0.025	< 0.025	< 0.025	0.030

8.5.3.2.17 Erosion Management

As required by NIRB Project Certificate 008 Condition 11: ***The Proponent shall develop and implement an Erosion Management Plan to prevent or minimize erosion and its resulting effects from project-related land disturbance.***

In accordance with Condition 11 of NIRB Project Certificate No. 008, Agnico Eagle maintains an Erosion Management Plan (V2; December 2018) for the Whale Tail site. This plan presents the monitoring and mitigation actions related to three specific events which have the potential to cause erosional concerns: dike construction and dewatering, freshet, and the rise of water levels in Whale Tail South.

For each of these three events, monitoring consists of water quality analyses and/or visual inspections in erosion-prone areas, which are conducted and reported under a number of programs, as follows.

8.5.3.2.17.1 Water Quality

For each of these three events, monitoring consists of water quality analyses and/or visual inspections in erosion-prone areas, which are conducted and reported under a number of programs, as follows.

- For erosion related to dike construction and dewatering:
  - *No dike construction and dewatering in 2021*.

- For erosion related to freshet:
  - *Water Quality and Flow Monitoring Plan* (according to NWB Type A Water License requirements), as described in Section 8.5 of this report.
  - *Freshet Action Plan* (results below)

- For erosion related to rise of water levels in Whale Tail South:
  - *Water Quality and Flow Monitoring Plan* (according to NWB Type A Water License requirements), as described in Section 8.5 of this report
  - *CREMP* (Appendix 33 of this report)
  - *Erosion Management Plan* (results below)

Results of visual assessments for erosional concerns and water quality monitoring under the *Freshet Action Plan* and *Erosion Management Plan* (in relation to Whale Tail South flooding) are reported here. Others are reported under the various sections of this Annual Report, as described above.

8.5.3.2.17.2 Freshet Action Plan Monitoring

Under this Plan, inspections of Whale Tail Site and Whale Tail Haul Road water management infrastructure (including bridges, culverts, ditches, Whale Tail South channel, IVR diversion channel) are conducted daily to weekly by dedicated personnel starting in May.

According to the *Erosion Management Plan*, erosional concerns are recorded, such as: bed erosion upstream and downstream of watercourse crossing structures, scour under bridge abutments and abutment foundations, erosion along cutslopes and fillslopes of embankments (rill and gully erosion), etc.

Water quality monitoring for turbidity/TSS is also conducted as required based on visual observations. TSS is analyzed by onsite assay laboratory procedures when excess turbidity is observed by visual

inspection. TSS is analyzed by commercial accredited laboratory if any elevated results are received from the onsite laboratory. Laboratory-measured TSS results that exceed 30 mg/L are reported to appropriate regulators.

An inspection log is maintained, documenting general conditions at each location, observations on flow rates and clarity, turbidity sample collection (as required), and any mitigation measures that are implemented to prevent erosional concerns.

In 2021, no major erosion concerns that required mitigation actions were identified during visual inspections for Whale Tail Haul Road water management infrastructure (e.g. scour, bed erosion, etc.).

Similarly, no major turbidity concerns were identified, and no water quality samples were required to be collected. As precautionary measures, straw booms or woodchip booms were installed for Whale Tail Haul Road infrastructure as follows:

- Culverts:
    - Booms installed beginning June 4 as required
- Bridge km 126
    - Booms installed June 8
- Bridge km 135
    - Booms installed June 16
- Bridge km 139
    - Booms installed June 8

For onsite inspections, no major erosional concerns were observed during visual inspections (e.g. scour, bed erosion, gullying, etc.).

The following situations with potential to lead to erosional concerns were identified, with actions taken as described.

1. In August 2020, culverts were installed across the road leading to the emulsion plant, near the Mammoth Dike south abutment, after ponding water was observed on the upstream (south) side of this road during freshet. In 2021, overland flow was again observed across this road in May, while culverts were blocked with ice and snow. Attempts were made to thaw the culverts (May 28th), but some flow across the road continued until June 12th (in 2020 prior to culvert installation, the overland flow continued until mid-July). Sediments control measures (straw and wood-chip booms) were installed downstream of the road to avoid potential sediments transportation. Some ponding water on the south side of the road at the culverts was again observed for several days in mid-August, but water was flowing through the culvert as intended.

8.5.3.2.17.3 Whale Tail South Flooding

Flooding of Whale Tail South (WTS) was complete in 2019. However, visual inspections continued in 2021 during the open water season throughout the WTS flood zone. Since flooding has been complete for two years, these surveys were conducted opportunistically by Environment Department technicians to ensure that erosion along the new banks did not mobilize excess TSS into Whale Tail Lake. Shorelines

were observed for any major instability, along with signs of permafrost degradation such as ground ice melting, gully and fissuring. None of these issues were identified in 2021 and no mitigation was required.

8.5.4 Sewage Treatment Plant

8.5.4.1 *Meadowbank Site*

The Meadowbank mine site has one Seprotech L333 (STP-SEP) sewage treatment plant (STP) and three Little John 100 units (LJ-MIX) in operation; the equipment operates together with one sewage discharge effluent stream directed to the Stormwater Management Pond (SMP). In 2021, water was pumped from the SMP to the South Cell TSF in July, August, and September. There is no discharge to any receiving waters. The SMP also collects spring runoff from the surrounding area.

Samples are taken in accordance with Operation & Maintenance Manual – Sewage Treatment Plan for the purpose of determining operating efficiency of the units. Sample results are available in Table 8-69, for influent (STP-IN), Seprotech L333 and LJ-MIX effluent. Results of the sample analysis are submitted to the NWB in the monthly monitoring reports.

The total volume of treated sewage discharged in 2021 was 24,509 m^3. In addition, 362 m^3 of sewage sludge was collected and disposed of in the Tailings Storage Facility. A monthly summary of the volume of STP waste is presented in Table 8-68.

Table 8-68 Meadowbank 2021 Sewage Treatment Plant Waste Volume

Sewage volume from STP 2021			
Month	**Total flow to biodisks (m^3)**	**Total Lift station #3 out (m^3)**	**Lift #2 and Biodisks sludge out (m^3)**
	Sewage Collected at EQ tank	*All water (grey and black) discharged to TDL*	*Sewage sludge removed from STP*
January	2064	2828	47.6
February	1847	2536	38.08
March	1860	2569	22.6
April	1770	2456	15.75
May	2125	2792	18
June	1927	2654	31.6
July	2119	2929	20.4
August	1954	2752	47.6
September	2209	2990	44.2
October	2306	3167	52.7
November	2301	3176	13.6
December	2027	2846	10.2
Total	**24,509**	**33,695**	**362.33**

Note:
Daily the sewage truck picks up greywater from TCG and then grease from kitchen and brings it the Tailings Pond
After that the sewage truck picks up sewage from various locations around the mine and brings it the STP

Table 8-69 Meadowbank 2021 Sewage Treatment Plan (STP-IN, STP-SEP and LJ-MIX)

STP-IN	Sample date	1/4/2021	2/2/2021	3/8/2021	4/6/2021	5/10/2021	6/7/2021	7/5/2021	8/2/2021	9/6/2021	10/5/2021	11/1/2021	12/6/2021
Parameter	**Unit**												
Field Measured													
pH	pH units	6.80	7.40	7.50	7.80	7.30	7.40	7.80	7.00	8.40	7.29	7.60	7.60
Conventional Parameters													
TSS	mg/L	155	60	81	300	95	190	64	8	290	110	110	105
Nutrients and Chlorophyll a													
Ammonia Nitrogen	mg/L	91.65	91.61	94	98.41	94	90	92	11	93	85	67	99.32
Un-Ionized Ammonia, calculated	mg/L	0.76	7.99	2.2	1.25	1.5	1.3	2.7	0.057	12	0.93	1.2	1.45
Nitrate	mg/L	0.33	0.24	< 0.10	0.18	< 0.10	< 0.10	< 0.10	22.5	< 0.10	< 0.10	< 0.10	0.18
Nitrite	mg/L	0.100	0.150	0.020	0.080	0.015	0.021	< 0.010	< 0.010	0.016	< 0.010	< 0.010	0.030
Total Kjeldahl nitrogen	mg/L	110	120	93	110	94	91	99	13	98	96	75	120
Biochemical Oxygen Demand	mg/L	230	178	140	188	180	140	170	6	140	180	96	172
Chemical oxygen demand	mg/L	549	455	420	529	480	490	430	47	310	510	300	377
Total phosphorus	mg/L	10	8.41	8	10.54	13	9.1	12	8.8	8.4	12	7.6	9.4
Coliforms													
Total Coliform	CFU/100mL	40000000	ND	28000000	66000000	60000000	18000000	120000000	< 10000	53000000	< 1000000	19000000	32000000
Fecal Coliform	CFU/100mL	5100000	2300000	4500000	9000000	4800000	2000000	153000	< 10000	6306300	4000000	2800000	3000000
Atypical colonies	CFU/100mL	57000000	>200000000	84000000	39000000	580000000	65000000	120000000	180200	52000000	98000000	144000000	90000000

STP-SEP	Sample date	1/4/2021	2/2/2021	3/8/2021	4/6/2021	5/10/2021	6/7/2021	7/5/2021	8/2/2021	9/6/2021	10/5/2021	11/1/2021	12/6/2021
Parameter	**Unit**												
Field Measured													
pH	pH units	7.10	6.50	6.00	4.90	5.00	6.40	5.30	6.00	6.66	6.88	7.00	6.90
Conventional Parameters													
TSS	mg/L	10	3	8	7	4	12	6	260	8	8	9	14
Nutrients and Chlorophyll a													
Ammonia Nitrogen	mg/L	38	31.41	13	13.37	8.6	14	11	93	20	24	28	26.84
Un-Ionized Ammonia, calculated	mg/L	0.32	0.02	0.0078	< 0.01	< 0.00061	0.018	0.0011	0.045	0.046	0.092	0.12	0.08
Nitrate	mg/L	4.87	38.7	30.9	26.9	22.3	23.7	23.8	< 0.10	18.6	15.1	11.4	13.4
Nitrite	mg/L	1.110	0.460	0.033	0.080	0.041	0.058	< 0.010	< 0.010	1.200	0.593	1.160	2.380
Total Kjeldahl nitrogen	mg/L	41	31	14	14	9.2	14	12	100	23	24	32	34
Biochemical Oxygen Demand	mg/L	7	1	4	3	3	7	4	140	6	6	14	11
Chemical oxygen demand	mg/L	51	47	53	52	45	67	39	510	51	60	63	63
Coliforms													
Total Coliform	CFU/100mL	< 1000	2200	19000	< 1000	200	1000	< 100	ND	< 1000	900	2200	2800
Fecal Coliform	CFU/100mL	46	10	10	100	< 10	< 10	< 10	>60000	1400	100	< 10	30
Atypical colonies	CFU/100mL	180000	13000	49000	109000	17000	73000	4600	>2000000	122000	6800	600	< 100

STP-LJ-MIX	Sample date	1/4/2021	2/2/2021	3/8/2021	4/6/2021	5/10/2021	6/7/2021	7/5/2021	8/2/2021	9/6/2021	10/5/2021	11/1/2021	12/6/2021
Parameter	**Unit**												
Field Measured													
pH	pH units	7.40	6.80	6.60	6.00	6.40	6.70	5.60	6.10	6.35	6.51	5.19	5.70
Conventional Parameters													
TSS	mg/L	9	11	15	4	45	4	20	26	22	24	4	11
Nutrients and Chlorophyll a													
Ammonia Nitrogen	mg/L	8.44	29.45	21	12.41	5.6	6.8	14	16	35	18	14	10.2
Un-Ionized Ammonia, calculated	mg/L	< 0.01	0.14	0.061	< 0.01	0.0091	0.019	0.0025	0.019	0.043	0.029	0.0011	< 0.01
Nitrate	mg/L	14	13.8	32	21.6	14.5	14.7	38.4	14.9	50.1	18.9	18.3	19.9
Nitrite	mg/L	0.280	0.470	0.087	0.180	0.053	0.264	0.015	0.389	0.075	0.142	0.067	0.310
Total Kjeldahl nitrogen	mg/L	9.9	31	21	15	5.6	6.7	16	16	34	15	14	13
Biochemical Oxygen Demand	mg/L	3	2	8	2	25	3	15	5	9	7	3	5
Chemical oxygen demand	mg/L	61	34	69	34	44	47	42	48	77	65	50	56
Coliforms													
Total Coliform	CFU/100mL	60000	52000	11000	< 1000	2000	< 10000	< 1000	2700	< 100000	900	< 1000	200
Fecal Coliform	CFU/100mL	25	220	280	< 10	250	20	10	< 10	< 10	100	< 10	2
Atypical colonies	CFU/100mL	70000	32000	10000	12000	6000	340000	108000	4500	2700000	8100	7000	2600

8.5.4.2 *Whale Tail Site*

In 2021, effluent from the Sewage Treatment Plan was discharged to the Attenuation Pond on a daily basis. The total volume of treated sewage discharged in 2021 from the Newterra associated to the permanent camp was 32,450 m^3. In addition, 1,451 m^3 of sewage sludge was collected and disposed of in the Whale Tail WRSF. A monthly summary of the volume of STP waste is presented in Table 8-70.

Table 8-70 Whale Tail 2021 Sewage Treatment Plant Waste Volume

Sewage volume from STP 2021		
Month	**Total flow out Newterra Permanent Camp (m^3)**	**Sludge Removal (m^3)**
January	2,802	139
February	2,414	89.5
March	2,731	128.5
April	2,728	96.5
May	2,648	140
June	2,616	109
July	2,861	164
August	2,794	135.5
September	2,675	160.5
October	2,914	84
November	2,652	83.5
December	2,614	121
Total	**32,450**	**1,451.00**

As per Water License Schedule I Sampling location ST-WT-11 (Figure 4), effluent is to be sampled four times per calendar year. To asses the efficiency of the STP, a weekly sample were taken at the STP effluent. Results are provided in Table 8-72 below. There are no applicable license limits, however Agnico Eagle does follow operational/design targets outlined in Table 8-71. In 2021, the operational targets were exceeded for nitrate and phosphorus, as well as once instance with elevated levels of total oil and grease.

Table 8-71 Whale Tail STP Operational Parameters

Parameters	Unit	Effluent
pH	s.u.	6.5 - 9
Oil, Grease	mg/L	<5
Biological Oxygen Demand (BOD)	mg/L	<25
Total Suspended Solids	mg/L	<25
Unionized Ammonia Nitrogen (NH3-N)	mg-N/L	<1.25
Nitrate Nitrogen (NO3-N)	mg-N/L	<5
Total Phosphorus (P)	mg-P/L	<0.5
Fecal Coliform	CFU/100 ml	<200
Total Residual Chlorine	mg/L	<0.2

Overall nitrate levels decreased in 2021 compared to 2020, however they still remained above operational targets despite increasing Micro C dosing. Agnico Eagle will continue to look into additional options for plant modification in an effort to lower nitrate levels.

Total phosphorus levels decreased within the second half of 2021 due to increased dosing of Alum at the STP. In 2022, these levels are expected to continue to decrease as the plant has received new equipment to aid in managing chemical inventory to increase the dosing rates of Alum. However, the full setup will likely not be finished until summer 2022.

Table 8-72 Whale Tail 2021 Sewage Treatment Plan (ST-WT-11)

ST-WT-11	Unit	*Annual Average*		1/4/2021	2/1/2021	3/8/2021	4/12/2021	5/10/2021	6/14/2021	7/12/2021	8/9/2021	9/7/2021	10/5/2021	11/1/2021	12/6/2021
Parameter		***2020***	***2021***												
Field Measured															
pH	pH units	*7.01*	*7.10*	7.20	7.36	7.11	7.02	7.10	7.27	7.31	7.16	7.04	6.69	6.97	6.98
Conventional Parameters															
Turbidity	NTU	*1.21*	*1.14*	0.72	0.74	2.33	5.60	< 0.1	0.70	< 0.1	0.30	0.60	1.30	0.40	0.84
Specific conductivity	umhos/cm	*581*	*568*	505	543	666	-	-	563	-	-	-	-	-	561
Hardness, as $CaCO_3$	mg/L	*71*	*76*	65	91	121	73.1	80	79	56.4	69.7	54.6	70.4	57.5	90
Total alkalinity, as $CaCO_3$	mg/L	*112*	*55*	63	62	96	61	68	79	50	32	32	8.3	57	55
TDS	mg/L	*-*	*325*	337	362	444	230	200	375	230	370	325	340	310	374
TSS	mg/L	*3*	*3*	1	< 1	< 1	16	< 1	< 1	4	1	3	5	4	2
Chlorine, Total Residual	mg/L	*-*	*0.1*	-	-	-	-	-	-	-	-	-	-	-	< 0.1
Major Ions															
Chloride	mg/L	*81.1*	*75.2*	74.2	80.4	79.1	81.0	83.0	84.1	70.0	66.0	68.0	65.0	72.0	80.1
Fluoride	mg/L	*0.06*	*0.09*	0.05	0.06	0.07	0.11	0.11	0.14	< 0.10	< 0.10	0.10	< 0.10	0.11	0.05
Sulfate	mg/L	*38.5*	*37.8*	22.6	24.8	25.1	19.0	21.0	31.2	28.0	60.0	73.0	77.0	39.0	32.9
Nutrients and Chlorophyll a															
Ammonia (NH_3)	mg/L	*-*	*0.10*	-	-	-	0.16	0.061	-	0.21	0.2	0.13	0.19	0.16	-
Ammoniacal Nitrogen as NH_4	mg N/L	*0.26*	*0.11*	0.11	0.14	0.12	-	-	0.11	-	-	-	-	-	0.08
Ammonia Nitrogen	mg N/L	*0.27*	*0.12*	0.11	0.14	0.12	0.13	0.05	0.12	0.17	0.17	0.11	0.16	0.13	0.08
Nitrate	mg N/L	*16.51*	*12.12*	8.42	10.80	29.20	7.15	1.74	9.36	5.74	19.20	12.90	16.80	12.90	11.20
Nitrite	mg N/L	*0.14*	*0.05*	0.04	0.13	0.13	< 0.01	< 0.01	0.02	0.06	0.04	< 0.01	0.01	< 0.01	0.15
Biochemical Oxygen Demand, 5 Day	mg/L	*9*	*2*	< 1	< 1	1	< 2	< 2	< 1	< 2	2	< 2	3	< 2	1
Total phosphorus	mg P/L	*5.96*	*3.94*	3.82	6.53	7.13	5.10	5.40	5.54	5.00	2.30	0.63	0.49	2.70	2.59
Orthophosphate (P)	mg/L	*6.11*	*4.10*	4.65	6.53	7.54	4.80	5.50	6.15	5.50	2.20	0.61	0.46	2.70	2.58
General Organics															
Total oil and grease	mg/L	*1.7*	*1.5*	< 3.0	< 1.0	1.0	1.3	< 0.5	< 3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.0
Total Metals															
Aluminum	mg/L	*0.0394*	*0.0381*	0.0230	0.0280	< 0.005	0.0335	0.0148	0.0310	0.0311	0.0402	0.0618	0.0946	0.0475	0.0470
Arsenic	mg/L	*0.0059*	*0.0053*	0.0049	0.0051	0.0029	0.0024	0.0065	0.0054	0.0055	0.0067	0.0054	0.0049	0.0090	0.0044
Barium	mg/L	*0.0037*	*0.0093*	0.0095	0.0101	0.0147	0.0172	0.0158	0.0092	0.0099	0.0068	0.0030	0.0075	0.0023	0.0050
Cadmium	mg/L	*0.000026*	*0.000031*	< 0.00002	< 0.00002	< 0.00002	0.000057	0.000031	< 0.00002	0.000044	0.000038	0.000027	0.000053	0.000027	< 0.00002
Chromium	mg/L	*0.0011*	*0.0010*	0.0006	0.0022	< 0.0006	0.0011	< 0.0010	< 0.0006	< 0.0010	< 0.0010	< 0.0010	0.0012	< 0.0010	0.0009
Copper	mg/L	*0.0154*	*0.0096*	0.0066	0.0178	0.0174	0.0199	0.0084	0.0087	0.0086	0.0072	0.0044	0.0053	0.0051	0.0057
Iron	mg/L	*0.05*	*0.06*	0.03	0.06	0.01	0.08	0.05	0.06	0.10	0.05	0.06	0.08	0.05	0.05
Lead	mg/L	*0.00034*	*0.00996*	< 0.00017	< 0.00017	< 0.00017	0.10200	0.01100	0.00215	0.00110	0.00034	0.00043	0.00049	0.00069	0.00077
Manganese	mg/L	*0.0027*	*0.0149*	0.0025	0.0032	0.0138	0.0036	0.0091	0.0076	0.0119	0.0304	0.0208	0.0531	0.0064	0.0162
Mercury	mg/L	*0.00001*	*0.00001*	< 0.00001	< 0.00001	0.00002	< 0.00001	< 0.00001	0.00002	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00002
Molybdenum	mg/L	*0.0012*	*0.0011*	0.0006	0.0007	< 0.0005	< 0.0010	0.0016	0.0015	0.0014	0.0010	< 0.0010	< 0.0010	0.0011	0.0014
Nickel	mg/L	*0.0069*	*0.0090*	0.0069	0.0090	0.0097	0.0063	0.0129	0.0121	0.0088	0.0081	0.0082	0.0089	0.0083	0.0086
Selenium	mg/L	*0.0010*	*0.0003*	0.0005	< 0.0005	< 0.0005	0.0002	0.0002	< 0.0005	0.0002	0.0001	0.0001	< 0.00010	0.0001	< 0.0005
Silver	mg/L	*0.00011*	*0.00005*	< 0.0001	< 0.0001	< 0.0001	< 0.00002	< 0.00002	< 0.0001	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.0001
Thallium	mg/L	*-*	*0.00001*	-	-	-	< 0.00001	< 0.00001	-	0.000013	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Zinc	mg/L	*0.057*	*0.065*	0.049	0.067	0.082	0.079	0.052	0.028	0.065	0.064	0.039	0.098	0.052	0.104
Coliforms															
Total Coliform	CFU/100mL	*491*	*1877*	450	< 100	3300	3000	100	< 1000	2500	200	3800	6200	-	< 0
Fecal Coliform	CFU/100mL	*10*	*36*	7	12	4	10	2	8	45	3	108	108	10	112
Atypical colonies	CFU/100mL	*10940*	*27945*	1150	3500	4900	103000	12600	133000	850	2500	11400	4500	-	30000

8.5.5 Bulk Fuel Storage Facility

8.5.5.1 *Meadowbank Site*

Water collected in the secondary containment area of the bulk fuel storage tank at the Meadowbank mine site was sampled on June 7th, 2021. Water from the Meadowbank tank farm was directed South of the tank farm to get the Meadowbank Stormwater Management Pond and did not reach any receiving environment. Results are presented in Table 8-73 and the sampling location (ST-37) is illustrated on Figure 1. No water quality parameters exceeded the water quality limit stipulated in Part F, Item 9 of the 2AM-MEA1530 Water License. Notification to the CIRNAC Inspector, made in accordance with Part F, Item 13 of NWB License 2AM-MEA1530 to empty the secondary containment area, was sent June 3th. As a result, 200 m^3 of water was discharged in June to the Stormwater Management Pond via a temporary pipe from the secondary containment area of the Meadowbank bulk fuel storage tank.

In 2021, tank was fully inspected and maintenance works were performed.

Table 8-73 Meadowbank 2021 Bulk Fuel Storage Facility Water Quality Monitoring (ST-37)

ST-37 / Parameter	Max grab	Max monthly mean	Sample date / Unit	6/7/2021
Field Measured				
pH	6.0 - 9.5	6.0 - 9.5	pH units	6.91
Conventional Parameters				
TSS	30	15	mg/L	3
Nutrients and Chlorophyll a				
Ammonia (NH3)			mg/L	1.2
Ammonia Nitrogen	6.0	6.0	mg/L	0.98
General Organics				
Total oil and grease	5 and no visible sheen	5 and no visible sheen	mg/L	< 0.50
Total Metals				
Arsenic	1	0.5	mg/L	0.0097
Copper	0.6	0.3	mg/L	0.0035
Lead	0.1	0.1	mg/L	0.0004
Nickel	1	0.5	mg/L	0.0053
Zinc	1	0.5	mg/L	< 0.005
Volatile Organics				
Benzene	0.37	0.37	mg/L	< 0.0002
Ethylbenzene	0.09	0.09	mg/L	< 0.0002
Toluene	0.002	0.002	mg/L	< 0.0002
Xylenes			mg/L	< 0.0004

8.5.5.2 *Baker Lake Marshalling Facilities*

Water collected in the secondary containment areas of the main (Tanks 1 – 4; ST-40.2) and (Tanks 7-8; ST-40.3) diesel bulk fuel storage facilities and Jet A secondary tank (ST-38) at the Baker Lake Marshalling Facility were sampled on June 7th, 2021. Notification to the CIRNAC Inspector, made in accordance with Part F, Item 13 of NWB License 2AM-MEA1530 to empty secondary containment areas, was sent on June 3rd. In June 2021, 1,400 m^3 from Tank 7-8, and 150 m^3 from Jet A tanks was discharged to the environment. No water was discharged in June for station ST-40.2 and ST-40.1 and was brought back by tanker to Meadowbank Site.

Water was also sampled from Tanks 1 – 4 (ST-40.2) on October 19th. Second notification to the CIRNAC Inspector was sent on October 18th. In October, 1,730 m^3 was pumped from Tank 1-4 containment area. The locations of these sampling stations (ST-38, ST-40.1, ST-40.2, and ST-40.3) are illustrated on Figure 5 and results are presented in Table 8-74.

On September 8th and 9th, a contractor working for Agnico Eagle transferred contact water from secondary containment of tanks 5 & 6 (ST-40.1) towards secondary containment of tanks 3 & 4 (ST-40.2) to perform electrical and piping connections for the new tank 8 construction (approved by NWB on January 28th, 2019). During transfer of water between approved site infrastructures (secondary containment) there was evidence that a portion of the flow transferred between the secondary containment had migrated towards the tundra due to misplacement of the discharge pipe. Refer to Section 7 above for more details.

Table 8-74 Baker Lake 2021 Bulk Fuel Storage Facility Water Quality Monitoring (ST-38, ST-40.2, and ST-40.3)

BULK FUEL	MAX GRAB	MAX MONTHLY MEAN	Sample date	6/7/2021	6/7/2021	10/19/2021
Parameter			Unit	ST-38	ST-40.3	ST-40.2
Field Measured						
pH	6.0 - 9.5	6.0 - 9.5	pH units	7.68	7.79	8.76
Conventional Parameters						
TSS	30	15	mg/L	3	5	12
Nutrients and Chlorophyll a						
Ammonia (NH3)			mg/L	< 0.061	< 0.061	< 0.061
Ammonia Nitrogen	6	6	mg/L	< 0.05	< 0.05	< 0.05
General Organics						
Total oil and grease	5 and no visible sheen	5 and no visible sheen	mg/L	< 0.50	< 0.50	< 0.50
Total Metals						
Arsenic	1	0.5	mg/L	0.0002	0.0011	0.0007
Copper	0.6	0.3	mg/L	0.0011	0.0022	0.0058
Lead	0.1	0.1	mg/L	0.0003	0.0007	0.0005
Nickel	1	0.5	mg/L	< 0.001	< 0.001	< 0.001
Zinc	1	0.5	mg/L	0.006	< 0.005	0.006
Volatile Organics						
Benzene	0.37	0.37	mg/L	< 0.0002	< 0.0002	< 0.0002
Ethylbenzene	0.09	0.09	mg/L	< 0.0002	< 0.0002	< 0.0002
Toluene	0.002	0.002	mg/L	< 0.0002	< 0.0002	< 0.0002
Xylenes			mg/L	< 0.0004	< 0.0004	< 0.0004

In October 2021, construction was completed on the addition of an eighth 10 million litre diesel fuel tank that was added to the Baker Lake fuel distribution system. Modifications and improvements to the existing tanks within the system have been on-going. As of June 2021, tanks 3, 4, and 6 had been inspected, repaired, and certified. A comprehensive inspection of tanks 1 and 2 is planned for 2022. Additionally, planned maintenance servicing will be conducted on tank 6 as per recommendations by the certified inspector.

An intensive tank inspection of the Baker Lake Fuel Farm conducted in partnership with an API 653 inspector is underway. In addition, plans are in place to apply an epoxy coating inside all tanks to prevent leaking. Application will be done in 2022-2024. QA/QC on the tanks will also be performed by an

inspector (NACE CIP Level 3). The frequency of future inspections will be determined by the API 653 recommendations following the initial inspections of the tank farm facilities conducted in 2021 and 2022.

The Baker Lake Bulk Fuel Storage Facility: Environmental Performance Monitoring Plan (Appendix 17) was recently updated and approved by the NWB in March 2022. Section 5 of this management plan details the environmental performance monitoring plan which is a tiered approach with an emphasis on visual and operational inspections; routine surface water sampling to control and monitor the quality of the contact water; and event monitoring (in the case of a spill emergency or occurrence). Management of the bulk fuel storage facility will be guided by the monitoring results. As detailed in this plan, Agnico Eagle committed to increasing visual inspections of the Baker Lake Marshalling Facilities from weekly to twice weekly during Freshet and summer months. Monthly inspections are also conducted by the Energy and Infrastructure Department. Inspection of the facility included: tank and piping condition, secondary containment berm structure and integrity, indicators of liner damage, precipitation/ run-off accumulation, evidence of tampering or misuse, any structural abnormalities and visible sheens on contact water pools and crush material inside the secondary containment. Furthermore, Agnico Eagle is following the annual recommendations from the third-party Geotechnical Inspection of the Marshalling Facility. This report and the Agnico Eagle implementation plan are provided respectively in Appendix 9 and 15.

8.5.5.3 *Whale Tail Site*

In 2021, a 10-day notice was sent to CIRNAC on June 3rd, 2021 with the advisement that water would be discharged from the secondary containment of the Whale Tail 1.5 million litre diesel tank farm (ST-WT-12). It was decided that this water would not be discharged to the environment and was instead pumped to the IVR Attenuation Pond for eventual discharge to the environment following treatment by the FWTP.

In 2021, no water was discharged from the secondary containment of the powerhouse fuel tank (ST-WT-16).

8.5.6 All Weather Access Road/ Whale Tail Haul Road and Quarries*

8.5.6.1 *Meadowbank Site*

As required by DFO Authorizations NU-03-0190 Condition 5.3 (AWPAR); ***A photographic record of before, during and after construction, during decommissioning and after restoration, showing that all works and undertakings have been completed according to the approved Plan and conditions of this authorization […]***

A geotechnical structural inspection of the AWAR, including all culverts, bridges and quarries, was conducted by Golder Associates in 2021. This annual inspection is a requirement of the Water License. The findings are presented in the report entitled 'Meadowbank and Whale Tail 221 Annual Geotechnical Inspection', attached in Appendix 9. Agnico Eagle responses to the recommendations from the inspection are also included in Appendix 15.

In relation to Fisheries and Oceans Canada Authorizations NU-03-0190, NU-03-0191.3, NU-03-0191.4, NU-08-0013 and NU-14-1046 Agnico Eagle maintains a Habitat Compensation Monitoring Plan (Version 4, 2017) to ensure that fish habitat compensation features are constructed and functioning as intended. Based on the schedule described in the Habitat Compensation Monitoring Plan, monitoring of

* TSM- Biodiversity and Conservation Management

compensation features currently occurs every 2 years. Monitoring was conducted in 2021 for the constructed spawning pad, located at stream crossing R02 along the all-weather access road. Refer to Habitat Compensation Monitoring Report provided in Appendix 45. The constructed spawning pads were visually confirmed to be stable as designed. The next monitoring is planned for the summer of 2023.

Pre-freshet and freshet inspections were conducted at crossings along the AWAR in 2021. These inspections are conducted to document the presence/absence of flow, erosional concerns and turbidity plumes. Beginning of June 2021, small streams began flowing and by end of June all of the streams and rivers along the AWAR opened up.

Weekly inspections are also conducted along the AWAR on a year round basis. During the freshet and open water season, any visual turbidity plumes or erosion along the AWAR, culverts or HADD crossings are documented by Environmental Technicians. In 2021, no visual turbidity plumes or erosion concern were observed.

8.5.6.2 *Whale Tail Site*

A geotechnical structural inspection of the Whale Tail Haul Road, including all culverts, bridges, eskers and quarries, was conducted in 2021. This annual inspection is a requirement of the Water License. The findings are presented in the report entitled 'Meadowbank and Whale Tail 221 Annual Geotechnical Inspection', attached in Appendix 9. Agnico Eagle responses to the recommendations from the inspection are also included in Appendix 15.

Pre-freshet and freshet inspections were conducted at crossings along the Whale Tail Haul Road, eskers and quarries in 2021. These inspections are conducted to document the presence/absence of flow, erosional concerns and turbidity plumes and to ensure that runoff, if any, would be free of any visible sheen and would not impact the environment. If needed, mitigation measures, as straw boom or turbidity barrier, were put in place as prevention measures. No issues with runoff water inside the eskers/quarries, culvert or bridge to any waterbodies were noted in 2021. Refer to Section 8.5.3.2.17 for more details.

Weekly inspections are also conducted along the Whale Tail Haul Road and eskers/quarries on a year round basis. During the freshet and open water season, any visual turbidity plumes or erosion along the road, culverts, bridge or eskers/quarries are documented by Environmental Technicians. In 2021, no visual turbidity plumes or erosion was observed.

8.5.7 QAQC Sampling

As required by NIRB Project Certificate No.004, Condition 23: ***ensure that water quality monitoring performed at locations within receiving waters that allow for an assimilative capacity assessment of concern to regulators, be carried out by an independent contractor and submitted to an independent accredited lab for analysis, on a type and frequency basis as determined by the NWB; results of analysis shall be provided to the NWB and NIRB's Monitoring Officer.***

And

As required by NWB Water License 2AM-MEA1530 Part I, Item 17: ***The Licensee shall annually review the approved QA/QC Plan and modify the Plan as necessary. Proposed changes shall be submitted to an Accredited Laboratory for approval.***

And

As required by NWB Water License 2AM-WTP1830 Part I, Item 20: ***The Licensee shall annually review the approved QA/QC Plan and modify the Plan as necessary. Proposed changes shall be submitted to an Accredited Laboratory for approval.***

The objective of quality assurance and quality control (QA/QC) program is to assure that the chemical data collected are representative of the material being sampled, are of known quality, are properly documented, and are scientifically defensible. Data quality was assured throughout the collection and analysis of samples using specified standardized procedures, by the employment of accredited laboratories, and by staffing the program with experienced technicians.

Most of the chemical analyses for Meadowbank and Whale Tail Sites were performed by Bureau Veritas (BV) in Ontario, an accredited facility. All data from BV lab underwent a vigorous internal QA/QC process, including the use of spiked samples and duplicate samples. All QA/QC data passed the laboratories acceptable limits. The laboratory certificates of quality control can be provided on request for Meadowbank and Whale Tail.

All toxicity and sublethal tests were performed by Aquatox in Ontario. Testing was conducted as stipulated in the corresponding Environment Canada Biological Test Methods. QA/QC measures implemented by the lab, including the use of reference toxicants, met the acceptable limits. Toxicity reports for Meadowbank and Whale Tail can be provided on request.

Agnico Eagle also require the services of laboratory as Bureau Veritas in Edmonton, Alberta, H2Lab in Val-D'Or, Quebec and SGS in Lakefield, Ontario. Agnico Eagle also uses the services of ALS for many of the CREMP and AEMP water quality analysis.

Field blanks are laboratory bottles filled with deionized water in the field, and then treated as a normal sample. They are used to identify errors or contamination in sample collection and analysis. Trip blank are laboratory pre-filed bottles with DI water carried to the sampling location and are left unopened. Duplicate field water quality samples are collected simultaneously in the field and used to assess sampling variability and sample homogeneity.

The QA/QC Plan was revised in March 2021 (Version 7) and can be found in Appendix 54.

8.5.7.1 *Meadowbank Site*

The following presents the percentage of duplicate and field samples collected from each of the monitoring programs:

- MDMER and EEM monitoring programs: 10 duplicate samples, 10 field blanks and 5 trip blanks were collected from a total of 30 samples, representing 33.33 %;

- STP monitoring program: 9 duplicate samples and 4 trip blanks were collected from a total of 36 samples, representing 25 %;

- Surface water monitoring programs: 35 duplicate samples, 31 field blanks and 21 trip blanks were collected from a total of 142 samples, representing 24.65%; and

- Bulk fuel storage facilities monitoring program: 3 duplicate samples, 3 field blanks and 3 trip blanks samples were collected from a total of 4 samples, representing 75 %.

This represents approximately 26.89% of the samples collected, which is higher than the QA/QC duplicate program objective of 10%.

Analytical precision is a measurement of the variability associated with duplicate analyses of the same sample in the laboratory. Duplicate results were assessed using the relative percent difference (RPD) between measurements. The equation used to calculate a RPD is:

RPD = (A-B)/ ((A+B)/2)*100; where: A = field sample; B = duplicate sample.

Large variations in RPD values are often observed between duplicate samples when the concentrations of analytes are low and approaching the detection limit. Consequently, a RPD of 20% for concentrations of field and duplicates samples that both exceed 10x the method detection limit (MDL) is considered notable. The analytical precision of one QA/QC sampling event is characterized as:

-High, when less than 10% of the parameters have variations that are notable;

-Medium, when 10 to 30% of the parameters have variations that are notable;

-Low, when more than 30% of the parameters have variations that are notable.

Results of the QA/QC data are presented in Tables 8-75 to 8-102 for the MDMER and EEM, Surface Water, STP and Bulk Fuel Storage Facility monitoring programs, respectively. The following is a brief summary of the QA/QC results, per sampling program:

- MDMER and EEM (Tables 8-75 and 8-76): All the duplicate samples collected were considered as having high analytical precision except for one (1) sample having a medium analytical precision of 10%.

- Surface Water (Tables 8-77 8-98 and 8-101 – 8-102): All QA/QC sampling events conducted within the surface water quality program are rated as having high analytical precision except for two (2) samples having a medium analytical precision of 10%.

- STP (Table 8-99): Analytical precision is rated high for three (3) samples, medium for four (4) samples (between 11% to 14%) and low for two (2) sampling events, respectively 38% and 63%. However, as the number of parameters analysed is low, one sample with notable variation between field and duplicate and field bank and lab blank samples will trigger a medium or low analytical precision.

- Bulk Fuel Storage Facility (Table 8-100): Analytical precision is rated high for the duplicate sampling event conducted at the Bulk Storage Facility.

RPD values were also calculated for field blanks and lab blanks in 2021 as the QA/QC Plan. All field blank samples are considered to have high analytical precision.

The QA/QC plan was followed and samples were collected by qualified technicians. Given the high number of samples collected in 2021, it is common to have some RPD exceedances as a result of the

discrete differences in the original and field duplicates. Given the variability of these exceedances (occurring with different parameters, on different dates for different sampling programs) and the high number of successful samples, it is evident that field QA/QC standards during water sampling were maintained during sampling in 2021. Agnico Eagle environmental technicians will continue to follow standard QA/QC procedures for surface water sampling that requires the use of sample bottles that are provided by an accredited laboratory, proper handling and storage of bottles to prevent cross-contamination between areas and, if appropriate, thoroughly rinsing the sample containers with sample water prior to sample collection.

Each equipment used for field measurement are calibrated prior each usage. Calibration datasheet are kept for future reference, if needed. QA/QC methods and results for specific field programs are discussed separately in their respective reports; these field programs are presented in the Appendices listed below:

- Appendix 33: *2021 Core Receiving Environment Monitoring Program* – Sections 3;
- Appendix 42: *2021 Groundwater Monitoring Report* – Sections 3.2 (Meadowbank Report) and 5.0 (Whale Tail Report);
- Appendix 50: *Air Quality and Dustfall Monitoring Report 2021* – Section 4.4.

Table 8-75 Meadowbank 2021 MDMER QAQC (ST-MMER-3)

Parameter	Sample date		1/11/2021							2/1/2021						3/1/2021					
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																					
TSS	mg/L	1	1	1	1	6	6	0.00	0.00	1	1	6	5	18.18	0.00	1	1	8	8	0.00	0.00
Major Ions																					
Cyanide	mg/L	0.0050/0.001*	-	-	-	-	-	-	-	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Nutrients and Chlorophyll a																					
Ammonia Nitrogen (NH3-NH4)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals																					
Aluminum	mg/L	0.0030/0.005*	-	-	-	-	-	-	-	0.003	0.003	0.099	0.09	11.89	0.00	0.003	0.003	0.127	0.123	3.20	0.00
Arsenic	mg/L	0.0001/0.0005*	-	-	-	-	-	-	-	0.0001	0.0001	0.0009	0.00	2.30	0.00	0.0001	0.0001	0.0006	0.0006	1.60	0.00
Copper	mg/L	0.0005	-	-	-	-	-	-	-	0.0005	0.0005	0.0011	0.00	2.71	0.00	0.0034	0.0005	0.0010	0.0010	1.05	**148.98**
Lead	mg/L	0.0002/0.00017*	-	-	-	-	-	-	-	0.0002	0.0002	0.0002	0.00	0.00	0.00	0.0003	0.0002	0.0002	0.0002	0.00	**29.79**
Nickel	mg/L	0.001/0.0005*	-	-	-	-	-	-	-	0.0010	0.0010	0.0010	0.00	0.00	0.00	0.002	0.001	0.001	0.001	0.00	**62.07**
Zinc	mg/L	0.005/0.001*	-	-	-	-	-	-	-	0.005	0.005	0.005	0.01	0.00	0.00	0.011	0.005	0.005	0.005	0.00	**74.21**
Radionuclides																					
Radium-226	Bq/l	0.0050/0.01*	-	-	-	-	-	-	-	0.005	0.005	0.005	0.005	0.00	0.00	0.060	0.005	0.005	0.005	0.00	*169.23*
% Exceedance**								0%	0%					0%	0%					0%	0%

Parameter	Sample date		3/8/2021							4/5/2021						12/13/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																						
TSS	mg/L	1	1	1	1	8	8	0.00	0.00	1	1	4	5	**22.22**	0.00	1.00	1.00	1.00	17	13	26.67	0.00
Major Ions																						
Cyanide	mg/L	0.0050/0.001*	-	-	-	-	-	-	-	0.005	0.005	0.005	0.005	0.00	0.00	0.001*	0.001*	0.001*	0.001*	0.001*	0.00*	0.00*
Nutrients and Chlorophyll a																						
Ammonia Nitrogen (NH3-NH4)	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	0.01	0.01	-	0.06	-	0.00
Total Metals																						
Aluminum	mg/L	0.0030/0.005*	-	-	-	-	-	-	-	0.003	0.003	0.072	0.059	20.11	0.00	0.005*	0.005*	0.005*	0.153*	0.135*	12.50*	0.00*
Arsenic	mg/L	0.0001/0.0005*	-	-	-	-	-	-	-	0.0001	0.0001	0.0008	0.0008	3.92	0.00	0.0005*	0.0005*	0.0005*	0.0005*	0.0010*	**66.67***	0.00*
Copper	mg/L	0.0005	-	-	-	-	-	-	-	0.001	0.001	0.001	0.001	6.01	0.00	0.0005	0.0005	0.0005	0.0016	0.0010	**46.15**	0.00
Lead	mg/L	0.0002/0.00017*	-	-	-	-	-	-	-	0.0002	0.0002	0.0002	0.0002	9.52	0.00	0.00017*	0.00017*	0.0003*	0.00017*	0.00017*	0.00*	**55.32***
Nickel	mg/L	0.001/0.0005*	-	-	-	-	-	-	-	0.001	0.001	0.001	0.001	0.00	0.00	0.0005*	0.0005*	0.0005*	0.0008*	0.0006*	**28.57***	0.00*
Zinc	mg/L	0.005/0.001*	-	-	-	-	-	-	-	0.005	0.005	0.005	0.005	0.00	0.00	0.001*	0.001*	0.001*	0.005*	0.001*	**133.33***	0.00*
Radionuclides																						
Radium-226	Bq/l	0.0050/0.01*	-	-	-	-	-	-	-	0.005	0.005	0.005	0.005	0.00	0.00	0.01*	0.01*	0.002*	0.01*	0.0050	*66.67*	**133.33***
% Exceedance**								0%	0%					11%	0%						11%	0%

Footnotes:
*Different MDL (different lab).
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-76 Meadowbank 2021 EEM QAQC (ST-MMER-3-EEM, ST-MMER-3-EEM-SPLE and ST-MMER-1-TPS)

Water Quality Monitoring Effluent Characterization (ST-MMER-3-EEM)

ST-MMER-3-EEM	Sample date	MDL	5/3/2021					
Parameter	Sample type		Field Blank	Lab Blank	Duplicate	Original	RPD (N/FD)	RPD (FB/LB)
Conventional Parameters								
Hardness, as CaCO3	mg/L	0.50	0.5	-	35.2	35.2	0.00	-
Total alkalinity, as CaCO3	mg/L	1.0	1.3	1.0	31	32	3.17	**26.09**
Major Ions								
Chloride	mg/L	1.0	1	1.0	1.5	1.1	**30.77**	0.00
Sulfate	mg/L	1.0	1	1.0	6.9	7.0	1.44	0.00
Nutrients and Chlorophyll a								
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.1	0.10	0.1	0.11	0.10	9.52	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total phosphorus	mg/L	0.001	0.0021	0.0010	0.021	0.024	13.33	**70.97**
Total Metals								
Aluminum	mg/L	0.003	0.003	0.003	0.571	0.643	11.86	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Chromium	mg/L	0.001	0.001	0.001	0.010	0.014	35.10	0.00
Cobalt	mg/L	0.0002	0.0002	0.0002	0.0009	0.0010	7.33	0.00
Iron	mg/L	0.01	0.01	0.01	1.08	1.17	8.00	0.00
Manganese	mg/L	0.001	0.001	0.001	0.020	0.022	5.74	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.003	0.007	**69.31**	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Uranium	mg/L	0.0001	0.0001	0.0001	0.0003	0.0004	5.71	0.00
% Exceedance*							5%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Water Quality Monitoring Exposure Area Second Portage Lake (ST-MMER-3-EEM-SPLE)

ST-MMER-3-EEM-SPLE	Sample date	MDL	12/13/2021						
Parameter	Sample type		Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (N/FD)	RPD (FB/LB)
Conventional Parameters									
pH	pH units	0.005	5.64	5.68	-	6.96	6.99	0.43	-
Hardness	mg/L	1	1	1	1	12	13	8.00	0.00
Total alkalinity, as CaCO3	mg/L	2	4	4	5	13	13	0.00	**22.22**
TSS	mg/L	1	1	1	1	1	1	0.00	0.00
Major Ions									
Chloride	mg/L	0.5	0.5	0.5	0.5	0.7	0.7	0.00	0.00
Cyanide	mg/L	0.001	0.001	0.001	0.001	0.002	0.002	0.00	0.00
Sulfate	mg/L	0.6	0.6	0.6	0.6	4.6	4.6	0.00	0.00
Nutrients and Chlorophyll a									
Ammonia Nitrogen (NH3-NH4)	mg/L	0.01	0.02	0.02	0.01	0.02	0.03	**40.00**	**66.67**
Nitrate	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total phosphorus	mg/L	0.04	0.04	0.04	0.04	0.04	0.04	0.00	0.00
Total Metals									
Aluminum	mg/L	0.005	0.005	0.005	0.006	0.005	0.005	0.00	18.18
Arsenic	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Cadmium	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Chromium	mg/L	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.00	0.00
Cobalt	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0007	0.0007	0.00	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Lead	mg/L	0.00017	0.00017	0.00017	0.0003	0.00017	0.00017	0.00	**55.32**
Manganese	mg/L	0.0005	0.0005	0.0005	0.0005	0.0007	0.0005	**33.33**	0.00
Mercury	mg/L	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Nickel	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Selenium	mg/L	0.0005	0.0446	0.0005	0.001	0.0005	0.0005	0.00	**66.67**
Thallium	mg/L	0.0002	0.0002	0.0002	0.0008	0.0002	0.0002	0.00	**120.00**
Uranium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Zinc	mg/L	0.001	0.001	0.001	0.001	0.009	0.001	**160.00**	0.00
% Exceedance*								0.00%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Water Quality Monitoring Reference Area Third Portage Lake (ST-MMER-3-EEM-TPS)

ST-MMER-1-EEM-TPS	Sample date	MDL Maxxam	3/29/2021						MDL H2Lab	12/14/2021						
Parameter	Sample type		Field Blank	Lab Blank	Duplicate	Original	RPD (N/FD)	RPD (FB/LB)		Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (N/FD)	RPD (FB/LB)
Conventional Parameters																
pH	pH units		-	-	-	-	-	-		5.58	5.63	-	6.8	6.82	0.29	-
Hardness, as CaCO3	mg/L	0.5	0.5	-	9.69	9.69	0.00	-	1	1	1	1	10	10	0.00	0.00
Total alkalinity, as CaCO3	mg/L	1	1	1	6.3	5.9	6.56	0.00	2	4	3	5	9	9	0.00	**50.00**
TSS	mg/L	1	1	1	1	1	0.00	0.00	1	1	1	1	1	1	0.00	0.00
Major Ions																
Chloride	mg/L	1	1	1	1.6	1.4	13.33	0.00	0.5	0.5	0.5	0.5	0.6	0.5	18.18	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.001	0.001	0.001	0.001	0.002	0.002	0.00	0.00
Sulfate	mg/L	1	1	1	4.1	4.3	4.76	0.00	0.6	4.2	0.6	0.6	0.6	4.3	**151.02**	0.00
Nutrients and Chlorophyll a																
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total phosphorus	mg/L	0.001	0.0016	0.001	0.0011	0.001	9.52	**46.15**	**0.01**	0.01	0.01	0.04	0.01	0.01	0.00	**120.00**
Total Metals																
Aluminum	mg/L	0.0005	0.0016	0.0005	0.0025	0.0027	9.56	**103.85**	0.005	0.005	0.005	0.006	0.005	0.005	0.00	18.18
Arsenic	mg/L	0.00002	0.00002	0.00002	0.00015	0.00015	1.37	0.00	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Cadmium	mg/L	0.000005	0.000005	0.000005	0.000005	0.000005	0.000000	0.00	0.00002	0.00002	0.00007	0.00002	0.00002	0.00002	0.00	**111.11**
Calcium (total)	mg/L	0.01	0.05	-	2.29	2.34	2.16	-	0.03	0.03	0.03	0.03	2.34	2.41	2.95	0.00
Chromium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0006	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Cobalt	mg/L	0.000005	0.000005	0.000005	0.000006	0.000006	11.57	0.00	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Copper	mg/L	0.00005	0.00005	0.00005	0.00034	0.00036	5.78	0.00	0.0005	0.0005	0.0005	0.0005	0.0006	0.0006	0.00	0.00
Iron	mg/L	0.001	0.001	0.001	0.002	0.002	11.11	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Lead	mg/L	0.000005	0.000005	0.000005	0.000006	0.000006	0.00	0.00	0.00017	0.0002	0.0002	0.0003	0.0002	0.0002	0.00	**55.32**
Magnesium (total)	mg/L	0.01	0.05	-	0.962	0.937	2.63	-	0.02	0.02	0.02	0.02	0.96	0.99	3.08	**0.00**
Manganese	mg/L	0.00005	0.00005	0.00005	0.00050	0.00051	1.98	0.00	0.0005	0.00	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00002	0.00001	0.00001	0.00001	0.00002	**66.67**	0.00
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.00010	0.00010	0.98	0.00	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Nickel	mg/L	0.00002	0.00002	0.00002	0.00035	0.00038	6.56	0.00	0.0005	0.0005	0.0005	0.0005	0.0005	0.0006	18.18	0.00
Selenium	mg/L	0.00004	0.00004	0.00004	0.00004	0.00004	0.00	0.00	0.0005	0.0005	0.0005	0.0010	0.0005	0.0010	**66.67**	**66.67**
Thallium	mg/L	0.000002	0.000002	0.000002	0.000002	0.000002	0.00	0.00	0.0002	0.0002	0.0002	0.0008	0.0002	0.0002	0.00	**120.00**
Uranium	mg/L	0.000002	0.000002	0.000002	0.000032	0.000031	1.59	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Zinc	mg/L	0.0001	0.0005	0.0005	0.0007	0.0006	19.55	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Radionuclides																
Radium-226	Bq/l	0.005	0.005	0.0050	0.005	0.005	0.00	0.00	0.01	0.01	0.01	0.002	0.01	0.005	**66.67**	**133.33**
% Exceedance*							0%	0%							0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-77 Meadowbank 2021 Non-Contact Water Diversion Ditch QAQC (ST-5)

Parameter	Sample date		7/6/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Turbidity	NTU	0.1	0.1	0.1	0.1	0.4	0.7	**54.55**	0.00
TSS	mg/L	1	1	1	1	2	1	**66.67**	0.00
Major Ions									
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Sulfate	mg/L	1	5.7	1	1	26	28	7.41	0.00
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.025	0.024	1.65	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.00098	0.00101	3.02	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.00277	0.00284	2.50	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.0055	0.0056	1.80	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Radionuclides									
Radium-226	Bq/l	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-78 Meadowbank 2021 Non-Contact Water Diversion Ditch QAQC (ST-6)

Parameter	Sample date		7/5/2021						10/3/2021	
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Original
Conventional Parameters										
Turbidity	NTU	0.1	0.1	0.1	0.2	0.2	0.00	0.00	0.1	0.3
TSS	mg/L	1	1	1	1	1	0.00	0.00	1	1
Major Ions										
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005
Sulfate	mg/L	1.0	1	1	5.5	5.4	1.83	0.00	1	5.5
Total Metals										
Aluminum	mg/L	0.003	0.003	0.003	0.015	0.020	**29.74**	0.00	0.003	0.0093
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0003	0.0003	**20.69**	0.00	0.0001	0.00024
Copper	mg/L	0.0005	0.0005	0.0005	0.0007	0.0007	4.20	0.00	0.0005	0.0005
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002
Nickel	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005
Radionuclides										
Radium-226	Bq/l	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005
% Exceedances*							0%	0%		

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-79 Meadowbank 2021 East Dike Seepage Discharge QAQC (ST-8)

Parameter	Sample date		2/1/2021						3/1/2021						4/5/2021						12/13/2021						
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																											
TSS	mg/L	1	1	1	6	5	18.18	0.00	1	1	8	8	0.00	0.00	1	1	4	5	**22.22**	0.00	1.00	1.00	1.00	17	13	26.67	0.00
Major Ions																											
Cyanide	mg/L	0.0050/0.001*	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00	0.001*	0.001*	0.001*	0.001*	0.001*	0.00*	0.00*
Sulfate	mg/L	1.0/0.6*	1	1	6.4	6.2	3.17	0.00	1	1	6.3	6.3	0.00	0.00	1	1	8.5	8.8	3.47	0.00	0.6*	0.6*	0.6*	6.9*	7.7*	10.96*	0.00*
Total Metals																											
Aluminum	mg/L	0.0030/0.005*	0.003	0.003	0.099	0.088	11.89	0.00	0.003	0.003	0.127	0.123	3.20	0.00	0.003	0.003	0.072	0.059	20.11	0.00	0.005*	0.005*	0.005*	0.153*	0.135*	12.50*	0.00*
Arsenic	mg/L	0.0001/0.0005*	0.0001	0.0001	0.0009	0.0009	2.30	0.00	0.000	0.000	0.001	0.00063	1.60	0.00	0.0001	0.0001	0.0008	0.0008	3.92	0.00	0.0005*	0.0005*	0.0005*	0.0005*	0.0010*	**66.67***	0.00*
Copper	mg/L	0.0005	0.0005	0.0005	0.0011	0.0011	2.71	0.00	0.0034	0.0005	0.0010	0.00095	1.05	**148.98**	0.0005	0.0005	0.0011	0.0012	6.01	0.00	0.0005	0.0005	0.0005	0.0016	0.0010	**46.15**	0.00
Lead	mg/L	0.0002/0.00017*	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0003	0.0002	0.0002	0.0002	0.00	**29.79**	0.0002	0.0002	0.0002	0.0002	9.52	0.00	0.00017*	0.00017*	0.0003*	0.00017*	0.00017*	0.00*	**55.32***
Nickel	mg/L	0.001/0.0005*	0.001	0.001	0.001	0.001	0.00	0.00	0.002	0.001	0.001	0.001	0.00	**62.07**	0.001	0.001	0.001	0.001	0.00	0.00	0.0005*	0.0005*	0.0005*	0.0008*	0.0006*	**28.57***	0.00*
Zinc	mg/L	0.005/0.001*	0.005	0.005	0.005	0.005	0.00	0.00	0.011	0.005	0.005	0.005	0.00	**74.21**	0.005	0.005	0.005	0.005	0.00	0.00	0.001*	0.001*	0.001*	0.005*	0.001*	**133.33***	0.00*
Radionuclides																											
Radium-226	Bq/l	0.0050/0.01*	0.005	0.005	0.005	0.005	0.00	0.00	0.060	0.005	0.005	0.005	0.00	*169.23*	0.005	0.005	0.005	0.005	0.00	0.00	0.01*	0.01*	0.002*	0.01*	0.0050	*66.67*	**133.33***
% Exceedance*							0%	0%					0%	0%					10%	0%						10%	0%

Footnotes:
*Different MDL (different lab).
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-80 Meadowbank 2021 Portage RSF QAQC (ST-16)

Parameter	Sample date		7/13/2021						10/11/2021
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	-	96.2	96	0.21	-	0.5
Total alkalinity, as CaCO3	mg/L	1	1	1	52	52	0.00	0.00	1.3
Carbonate, as CaCO3	mg/L	1	1	-	1	1	0.00	-	1
Bicarbonate, as CaCO3	mg/L	1	1	-	52	52	0.00	-	1.3
TDS	mg/L	10	10	10	140	125	11.32	0.00	10
TSS	mg/L	1	1	1	33	30	9.52	0.00	1
Total organic carbon	mg/L	0.4	0.4	0.4	2.6	2.6	0.00	0.00	0.4
Dissolved organic carbon	mg/L	0.4	0.4	0.4	2.4	2.4	0.00	0.00	-
Colour	TCU	2	2	2	10	10	0.00	0.00	2
Major Ions									
Bromide	mg/L	1	1	1	1	1	0.00	0.00	1
Chloride	mg/L	1	1	1	2.7	2.7	0.00	0.00	1
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Fluoride	mg/L	0.1	0.1	0.1	0.18	0.15	18.18	0.00	0.1
Silica	mg/L	0.05	0.05	0.05	3.9	3.7	5.26	0.00	0.10
Sulfate	mg/L	1	1	1	47	48	2.11	0.00	1
Thiocyanate	mg/L	0.2	0.2	0.2	0.2	0.2	0.00	0.00	0.2
Thiosulphates	mg/L	0.2	0.2	0.2	0.2	0.2	0.00	0.00	0.2
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05
Nitrate	mg/L	0.1	0.1	0.1	1.67	1.67	0.00	0.00	0.1
Nitrite	mg/L	0.01	0.01	0.01	0.03	0.02	8.00	0.00	0.01
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	0.12	0.27	**76.92**	0.00	0.1
Total phosphorus	mg/L	0.001	0.002	0.001	0.022	0.023	4.44	**66.67**	0.001
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.022	0.022	0.00	0.00	0.01
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	1.35	1.19	12.60	0.00	0.003
Antimony	mg/L	0.0005	0.0005	0.0005	0.0017	0.0017	2.97	0.00	0.0005
Arsenic	mg/L	0.0001	0.0001	0.0001	0.1190	0.1190	0.00	0.00	0.0001
Barium	mg/L	0.001	0.001	0.001	0.019	0.018	4.99	0.00	0.001
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05
Cadmium	mg/L	0.00001	0.000010	0.000010	0.000012	0.000012	0.0	0.0	0.000010
Calcium (total)	mg/L	0.05	0.05	-	20.8	20.7	0.48	-	0.05
Chromium	mg/L	0.001	0.001	0.001	0.026	0.022	14.55	0.00	0.001
Cobalt	mg/L	0.0002	0.0002	0.0002	0.0024	0.0024	1.27	0.00	0.0002
Copper	mg/L	0.0005	0.0005	0.0005	0.0046	0.0047	2.59	0.00	0.0005
Iron	mg/L	0.01	0.01	0.01	1.87	1.78	4.93	0.00	0.01
Lead	mg/L	0.0002	0.0002	0.0002	0.0009	0.0009	0.00	0.00	0.0002
Lithium	mg/L	0.002	0.002	0.002	0.0023	0.0022	4.44	0.00	0.002
Magnesium (total)	mg/L	0.05	0.05	-	10.7	10.8	0.93	-	0.05
Manganese	mg/L	0.001	0.00	0.00	0.03	0.03	2.35	0.00	0.00
Mercury	mg/L	0.00001	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molybdenum	mg/L	0.001	0.00	0.00	0.02	0.02	0.94	0.00	0.00
Nickel	mg/L	0.001	0.00	0.00	0.02	0.02	6.13	0.00	0.00
Potassium (total)	mg/L	0.05	0.05	-	5.19	5.21	0.38	-	0.05
Selenium	mg/L	0.0001	0.00	0.00	0.00	0.00	4.38	0.00	0.00
Silver	mg/L	0.00002	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sodium (total)	mg/L	0.05	0.05	-	3.26	3.24	0.62	-	0.05
Strontium	mg/L	0.001	0.00	0.00	0.12	0.12	2.53	0.00	0.00
Thallium	mg/L	0.00001	0.00	0.00	0.00	0.00	11.76	0.00	0.00
Tin	mg/L	0.005	0.01	0.01	0.01	0.01	0.00	0.00	0.01
Titanium	mg/L	0.005	0.01	0.01	0.03	0.03	4.86	0.00	0.01
Uranium	mg/L	0.0001	0.0001	0.0001	0.0062	0.0064	2.39	0.00	0.0001
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Dissolved Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.014	0.007	**65.37**	0.00	0.003
Antimony	mg/L	0.0005	0.0005	0.0005	0.0017	0.0017	0.00	0.00	0.0005
Arsenic	mg/L	0.0001	0.0001	0.0001	0.110	0.112	1.80	0.00	0.0001
Barium	mg/L	0.001	0.001	0.001	0.0121	0.0121	0.00	0.00	0.001
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001
Cobalt	mg/L	0.0002	0.0002	0.0002	0.00042	0.0004	4.88	0.00	0.0002

Parameter	Sample date		7/13/2021						10/11/2021
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank
Copper	mg/L	0.0002	0.0002	0.0002	0.0024	0.0023	0.85	0.00	0.0002
Iron	mg/L	0.005	0.005	0.005	0.018	0.015	17.96	0.00	0.005
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002
Lithium	mg/L	0.002	0.002	0.002	0.002	0.002	0.00	0.00	0.002
Manganese	mg/L	0.001	0.001	0.001	0.0138	0.013	5.97	0.00	0.001
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001
Molybdenum	mg/L	0.001	0.001	0.001	0.021	0.022	0.4662	0.00	0.001
Nickel	mg/L	0.001	0.001	0.001	0.006	0.006	0.00	0.00	0.001
Selenium	mg/L	0.0001	0.0001	0.0001	0.0007	0.0006	1.550	0.00	0.0001
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002
Strontium	mg/L	0.001	0.0010	0.0010	0.1170	0.1160	0.8584	0.00	0.001
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Uranium	mg/L	0.0001	0.0001	0.0001	0.0055	0.0054	2.19	0.00	0.0001
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
% Exceedance**							0.0%	0.0%	

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-81 Meadowbank 2021 NP2-South QAQC (NP2-South)

Parameter	Sample date		9/19/2021						
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	-	76.9	78.3	1.80	-	0.5
Total alkalinity, as CaCO3	mg/L	1	1	1	53	52	1.90	0.00	1
Carbonate, as CaCO3	mg/L	1	1	-	1	1	0.00	-	1
Bicarbonate, as CaCO3	mg/L	1	1	-	53	51	3.85	-	1
TDS	mg/L	10	10	10	90	80	11.76	0.00	10
TSS	mg/L	1	1	1	1	1	0.00	0.00	1
Total organic carbon	mg/L	0.4	0.4	0.4	3.8	3.8	0.00	0.00	0.4
Dissolved organic carbon	mg/L	0.4	0.4	0.4	3.7	3.6	2.74	0.00	0.4
Colour	TCU	2	2	2	10	10	0.00	0.00	2
Major Ions									
Bromide	mg/L	1	1	1	1	1	0.00	0.00	1
Chloride	mg/L	1	1	1	2.3	2.1	9.09	0.00	1
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Fluoride	mg/L	0.1	0.1	0.1	0.14	0.14	0.00	0.00	0.1
Silica	mg/L	0.05	0.05	0.05	0.49	0.71	*36.67*	0.00	0.1
Sulfate	mg/L	1	1	1	28	30	6.90	0.00	1
Thiocyanate	mg/L	0.2	0.2	0.2	0.2	0.2	0.00	0.00	0.2
Thiosulphates	mg/L	0.2	0.2	0.2	0.2	0.2	0.00	0.00	0.2
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05
Nitrate	mg/L	0.1	0.1	0.1	0.29	0.39	**29.41**	0.00	0.1
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	0.14	0.13	7.41	0.00	0.1
Total phosphorus	mg/L	0.001	0.001	0.001	0.003	0.003	3.39	**26.09**	0.001
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.046	0.063	30.57	0.00	0.003
Antimony	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00	0.0005
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0016	0.0016	1.90	0.00	0.0001
Barium	mg/L	0.001	0.001	0.001	0.004	0.005	2.25	0.00	0.001
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001
Calcium (total)	mg/L	0.05	0.05	-	19.40	19.70	1.53	-	0.05
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001
Cobalt	mg/L	0.0002	0.0002	0.0002	0.0010	0.0015	**38.37**	0.00	0.0002
Copper	mg/L	0.0005	0.0005	0.0005	0.0035	0.0036	3.92	0.00	0.0005
Iron	mg/L	0.01	0.01	0.01	0.05	0.05	1.98	0.00	0.01
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002
Lithium	mg/L	0.002	0.002	0.002	0.002	0.002	0.00	0.00	0.002
Magnesium (total)	mg/L	0.05	0.05	-	6.94	7.05	1.57	-	0.05
Manganese	mg/L	0.001	0.001	0.001	0.036	0.051	35.27	0.00	0.001
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001
Molybdenum	mg/L	0.001	0.001	0.001	0.002	0.002	0.00	0.00	0.001
Nickel	mg/L	0.001	0.001	0.001	0.024	0.034	32.01	0.00	0.001
Potassium (total)	mg/L	0.05	0.05	-	1.96	2.05	4.49	-	0.05
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	9.52	0.00	0.0001
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002
Sodium (total)	mg/L	0.05	0.05	-	3.27	3.31	1.22	-	0.05
Strontium	mg/L	0.001	0.001	0.001	0.075	0.075	0.13	0.00	0.001
Tellurium	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Uranium	mg/L	0.0001	0.0001	0.0001	0.0016	0.0016	1.27	0.00	0.0001
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Dissolved Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.019	0.019	2.08	0.00	0.003
Antimony	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00	0.0005
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0015	0.0015	0.00	0.00	0.0001
Barium	mg/L	0.001	0.001	0.001	0.005	0.005	2.20	0.00	0.001
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001

Parameter	Sample date		9/19/2021						
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank
Cobalt	mg/L	0.0002	0.0002	0.0002	0.0008	0.0009	2.35	0.00	0.0002
Copper	mg/L	0.0002	0.0002	0.0002	0.0030	0.0030	1.33	0.00	0.0002
Iron	mg/L	0.005	0.01	0.01	0.02	0.02	6.73	0.00	0.005
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002
Lithium	mg/L	0.002	0.002	0.002	0.002	0.002	0.00	0.00	0.002
Magnesium (Dissolved)	mg/L	0.05	0.05	-	6.85	6.88	0.44	-	0.05
Manganese	mg/L	0.001	0.001	0.001	0.030	0.030	0.66	0.00	0.001
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001
Molybdenum	mg/L	0.001	0.001	0.001	0.002	0.002	0.00	0.00	0.001
Nickel	mg/L	0.001	0.001	0.001	0.023	0.023	0.00	0.00	0.001
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002
Strontium	mg/L	0.001	0.001	0.001	0.075	0.073	1.62	0.00	0.001
Tellurium	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001
Thallium	mg/L	0.00001	0.000	0.000	0.000	0.000	0.00	0.00	0.00001
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Uranium	mg/L	0.0001	0.0001	0.0001	0.0015	0.0015	1.36	0.00	0.0001
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005
Exceedance*	‘						4 %	0%	

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-82 Meadowbank 2021 North Portage Pit Lake QAQC (ST-17)

Parameter	Sample date		9/7/2021								12/7/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N 1)	RPD (FB/LB)	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																	
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	489	493	0.81	-	1.00	1	1	1	825	814	1.34	0.00
Total alkalinity, as CaCO3	mg/L	1	1.1	1	1	85	85	0.00	0.00	2.00	4	4	5	110	105	4.65	**22.22**
Carbonate, as CaCO3	mg/L	1	1	1	-	1	1	0.00	-		-	-		-	-	-	-
Bicarbonate, as CaCO3	mg/L	1	1.1	1	-	85	85	0.00	-	2.00	4	4	5	110	105	4.65	**22.22**
TDS	mg/L	10	10	10	10	1350	1240	8.49	0.00	2.00	10	26	1	1793	1786	0.39	*185.19*
TSS	mg/L	1	1	1	1	4	3	**28.57**	0.00	1.00	1	1	1	2	2	0.00	0.00
Total organic carbon	mg/L	0.4	0.4	0.4	0.4	17	16	6.06	0.00	0.20	0.2	0.2	0.2	12.6	13	3.13	0.00
Dissolved organic carbon	mg/L	0.4	0.4	0.4	0.4	16	16	0.00	0.00	0.20	0.2	0.2	0.2	10.6	8.1	26.74	0.00
Sodium Adsorption Ratio (salinity in water)	- / ppm	0.1	NC	NC	-	3.9	3.9	0.00	-	0.001	0.01	0.03	0.01	1.75	1.75	0.40	*122.58*
Major Ions																	
Bromide	mg/L	1	1	1	1	1	1	0.00	0.00	0.01	0.01	0.04	0.01	1.28	1.21	5.62	**120.00**
Chloride	mg/L	1	1	1	1	110	120	8.70	0.00		-	-	-	-	-	-	-
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.045	0.043	4.55	0.00	0.001	0.001	0.002	0.001	0.023	0.023	0.00	**66.67**
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.3	0.27	10.53	0.00	0.02	0.02	0.02	0.02	0.2	0.18	10.53	0.00
Silica	mg/L	0.05	0.05	0.05	0.05	4.6	4.7	2.15	0.00	0.02	-	-	0	-	-	-	-
Sulfate	mg/L	1	1	1	1	780	780	0.00	0.00		-	-	-	-	-	-	-
Nutrients and Chlorophyll a																-	
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	19	19	0.00	0.00	0.01	0.01	0.04	0.01	27.84	27.74	0.36	**120.00**
Nitrate	mg/L	0.1	0.1	0.1	0.1	2.52	2.51	0.40	0.00	0.01	0.01	0.01	0.01	1.99	1.58	22.97	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.245	0.256	4.39	0.00	0.01	0.01	0.01	0.01	0.23	0.24	4.26	0.00
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	0.1	35	35	0.00	0.00	0.05	0.05	0.12	0.05	42	34	21.05	**82.35**
Total phosphorus	mg/L	0.001	0.001	0.001	0.001	0.017	0.021	21.05	0.00	0.01	0.1	0.05	0.01	0.06	0.07	15.38	**133.33**
Orthophosphate (P)	mg/L	0.01/0.001*	0.01	0.01	0.01	0.028	0.03	6.90	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.00	0.00
Total Metals																	
Aluminum	mg/L	0.0005	0.0005	0.0005	0.0005	0.0626	0.0575	8.49	0.00	0.05	0.005	0.005	0.006	0.005	0.005	0.00	18.18
Antimony	mg/L	0.00002	0.00002	0.00002	0.00002	0.0045	0.0045	1.55	0.00		-	-		-	-	-	-
Arsenic	mg/L	0.00002	0.00002	0.00002	0.00002	0.0844	0.0871	3.15	0.00	0.0005	0.0005	0.0005	0.0005	0.1193	0.1175	1.52	0.00
Barium	mg/L	0.00002	0.00002	0.00002	0.00002	0.0281	0.0280	0.36	0.00	0.0005	0.0005	0.0005	0.0005	0.041	0.0446	8.41	0.00
Beryllium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00		-	-		-	-	-	-
Boron	mg/L	0.01	0.01	0.01	0.01	0.10	0.10	3.96	0.00		-	-		-	-	-	-
Cadmium	mg/L	0.000005	0.00001	0.00001	0.00001	0.00005	0.00004	**23.26**	0.00	0.00002	0.00002	0.00002	0.00002	0.00002	0.0002	**163.64**	0.00
Calcium (total)	mg/L	0.01	0.05	0.05	-	164	164	0.00	-	0.03	0.03	0.03	0.03	270	268	0.74	0.00

Parameter	Sample date		9/7/2021								12/7/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N 1)	RPD (FB/LB)	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Chromium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0010	0.0009	12.15	0.00	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.00	0.00
Copper	mg/L	0.00005	0.00005	0.00005	0.00005	1.35	1.38	2.20	0.00	0.0005	0.0014	0.0018	0.0005	0.96	0.94	2.11	**113.04**
Iron	mg/L	0.001	0.001	0.001	0.001	0.310	0.307	0.97	0.00	0.01	0.01	0.01	0.01	0.37	0.36	2.74	0.00
Lead	mg/L	0.000005	0.000005	0.000005	0.000005	0.00194	0.00191	1.56	0.00	0.00017	0.00017	0.00017	0.0003	0.00073	0.00071	2.78	**55.32**
Lithium	mg/L	0.0005	0.0005	0.0005	0.0005	0.0040	0.0040	0.00	0.00		-	-		-	-	-	-
Magnesium (total)	mg/L	0.01	0.05	0.05	-	19.5	20	2.53	-	0.02	0.02	0.02	0.02	37.1	35.64	4.01	0.00
Manganese	mg/L	0.00005	0.00005	0.00005	0.00005	0.506	0.514	1.57	0.00	0.0005	0.0005	0.0005	0.0005	0.8471	0.8265	2.46	0.00
Mercury	mg/L	0.00001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.00005	0.00	0.00	0.00	0.07	0.07	3.89	0.00	0.0005	0.0005	0.0005	0.0005	0.1239	0.1202	3.03	0.00
Nickel	mg/L	0.00002	0.00	0.00	0.00	0.82	0.85	2.76	0.00	0.0005	0.0005	0.0005	0.0005	0.719	0.7134	0.78	0.00
Potassium (total)	mg/L	0.01	0.05	0.05	-	50.6	51.9	2.54	-	0.05	0.06	0.16	0.05	93.73	90.04	4.02	**104.76**
Selenium	mg/L	0.00004	0.00004	0.00004	0.00004	0.025	0.0266	6.20	0.00	0.0005	0.0005	0.0005	0.0005	0.0463	0.0418	10.22	0.00
Silver	mg/L	0.000005	0.000005	0.000005	0.000005	0.000236	0.000307	26.15	0.00	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.00	0.00
Sodium (total)	mg/L	0.01	0.05	0.05	-	187	190	1.59	-	0.05	0.11	0.21	0.05	335	323	3.65	**123.08**
Strontium	mg/L	0.00005	0.00005	0.00005	0.00005	0.608	0.614	0.98	0.00		-	-		-	-	-	-
Thallium	mg/L	0.000002	0.000002	0.000002	0.000002	2.31E-05	1.92E-05	18.44	0.00	0.0002	0.0002	0.0002	0.0008	0.0002	0.0002	0.00	**120.00**
Tin	mg/L	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00		-	-		-	-	-	-
Titanium	mg/L	0.0005	0.0005	0.0005	0.0005	0.0013	0.0016	**20.69**	0.00		-	-		-	-	-	-
Uranium	mg/L	0.000002	0.000002	0.000002	0.000002	0.00933	0.00935	0.21	0.00		-	-		-	-	-	-
Vanadium	mg/L	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00		-	-		-	-	-	-
Zinc	mg/L	0.0001	0.0003	0.0001	0.0001	0.0024	0.0018	31.98	0.00	0.001	0.001	0.001	0.001	0.01	0.011	9.52	0.00
Dissolved Metals																	
Aluminum	mg/L	0.0005	0.0005	0.0008	0.0005	0.0044	0.0047	6.59	**48.48**	0.0005	0.0005	0.0005	0.006	0.005	0.008	***46.15***	*169.23*
Antimony	mg/L	0.00002	0.00002	0.00002	0.00002	0.00458	0.00447	2.43	0.00		-	-		-	-	-	-
Arsenic	mg/L	0.00002	0.00002	0.00002	0.00002	0.06050	0.0607	0.33	0.00	0.0005	0.0005	0.0005	0.0005	0.0497	0.0536	7.55	0.00
Barium	mg/L	0.00002	0.00002	0.00002	0.00002	0.02930	0.0285	2.77	0.00	0.0005	0.0005	0.0005	0.0005	0.0356	0.0349	1.99	0.00
Beryllium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00		-	-		-	-	-	-
Boron	mg/L	0.01	0.01	0.01	0.01	0.11	0.11	0.89	0.00		-	-		-	-	-	-
Cadmium	mg/L	0.000005	0.000005	0.000005	0.000005	0.000040	0.000030	**28.57**	0.00	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Chromium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.00	0.00	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.00	0.00
Copper	mg/L	0.00005	0.00005	0.00005	0.00005	1.23	1.20	2.47	0.00	0.0005	0.0014	0.0018	0.0005	0.4453	0.4926	10.09	**113.04**
Iron	mg/L	0.001	0.001	0.001	0.001	0.020	0.028	31.88	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Lead	mg/L	0.000005	0.00001	0.00001	0.00001	0.00017	0.00020	12.53	0.00	0.00017	0.00017	0.00017	0.0003	0.00017	0.00017	0.00	**55.32**
Lithium	mg/L	0.0005	0.0005	0.0005	0.0005	0.0047	0.0047	0.00	0.00		-	-		-	-	-	-
Manganese	mg/L	0.00005	0.00005	0.00005	0.00005	0.49600	0.48500	2.24	0.00	0.0005	0.0005	0.0005	0.0005	0.5952	0.6390	7.10	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.0001	0.0001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	**66.67**	0.00

Parameter	Sample date		9/7/2021								12/7/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N 1)	RPD (FB/LB)	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.00005	0.0736	0.0723	1.78	0.00	0.0005	0.0005	0.0005	0.0005	0.0911	0.0909	0.22	0.00
Nickel	mg/L	0.00002	0.00002	0.00002	0.00002	0.8340	0.7980	4.41	0.00	0.0005	0.0005	0.0005	0.0005	0.4904	0.5322	8.18	0.00
Selenium	mg/L	0.00004	0.00004	0.00004	0.00004	0.0247	0.0242	2.04	0.00	0.0005	0.0005	0.0005	0.0005	0.0257	0.0281	8.92	0.00
Silicon	mg/L	0.1	-	-	-	-	-	-	-		-	-		-	-	-	-
Silver	mg/L	0.000005	0.00001	0.00001	0.00001	0.00007	0.00008	10.96	0.00	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Strontium	mg/L	0.00005	0.00005	0.00005	0.00005	0.658	0.637	3.24	0.00	0.005	0.005	0.005	0.005	0.716	0.700	2.26	0.00
Thallium	mg/L	0.000002	0.000002	0.000002	0.000002	0.000027	0.00002	27.12	0.00	0.0002	0.0002	0.0002	0.0008	0.0002	0.0002	0.00	**120.00**
Tin	mg/L	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00		-	-		-	-	-	-
Titanium	mg/L	0.0005	0.0005	0.0005	0.0005	0.0010	0.0010	0.00	0.00		-	-		-	-	-	-
Uranium	mg/L	0.000002	0.000002	0.000002	0.000002	0.01030	0.01020	0.98	0.00		-	-		-	-	-	-
Vanadium	mg/L	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00		-	-		-	-	-	-
Zinc	mg/L	0.0001	0.0004	0.0003	0.0001	0.0035	0.0040	14.40	**104.76**	0.001	0.001	0.001	0.001	0.006	0.011	***58.82***	0.00
% Exceedance**								6%	0%							5%	0%

Footnotes:
*Different MDL.
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL"
**Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-83 Meadowbank 2021 South Portage Pit Lake QAQC (ST-19)

Parameter	Sample date		8/17/2021						9/7/2021
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	2.96	-	850	843	0.83	-	0.5
Total alkalinity, as CaCO3	mg/L	1	1.1	1	94	93	1.07	9.52	1
Carbonate, as CaCO3	mg/L	1	1	-	1	1	0.00	-	1
Bicarbonate, as CaCO3	mg/L	1	1.1	-	93	92	1.08	-	1
TDS	mg/L	10	10	10	2020	2010	0.50	0.00	10
TSS	mg/L	1	1	1	8	9	11.76	0.00	1
Total organic carbon	mg/L	0.4	0.4	0.4	20	20	0.00	0.00	0.4
Dissolved organic carbon	mg/L	0.4	0.4	0.4	20	20	0.00	0.00	0.4
Major Ions									
Bromide	mg/L	1	1	1	1	1	0.00	0.00	1
Chloride	mg/L	1	1	1	190	180	5.41	0.00	1
Cyanide	mg/L	0.005	0.007	0.005	0.062	0.063	1.60	**34.71**	0.005
Fluoride	mg/L	0.1	0.1	0.1	0.25	0.25	0.00	0.00	0.1
Silica	mg/L	0.05	0.05	0.05	6.4	6.4	0.00	0.00	0.05
Sulfate	mg/L	1	1	1	1000	1000	0.00	0.00	1
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	35	35	0.00	0.00	0.05
Nitrate	mg/L	0.1	0.1	0.1	6.6	6.5	1.99	0.00	0.1
Nitrite	mg/L	0.01	0.01	0.01	0.23	0.22	0.89	0.00	0.01
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	58	56	3.51	0.00	0.1
Total phosphorus	mg/L	0.001	0.001	0.001	0.014	0.013	7.41	0.00	0.001
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.02	0.04	**70.77**	0.00	0.01
Total Metals									
Aluminum	mg/L	0.0005	0.0023	0.0005	0.0340	0.0463	30.64	**128.06**	0.0005
Antimony	mg/L	0.00002	0.00002	0.00002	0.0102	0.01	1.98	0.00	0.00002
Arsenic	mg/L	0.00002	0.00002	0.00002	0.15	0.15	0.00	0.00	0.00002
Barium	mg/L	0.00002	0.00035	0.00002	0.07020	0.06990	0.43	*178.44*	0.00002
Beryllium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00	0.00001
Boron	mg/L	0.01	0.01	0.01	0.19	0.19	2.09	0.00	0.01
Cadmium	mg/L	0.000005	0.000005	0.000005	0.000044	0.000045	2.25	0.00	0.000005
Calcium (total)	mg/L	0.1	1.19	-	304	302	0.66	-	0.05
Chromium	mg/L	0.0001	0.0001	0.0001	0.0002	0.0005	**70.42**	0.00	0.0001
Copper	mg/L	0.00005	0.000051	0.00005	1.16	1.5	25.56	1.98	0.00005
Iron	mg/L	0.001	0.002	0.001	0.059	0.087	38.25	**62.07**	0.001
Lead	mg/L	0.000005	0.000020	0.000005	0.000204	0.000238	15.38	**119.35**	0.000005
Lithium	mg/L	0.0005	0.0005	0.0005	0.0028	0.0029	3.51	0.00	0.0005
Magnesium (total)	mg/L	0.1	0.05	-	22	21.8	0.91	-	0.05
Manganese	mg/L	0.00005	0.00017	0.00005	0.0836	0.084	0.45	**108.26**	0.00005
Mercury	mg/L	0.00001	0.00001	0.00001	0.0001	0.0001	0.00	0.00	0.00001
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.0887	0.0876	1.25	0.00	0.00005
Nickel	mg/L	0.00002	0.00007	0.00002	0.201	0.2	0.50	**114.89**	0.00002
Potassium (total)	mg/L	0.1	0.05	-	108	109	0.92	-	0.05
Selenium	mg/L	0.00004	0.00004	0.00004	0.093	0.0895	3.84	0.00	0.00004
Silver	mg/L	0.000005	0.000005	0.000005	0.000034	0.000055	*47.19*	0.00	0.000005
Sodium (total)	mg/L	0.1	0.17	-	263	261	0.76	-	0.05
Strontium	mg/L	0.00005	0.00067	0.00005	1.18	1.17	0.85	*172.22*	0.00005
Thallium	mg/L	0.000002	0.000002	0.000002	0.000016	0.000016	5.03	0.00	0.000002
Tin	mg/L	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00	0.0002

Parameter	Sample date		8/17/2021						9/7/2021
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank
Titanium	mg/L	0.0005	0.0005	0.0005	0.001	0.001	0.00	0.00	0.0005
Uranium	mg/L	0.000002	0.000002	0.000002	0.0194	0.0194	0.00	0.00	0.000002
Vanadium	mg/L	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00	0.0002
Zinc	mg/L	0.0001	0.0013	0.0001	0.0018	0.0015	17.85	*170.37*	0.00010
Dissolved Metals									
Aluminum	mg/L	0.0005	0.0031	0.0005	0.0118	0.0115	2.58	**144.29**	0.0005
Antimony	mg/L	0.00002	0.00002	0.00002	0.00997	0.00986	1.11	0.00	0.00002
Arsenic	mg/L	0.00002	0.00002	0.00002	0.132	0.132	0.00	0.00	0.00002
Barium	mg/L	0.00002	0.00075	0.00002	0.06780	0.06760	0.30	*189.57*	0.00002
Beryllium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00	0.00001
Boron	mg/L	0.01	0.01	0.01	0.191	0.192	0.52	0.00	0.01
Cadmium	mg/L	0.000005	0.000005	0.000005	0.000039	0.000043	9.76	0.00	0.000005
Chromium	mg/L	0.0001	0.0001	0.0001	0.0002	0.0002	0.00	0.00	0.0001
Copper	mg/L	0.00005	0.00005	0.00005	0.552	0.543	1.64	0.00	0.00005
Iron	mg/L	0.001	0.001	0.001	0.002	0.0023	13.95	0.00	0.001
Lead	mg/L	0.000005	0.000005	0.000005	0.000025	0.000028	11.32	0.00	0.000005
Lithium	mg/L	0.0005	0.0005	0.0005	0.0029	0.0032	9.84	0.00	0.0005
Manganese	mg/L	0.00005	0.00021	0.00005	0.0979	0.0974	0.51	**123.08**	0.00005
Mercury	mg/L	0.00001	0.00001	0.00001	0.0001	0.0001	0.00	0.00	0.00001
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.0823	0.0826	0.36	0.00	0.00005
Nickel	mg/L	0.00002	0.00003	0.00002	0.2	0.199	0.50	**46.15**	0.00002
Selenium	mg/L	0.00004	0.00004	0.00004	0.0756	0.0743	1.73	0.00	0.00004
Silver	mg/L	0.000005	0.000005	0.000005	0.000011	0.00001	9.52	0.00	0.000005
Strontium	mg/L	0.00005	0.00143	0.00005	1.14	1.16	1.74	*186.49*	0.00005
Thallium	mg/L	0.000002	0.000002	0.000002	1.73E-05	1.86E-05	7.24	0.00	0.000002
Tin	mg/L	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00	0.0002
Titanium	mg/L	0.0005	0.0005	0.0005	0.001	0.001	0.00	0.00	0.0005
Uranium	mg/L	0.000002	0.000003	0.000002	0.0213	0.0213	0.00	**49.06**	0.000002
Vanadium	mg/L	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00	0.0002
Zinc	mg/L	0.0001	0.0002	0.0001	0.0009	0.0008	2.35	**78.79**	0.00027
% Exceedance**							4%	0%	

Footnotes:
*Different MDL.
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-84 Meadowbank 2021 Goose Pit QAQC (ST-20)

Parameter	Sample date		8/2/2021						10/24/2021
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	-	615	615	0.00	-	0.5
Total alkalinity, as CaCO3	mg/L	1	1	1	110	120	8.70	0.00	1
Carbonate, as CaCO3	mg/L	1	1	-	1.1	1	9.52	-	1
Bicarbonate, as CaCO3	mg/L	1	1	-	110	110	0.00	-	1
TDS	mg/L	10	10	10	1450	1670	14.10	0.00	10
TSS	mg/L	1	1	1	3	4	**28.57**	0.00	1
Total organic carbon	mg/L	0.4	0.4	0.4	15	16	6.45	0.00	0.4
Dissolved organic carbon	mg/L	0.4	0.4	0.4	15	14	6.90	0.00	0.73
Sodium Adsorption Ratio (salinity in water)	-	0.1	NC	-	3.5	3.5	0.00	-	NC
Major Ions									
Bromide	mg/L	1	1	1	1	1	0.00	0.00	1
Chloride	mg/L	1	1	1	130	130	0.00	0.00	1
Cyanide	mg/L	0.005	0.005	0.005	0.064	0.063	1.57	0.00	0.005
Fluoride	mg/L	0.1	0.1	0.1	0.23	0.24	4.26	0.00	0.1
Silica	mg/L	0.05	0.05	0.05	6.8	6.7	1.48	0.00	0.05
Sulfate	mg/L	1	1	1	870	900	3.39	0.00	1.1
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	26	27	3.77	0.00	0.05
Nitrate	mg/L	0.1	0.1	0.1	2.6	2.38	8.84	0.00	0.1
Nitrite	mg/L	0.01	0.01	0.01	0.50	0.52	3.55	0.00	0.01
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	42	44	4.65	0.00	0.1
Total phosphorus	mg/L	0.001	0.001	0.001	0.02	0.023	13.95	0.00	0.001
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.18	0.19	5.41	0.00	0.01
Total Metals									
Aluminum	mg/L	0.0005	0.0006	0.0005	0.0613	0.0882	35.99	16.51	0.0005
Antimony	mg/L	0.00002	0.00002	0.00002	0.0164	0.0162	1.23	0.00	0.00002
Arsenic	mg/L	0.00002	0.00002	0.00002	0.577	0.579	0.35	0.00	0.00002
Barium	mg/L	0.00002	0.00002	0.00002	0.0488	0.0491	0.61	0.00	0.00002
Beryllium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00	0.00001
Boron	mg/L	0.01	0.01	0.01	0.16	0.159	0.63	0.00	0.01
Cadmium	mg/L	0.000005	0.000005	0.000005	0.00001	0.00001	0.00	0.00	0.000005
Calcium (total)	mg/L	0.01	0.05	-	228	229	0.44	-	0.05
Chromium	mg/L	0.0001	0.0001	0.0001	0.0006	0.0009	**37.97**	0.00	0.0001
Copper	mg/L	0.00005	0.00005	0.00005	0.0317	0.0337	6.12	0.00	0.00005
Iron	mg/L	0.001	0.001	0.001	0.136	0.195	35.65	0.00	0.001
Lead	mg/L	0.000005	0.000005	0.000005	0.000432	0.000516	17.72	0.00	0.000005
Lithium	mg/L	0.0005	0.0005	0.0005	0.0038	0.0039	2.60	0.00	0.0005
Magnesium (total)	mg/L	0.01	0.05	-	11	10.3	6.57	-	0.05
Manganese	mg/L	0.00005	0.00005	0.00005	0.0622	0.0525	16.91	0.00	0.00005
Mercury	mg/L	0.00001	0.00001	0.00001	0.0001	0.0001	0.00	0.00	0.00001
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.0875	0.0868	0.80	0.00	0.00005
Nickel	mg/L	0.00002	0.00002	0.00002	0.0772	0.0754	2.36	0.00	0.00002
Potassium (total)	mg/L	0.01	0.05	-	92.9	92.7	0.22	-	0.05
Selenium	mg/L	0.00004	0.00004	0.00004	0.0391	0.0393	0.51	0.00	0.00004
Sodium (total)	mg/L	0.01	0.05	-	185	181	2.19	-	0.05
Strontium	mg/L	0.00005	0.00005	0.00005	0.614	0.615	0.16	0.00	0.00005
Thallium	mg/L	0.000002	0.000002	0.000002	0.000017	0.000020	16.30	0.00	0.000002

Parameter	Sample date		8/2/2021						10/24/2021
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank
Tin	mg/L	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00	0.0002
Titanium	mg/L	0.0005	0.0005	0.0005	0.0017	0.0028	**48.89**	0.00	0.0005
Uranium	mg/L	0.000002	0.000002	0.000002	0.00748	0.00719	3.95	0.00	0.000002
Vanadium	mg/L	0.0002	0.0002	0.0002	0.0005	0.0006	3.70	0.00	0.0002
Zinc	mg/L	0.0001	0.0003	0.0001	0.0016	0.0016	3.75	**97.44**	0.0001
Dissolved Metals									
Aluminum	mg/L	0.0005	0.0008	0.0005	0.0127	0.0186	37.70	**49.62**	0.0005
Antimony	mg/L	0.00002	0.00002	0.00002	0.01560	0.01690	8.00	0.00	0.00002
Arsenic	mg/L	0.00002	0.00002	0.00002	0.544	0.586	7.43	0.00	0.00002
Barium	mg/L	0.00002	0.00002	0.00002	0.0465	0.0499	7.05	0.00	0.00002
Beryllium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00	0.00001
Boron	mg/L	0.01	0.01	0.01	0.16	0.18	9.36	0.00	0.01
Cadmium	mg/L	0.000005	0.000005	0.000005	0.000010	0.000072	*151.22*	0.00	0.000005
Chromium	mg/L	0.0001	0.00010	0.00001	0.00020	0.00020	0.00	0.00	0.0001
Copper	mg/L	0.00005	0.00005	0.00005	0.02390	0.03	17.90	0.00	0.00005
Iron	mg/L	0.001	0.001	0.001	0.002	0.01	*125.20*	0.00	0.001
Lead	mg/L	0.000005	0.000005	0.000005	0.000026	0.00	*178.78*	0.00	0.000005
Lithium	mg/L	0.0005	0.0005	0.0005	0.0037	0.00	15.00	0.00	0.0005
Manganese	mg/L	0.00005	0.00005	0.00005	0.0508	0.05	0.39	0.00	0.00005
Mercury	mg/L	0.00001	0.00001	0.00001	0.0001	0.00	0.00	0.00	0.00001
Molybdenum	mg/L	0.00005	0.0001	0.0001	0.0831	0.09	8.52	0.00	0.00005
Nickel	mg/L	0.00002	0.00002	0.00002	0.0726	0.08	4.58	0.00	0.00002
Selenium	mg/L	0.00004	0.00004	0.00004	0.0361	0.04	8.23	0.00	0.00004
Strontium	mg/L	0.00005	0.00005	0.00005	0.581	0.62	6.66	0.00	0.00005
Thallium	mg/L	0.000002	0.000002	0.000002	0.000015	0.00	15.19	0.00	0.000002
Tin	mg/L	0.0002	0.0002	0.0002	0.0004	0.00	0.00	0.00	0.0002
Titanium	mg/L	0.0005	0.0005	0.0005	0.0010	0.00	0.00	0.00	0.0005
Uranium	mg/L	0.000002	0.000002	0.000002	0.00669	0.01	4.67	0.00	0.0000023
Vanadium	mg/L	0.0002	0.0002	0.0002	0.0004	0.00	0.00	0.00	0.0002
Zinc	mg/L	0.0001	0.0004	0.0001	0.0007	0.01	*176.93*	**118.37**	0.0001
% Exceedance*							4%	0%	

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-85 Meadowbank 2021 Goose Pit Sump QAQC (ST-20 Sump)

Parameter	Sample date		9/7/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	197	200	1.51	-
Total alkalinity, as CaCO3	mg/L	1	1.1	1	1	54	54	0.00	0.00
TDS	mg/L	10	10	10	10	290	300	3.39	0.00
TSS	mg/L	1	1	1	1	1	1	0.00	0.00
Major Ions									
Chloride	mg/L	1	1	1	1	7.3	7.6	4.03	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.0056	0.0059	5.22	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.26	0.27	3.77	0.00
Sulfate	mg/L	1	1	1	1	150	150	0.00	0.00
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	3.6	3.59	0.28	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.016	0.015	6.45	0.00
Total Metals									
Aluminum	mg/L	0.0005	0.00106	0.00054	0.0005	0.0275	0.0274	0.36	7.69
Arsenic	mg/L	0.00002	0.00002	0.00002	0.00002	0.00441	0.00441	0.00	0.00
Barium	mg/L	0.00002	0.00002	0.00002	0.00002	0.02	0.0199	0.50	0.00
Cadmium	mg/L	0.000005	0.000005	0.000005	0.000005	0.0000118	0.0000101	15.53	0.00
Chromium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0004	0.00043	7.23	0.00
Copper	mg/L	0.00005	0.00005	0.00005	0.00005	0.000872	0.000875	0.34	0.00
Iron	mg/L	0.001	0.001	0.001	0.001	0.0349	0.0373	6.65	0.00
Lead	mg/L	0.000005	0.000005	0.000005	0.000005	0.0000681	0.0000674	1.03	0.00
Manganese	mg/L	0.00005	0.00005	0.00005	0.00005	0.00305	0.00318	4.17	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.00005	0.00472	0.00465	1.49	0.00
Nickel	mg/L	0.00002	0.00002	0.00002	0.00002	0.0352	0.0355	0.85	0.00
Selenium	mg/L	0.00004	0.00004	0.00004	0.00004	0.000721	0.000685	5.12	0.00
Thallium	mg/L	0.000002	0.000002	0.000002	0.000002	0.0000374	0.0000371	0.81	0.00
Zinc	mg/L	0.0001	0.0004	0.0001	0.0001	0.00052	0.00062	17.54	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-86 Meadowbank 2021 TSF Reclaim Water QAQC (ST-21)

Parameter	Sample Date		9/22/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	442	430	2.75	-
Total alkalinity, as CaCO3	mg/L	1	1	1.1	1	110	110	0.00	9.52
TDS	mg/L	10	10	10	10	1150	1110	3.54	0.00
TSS	mg/L	1	1	1	1	11	12	8.70	0.00
Dissolved organic carbon	mg/L	0.4	0.4	0.4	0.4	12	12	0.00	0.00
Major Ions									
Chloride	mg/L	1	1	1	1	62	63	1.60	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.045	0.044	2.25	0.00
Cyanide (free)	mg/L	0.001	0.001	0.0069	0.001	0.022	0.019	14.63	**149.37**
Cyanide (WAD)	mg/L	0.001	0.001	0.0024	0.001	0.018	0.018	0.00	**82.35**
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.28	0.28	0.00	0.00
Sulfate	mg/L	1	1	1	1	530	530	0.00	0.00
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	13	13	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	8.7	8.8	1.14	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.204	0.211	3.37	0.00
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	0.1	22	26	16.67	0.00
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.01	0.016	0.017	6.06	0.00
Total Metals									
Aluminum	mg/L	0.0005	0.0008	0.0005	0.0005	0.1370	0.1460	6.36	0.00
Arsenic	mg/L	0.00002	0.0000	0.0000	0.0000	0.0658	0.0640	2.77	0.00
Barium	mg/L	0.00002	0.0000	0.0000	0.0000	0.0378	0.0374	1.06	0.00
Cadmium	mg/L	0.000005	0.00	0.00	0.00	0.00	0.00	3.19	0.00
Chromium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0023	0.0021	10.62	0.00
Copper	mg/L	0.00005	0.00005	0.00005	0.00005	0.48100	0.46700	2.95	0.00
Iron	mg/L	0.001	0.001	0.001	0.001	0.363	0.377	3.78	0.00
Lead	mg/L	0.000005	0.000005	0.000005	0.000005	0.002620	0.002520	3.89	0.00
Manganese	mg/L	0.00005	0.00005	0.00005	0.00005	0.39800	0.38400	3.58	0.00
Mercury	mg/L	0.00001/0.0001*	0.00001	0.00001	0.00001	0.0001*	0.0001*	0.00*	0.00
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.00005	0.04240	0.04120	2.87	0.00
Nickel	mg/L	0.00002	0.00002	0.00002	0.00002	0.42400	0.41300	2.63	0.00
Selenium	mg/L	0.00004	0.00004	0.00004	0.00004	0.03280	0.03210	2.16	0.00
Silver	mg/L	0.000005	0.000005	0.000005	0.000005	0.000219	0.000222	1.36	0.00
Sodium (total)	mg/L	0.05	0.05	0.05	-	132.00	128.00	3.08	-
Thallium	mg/L	0.000002	0.000002	0.000002	0.000002	0.000040	0.000040	0.76	0.00
Zinc	mg/L	0.0001	0.0001	0.0001	0.0001	0.0027	0.0027	2.24	0.00
% Exceedance**								3%	0%

Footnotes:
*Different MDL.
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-87 Meadowbank 2021 Vault RSF QAQC (ST-24)

Parameter	Sample Date		8/3/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
Turbidity	NTU	0.1	0.1	0.1	0.4	0.3	**28.57**	0.00
Hardness, as CaCO3	mg/L	0.5	0.5	-	128	127	0.78	-
Total alkalinity, as CaCO3	mg/L	1	1	1	48	48	0.00	0.00
TDS	mg/L	10	10	10	160	165	3.08	0.00
TSS	mg/L	1	1	1	2	1	**66.67**	0.00
Major Ions								
Chloride	mg/L	1	1	1	5.6	5.6	0.00	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	69	68	1.46	0.00
Nutrients and Chlorophyll a								
Ammonia Nitrogen	mg/L	0.05	0.11	0.05	0.092	2.2	*183.94*	**75.00**
Nitrate	mg/L	0.1	0.1	0.1	1.48	1.29	13.72	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals								
Aluminum	mg/L	0.003	0.0030	0.0030	0.046	0.046	0.65	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0023	0.0023	0.44	0.00
Barium	mg/L	0.0010	0.0010	0.0010	0.0139	0.0139	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00003	0.00003	7.41	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0034	0.0034	0.30	0.00
Iron	mg/L	0.010	0.010	0.010	0.055	0.056	1.80	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Manganese	mg/L	0.001	0.001	0.001	0.015	0.015	0.00	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.018	0.0182	1.10	0.00
Nickel	mg/L	0.0010	0.0010	0.0010	0.0034	0.0034	0.00	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0003	0.0003	7.41	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.000010	0.000010	0.000013	0.000013	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*							0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-88 Meadowbank 2021 Vault Attenuation Pond QAQC (ST-25)

Parameter	Sample Date		9/20/2021		
	Unit	MDL	Duplicate	Original	RPD (FD/N)
Conventional Parameters					
Hardness, as CaCO3	mg/L	0.5	70.6	72.4	2.52
Total alkalinity, as CaCO3	mg/L	1	27	27	0.00
TDS	mg/L	10	100	95	5.13
TSS	mg/L	1	1	1	0.00
Major Ions					
Chloride	mg/L	1	4.2	3.9	7.41
Cyanide	mg/L	0.005	0.005	0.005	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.00
Sulfate	mg/L	1	48	47	2.11
Nutrients and Chlorophyll a					
Ammonia Nitrogen	mg/L	0.05	0.37	0.05	**152.38**
Nitrate	mg/L	0.1	0.60	0.62	3.28
Nitrite	mg/L	0.01	0.01	0.01	0.00
Total Metals					
Aluminum	mg/L	0.003	0.015	0.017	8.86
Arsenic	mg/L	0.0001	0.0006	0.0006	0.00
Barium	mg/L	0.001	0.014	0.015	2.74
Cadmium	mg/L	0.00001	0.00001	0.00001	**26.09**
Chromium	mg/L	0.001	0.001	0.001	0.00
Copper	mg/L	0.0005	0.0018	0.0019	3.28
Iron	mg/L	0.01	0.02	0.02	**21.05**
Lead	mg/L	0.0002	0.0002	0.0002	0.00
Manganese	mg/L	0.001	0.004	0.005	2.25
Mercury	mg/L	0.00001	0.00001	0.00001	0.00
Molybdenum	mg/L	0.001	0.005	0.006	3.64
Nickel	mg/L	0.001	0.002	0.002	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00
Zinc	mg/L	0.005	0.005	0.005	0.00
% Exceedance*					0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.*
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-89 Meadowbank 2021 Vault Pit QAQC (ST-26)

Parameter	Sample Date		7/13/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
Hardness, as CaCO3	mg/L	0.5	0.5	-	105	105	0.00	-
Total alkalinity, as CaCO3	mg/L	1	1	1	47	47	0.00	0.00
Carbonate, as CaCO3	mg/L	1	1	-	1	1	0.00	-
Bicarbonate, as CaCO3	mg/L	1	1	-	46	46	0.00	-
TDS	mg/L	10	10	10	130	150	14.29	0.00
TSS	mg/L	1	1	1	9	9	0.00	0.00
Total organic carbon	mg/L	0.4	0.4	0.4	1.9	1.8	5.41	0.00
Dissolved organic carbon	mg/L	0.4	0.4	0.4	1.7	1.7	0.00	0.00
Major Ions								
Chloride	mg/L	1	1	1	7.4	8	7.79	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Silica	mg/L	0.05	0.1	-	2.4	2.4	0.00	-
Sulfate	mg/L	1	1	1	51	52	1.94	0.00
Nutrients and Chlorophyll a								
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.10	0.09	7.25	0.00
Nitrate	mg/L	0.1	0.1	0.1	1.65	1.65	0.00	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	8.00	0.00
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	0.003	0.004	**32.43**	0.00
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals								
Aluminum	mg/L	0.003	0.003	0.003	0.212	0.236	10.71	0.00
Antimony	mg/L	0.0005	0.0005	0.0005	0.0014	0.0014	0.00	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0034	0.0034	0.88	0.00
Barium	mg/L	0.001	0.001	0.001	0.015	0.015	0.68	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	**24.39**	0.00
Calcium (total)	mg/L	0.05	0.05	-	30.2	30.2	0.00	-
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0013	0.0013	1.57	0.00
Iron	mg/L	0.01	0.01	0.01	0.32	0.36	12.63	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.001	0.001	3.11	0.00
Lithium	mg/L	0.002	0.002	0.002	0.002	0.002	4.26	0.00
Magnesium (total)	mg/L	0.05	0.05	-	7.23	7.26	0.41	-
Manganese	mg/L	0.001	0.001	0.001	0.028	0.028	1.08	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.023	0.023	0.43	0.00
Nickel	mg/L	0.001	0.001	0.001	0.002	0.002	0.00	0.00
Potassium (total)	mg/L	0.05	0.05	-	2.98	2.83	5.16	-
Selenium	mg/L	0.0001	0.0001	0.0001	0.0003	0.0003	0.00	0.00
Sodium (total)	mg/L	0.05	0.05	-	2.95	2.95	0.00	-
Strontium	mg/L	0.001	0.001	0.001	0.223	0.228	2.22	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	10.00	0.00
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Uranium	mg/L	0.0001	0.0001	0.0001	0.0055	0.0055	0.37	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00

Parameter	Sample Date		7/13/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Dissolved Metals								
Aluminum	mg/L	0.003	0.003	0.003	0.016	0.017	6.69	0.00
Antimony	mg/L	0.0005	0.0005	0.0005	0.0014	0.0014	2.15	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0029	0.0030	1.35	0.00
Barium	mg/L	0.001	0.001	0.001	0.0139	0.0138	0.72	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	9.52	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0002	0.0002	0.0002	0.0010	0.0010	2.00	0.00
Iron	mg/L	0.005	0.005	0.005	0.007	0.008	16.00	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Lithium	mg/L	0.002	0.002	0.002	0.002	0.002	0.00	0.00
Manganese	mg/L	0.001	0.001	0.001	0.023	0.022	0.45	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.023	0.023	0.43	0.00
Nickel	mg/L	0.001	0.001	0.001	0.002	0.002	0.00	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0003	0.0003	3.51	0.00
Strontium	mg/L	0.001	0.001	0.001	0.242	0.245	1.23	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	5.71	0.00
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Uranium	mg/L	0.0001	0.0001	0.0001	0.0052	0.0052	1.16	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*							0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-90 Meadowbank 2021 West Extension Pool WEP 1 QAQC (ST-30)

Parameter	Sample Date		6/14/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	22.3	21.9	1.81	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	13	13	0.00	0.00
TDS	mg/L	10	10	10	10	95	80	17.14	0.00
TSS	mg/L	1	1	1	1	2	2	0.00	0.00
Major Ions									
Chloride	mg/L	1	1	1	1	1	1	0.00	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	1	8.4	8.3	1.20	0.00
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.33	0.32	3.08	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.195	0.165	16.67	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0382	0.0403	5.35	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.004	0.003	11.11	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.002	0.003	**28.57**	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0024	0.0023	5.54	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.31	0.27	15.33	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.00	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.022	0.020	8.08	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.0027	0.0028	3.64	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.004	0.004	2.30	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.*
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-91 Meadowbank 2021 West Extension Pool WEP 2 QAQC (ST-31)

Parameter	Sample Date		6/14/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	57	59	3.45	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	39	38	2.60	0.00
TDS	mg/L	10	10	10	10	110	95	14.63	0.00
TSS	mg/L	1	1	1	1	4	4	0.00	0.00
Major Ions									
Chloride	mg/L	1	1	1	1	1.6	1.7	6.06	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	1	23	24	4.26	0.00
Nutrients									
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.092	0.12	**26.42**	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.67	0.67	0.00	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.019	0.018	5.41	0.00
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.152	0.150	1.32	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.2270	0.2370	4.31	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.005	0.005	4.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	**40.00**	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.004	0.004	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0007	0.0006	4.58	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.29	0.28	0.70	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	2.74	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.028	0.029	5.63	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.027	0.028	1.82	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.010	0.011	3.85	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0003	0.0003	7.41	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.*
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-92 Meadowbank 2021 Saddle Dam 3 QAQC (ST-32)

Parameter	Sample Date		6/14/2021							10/3/2021
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank
Conventional Parameters										
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	63.7	63.8	0.16	-	0.50
Total alkalinity, as CaCO3	mg/L	1	1	1	1	26	27	3.77	0.00	1.1
TDS	mg/L	10	10	10	10	145	140	3.51	0.00	10
TSS	mg/L	1	1	1	1	63	61	3.23	0.00	1
Major Ions										
Chloride	mg/L	1	1	1	1	3	4	**28.57**	0.00	1
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.008	0.008	2.53	0.00	0.005
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.00	0.00	0.1
Sulfate	mg/L	1	1	1	1	38	37	2.67	0.00	1
Nutrients and Chlorophyll a										
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.13	0.13	0.00	0.00	0.087
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.76	0.77	1.31	0.00	0.1
Nitrite	mg/L	0.01	0.01	0.01	0.1	0.021	0.023	9.09	**163.64**	0.01
Total Metals										
Aluminum	mg/L	0.003	0.003	0.003	0.003	1.77	1.86	4.96	0.00	0.003
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0135	0.0133	1.49	0.00	0.0001
Barium	mg/L	0.001	0.001	0.001	0.001	0.019	0.019	1.08	0.00	0.001
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00003	0.00003	3.92	0.00	0.00001
Chromium	mg/L	0.001	0.001	0.001	0.001	0.041	0.044	6.36	0.00	0.001
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0113	0.0114	0.88	0.00	0.0005
Iron	mg/L	0.01	0.01	0.01	0.01	3.37	3.41	1.18	0.00	0.01
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0075	0.0074	0.67	0.00	0.0002
Manganese	mg/L	0.001	0.001	0.001	0.001	0.080	0.080	0.50	0.00	0.001
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.006	0.006	3.23	0.00	0.001
Nickel	mg/L	0.001	0.001	0.001	0.001	0.021	0.021	2.41	0.00	0.001
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00004	0.00004	8.22	0.00	0.00002
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00003	0.00004	2.90	0.00	0.00001
Zinc	mg/L	0.005	0.005	0.005	0.005	0.007	0.007	1.46	0.00	0.005
% Exceedance*								0%	0%	

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.*
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-93 Meadowbank 2021 Phaser Pit QAQC (ST-41)

Parameter	Sample date		8/3/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
Hardness, as CaCO3	mg/L	0.5	0.5	-	76	76.6	0.79	-
Total alkalinity, as CaCO3	mg/L	1	1	1	34	36	5.71	0.00
Carbonate, as CaCO3	mg/L	1	1	-	1	1	0.00	-
Bicarbonate, as CaCO3	mg/L	1	1	-	34	36	5.71	-
TDS	mg/L	10	10	10	95	95	0.00	0.00
TSS	mg/L	1	1	1	9	6	**40.00**	0.00
Total organic carbon	mg/L	0.4	0.4	0.4	3.1	3.2	3.17	0.00
Dissolved organic carbon	mg/L	0.4	0.4	0.4	3	2.9	3.39	0.00
Major Ions								
Chloride	mg/L	1	1	1	2.1	2.2	4.65	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Silica	mg/L	0.05	0.05	0.05	2.2	2	9.52	0.00
Thiocyanate	mg/L	0.2	0.2	0.2	0.2	0.2	0.00	0.00
Nutrients								
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.99	1	1.01	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	0.19	0.16	17.14	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	0.003	0.004	**34.67**	0.00
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals								
Aluminum	mg/L	0.0005	0.0011	0.0005	0.1030	0.1110	7.48	**76.54**
Antimony	mg/L	0.00002	0.00002	0.00002	0.00064	0.00066	3.69	0.00
Arsenic	mg/L	0.00002	0.00002	0.00002	0.00174	0.00185	6.13	0.00
Barium	mg/L	0.00002	0.00002	0.00002	0.0133	0.0130	2.28	0.00
Beryllium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00002	14.29	0.00
Boron	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Cadmium	mg/L	0.000005	0.000005	0.000005	0.000022	0.000019	12.17	0.00
Calcium (total)	mg/L	0.01	0.05	-	23.3	23.5	0.85	-
Chromium	mg/L	0.0001	0.0001	0.0001	0.0002	0.0002	**31.58**	0.00
Copper	mg/L	0.00005	0.00005	0.00005	0.00395	0.00419	5.90	0.00
Iron	mg/L	0.001	0.001	0.001	0.162	0.187	14.33	0.00
Lead	mg/L	0.000005	0.00001	0.00001	0.00055	0.00058	5.68	0.00
Lithium	mg/L	0.0005	0.0005	0.0005	0.0014	0.0014	0.70	0.00
Magnesium (total)	mg/L	0.01	0.05	-	4.32	4.32	0.00	-
Manganese	mg/L	0.00005	0.00005	0.00005	0.0237	0.0236	0.42	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.00661	0.00669	1.20	0.00
Nickel	mg/L	0.00002	0.00002	0.00002	0.00418	0.00431	3.06	0.00
Potassium (total)	mg/L	0.01	0.05	-	1.96	2.01	2.52	-
Selenium	mg/L	0.00004	0.00004	0.00004	0.00018	0.00017	4.52	0.00
Sodium (total)	mg/L	0.01	0.05	-	1.44	1.40	2.82	-
Strontium	mg/L	0.00005	0.00005	0.00005	0.121	0.122	0.82	0.00
Thallium	mg/L	0.000002	0.000002	0.000002	0.00001	0.00001	8.00	0.00
Tin	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Titanium	mg/L	0.0005	0.0005	0.0005	0.0021	0.0024	14.63	0.00
Uranium	mg/L	0.000002	0.000002	0.000002	0.00409	0.00413	0.97	0.00
Vanadium	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00

Parameter	Sample date		8/3/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Zinc	mg/L	0.0001	0.0002	0.0001	0.0017	0.0020	17.49	**62.07**
Dissolved Metals								
Aluminum	mg/L	0.0005	0.0009	0.0005	0.0307	0.0367	17.80	**60.14**
Antimony	mg/L	0.00002	0.00002	0.00002	0.00062	0.00063	2.56	0.00
Arsenic	mg/L	0.00002	0.00002	0.00002	0.00159	0.00167	4.91	0.00
Barium	mg/L	0.00002	0.00002	0.00002	0.01150	0.01220	5.91	0.00
Beryllium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Boron	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Cadmium	mg/L	0.000005	0.00001	0.00001	0.00002	0.00002	14.90	0.00
Chromium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Copper	mg/L	0.00005	0.00005	0.00005	0.00361	0.00371	2.73	0.00
Iron	mg/L	0.001	0.001	0.001	0.043	0.048	10.76	0.00
Lead	mg/L	0.000005	0.00001	0.00001	0.00025	0.00028	9.38	0.00
Lithium	mg/L	0.0005	0.0005	0.0005	0.0013	0.0013	0.00	0.00
Manganese	mg/L	0.00005	0.00005	0.00005	0.01820	0.01890	3.77	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.00624	0.00642	2.84	0.00
Nickel	mg/L	0.00002	0.00002	0.00002	0.00393	0.00399	1.52	0.00
Selenium	mg/L	0.00004	0.00004	0.00004	0.00017	0.00018	5.28	0.00
Strontium	mg/L	0.00005	0.00005	0.00005	0.115	0.117	1.72	0.00
Thallium	mg/L	0.000002	0.000002	0.000002	0.000009	0.000009	3.47	0.00
Tin	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Titanium	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Uranium	mg/L	0.000002	0.000002	0.000002	0.00389	0.00395	1.53	0.00
Vanadium	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Zinc	mg/L	0.0001	0.0002	0.0001	0.0010	0.0013	19.91	**75.00**
% Exceedance*							0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-94 Meadowbank 2021 BB Phaser Pit QAQC (ST-42)

Parameter	Sample Date		7/13/2021							8/3/2021					
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters															
Hardness, as CaCO3	mg/L	0.5	0.5	0.58	-	59.5	59.7	0.34	-	0.5		65	65.1	0.15	-
Total alkalinity, as CaCO3	mg/L	1	1	1.00	1	31	31	0.00	0.00	1	1	33	33	0.00	0.00
Carbonate, as CaCO3	mg/L	1	1	1.00	-	1	1	0.00	-	1		1	1	0.00	-
Bicarbonate, as CaCO3	mg/L	1	1	1.00	-	31	31	0.00	-	1		32	33	3.08	-
TDS	mg/L	10	10	10.00	10	90	80	11.76	0.00	10	10	85	95	11.11	0.00
TSS	mg/L	1	1	1.00	1	13	9	*36.36*	0.00	1	1	3	10	**107.69**	0.00
Total organic carbon	mg/L	0.4	0.4	0.40	0.4	3.4	3.3	2.99	0.00	0.82	0.4	3.7	3.5	5.56	**68.85**
Dissolved organic carbon	mg/L	0.4	0.4	0.40	0.4	3.3	3.3	0.00	0.00	0.4	0.4	3.2	3.1	3.17	0.00
Major Ions															
Chloride	mg/L	1	1.00	1.00	1.00	2.30	2.30	0.00	0.00	1.00	1.00	2.00	1.60	**22.22**	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Silica	mg/L	0.05	0.05	0.10	-	2.20	2.20	0.00	-	0.05	0.05	2.3	2.2	4.44	0.00
Sulfate	mg/L	1	1	1	1	33	32	3.08	0.00	1	1	33	33	0.00	0.00
Nutrients and Chlorophyll a															
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05	0.05	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.8	0.8	0.00	0.00	0.10	0.10	0.78	0.78	0.00	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
Total Kjeldahl nitrogen	mg/L	0.1	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.10	0.10	0.16	0.16	0.00	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	0.001	0.007	0.006	**21.88**	0.00	0.001	0.001	0.003	0.004	**46.15**	0.00
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals															
Aluminum	mg/L	0.0005	0.0005	0.0005	0.0005	0.2280	0.2290	0.44	0.00	0.0006	0.0005	0.0968	0.105	8.13	**23.01**
Antimony	mg/L	0.00002	0.00002	0.00002	0.00002	0.00057	0.00056	1.06	0.00	0.00002	0.00002	0.00062	0.00059	4.77	0.00
Arsenic	mg/L	0.00002	0.00002	0.00002	0.00002	0.00185	0.00178	3.86	0.00	0.00002	0.00002	0.00160	0.00163	1.86	0.00
Barium	mg/L	0.00002	0.00002	0.00002	0.00002	0.01210	0.01220	0.82	0.00	0.00002	0.00002	0.01200	0.01180	1.68	0.00
Beryllium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00002	0.00003	8.00	0.00	0.00001	0.00001	0.00002	0.00001	13.33	0.00
Boron	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
Cadmium	mg/L	0.000005	0.000005	0.000005	0.000005	0.000023	0.000022	4.48	0.00	0.000005	0.000005	0.000021	0.000021	0.00	0.00
Calcium (total)	mg/L	0.05	0.05	0.23	-	18.2	18.2	0.00	-	0.05		20	20	0.50	-
Chromium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0005	0.0005	8.16	0.00	0.0001	0.0001	0.0002	0.0002	15.38	0.00
Copper	mg/L	0.00005	0.00005	0.00005	0.00005	0.00429	0.00446	3.89	0.00	0.00005	0.00005	0.00443	0.00436	1.59	0.00
Iron	mg/L	0.001	0.001	0.001	0.001	0.435	0.416	4.47	0.00	0.001	0.001	0.135	0.145	7.14	0.00
Lead	mg/L	0.000005	0.000005	0.000005	0.000005	0.000661	0.000606	8.68	0.00	0.00001	0.00001	0.00032	0.00036	11.39	0.00

Parameter	Sample Date		7/13/2021							8/3/2021					
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Lithium	mg/L	0.0005	0.0005	0.0005	0.0005	0.0015	0.0016	2.61	0.00	0.0005	0.0005	0.0013	0.0013	2.35	0.00
Magnesium (total)	mg/L	0.05	0.05	0.05	-	3.42	3.47	1.45	-	0.05		3.65	3.65	0.00	-
Manganese	mg/L	0.00005	0.00005	0.00005	0.00005	0.02770	0.02720	1.82	0.00	0.00005	0.00005	0.0214	0.0218	1.85	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.00005	0.00440	0.00448	1.80	0.00	0.00005	0.00005	0.00478	0.00463	3.19	0.00
Nickel	mg/L	0.00002	0.00002	0.00002	0.00002	0.00513	0.00510	0.59	0.00	0.00002	0.00002	0.00459	0.00460	0.22	0.00
Potassium (total)	mg/L	0.05	0.05	0.05	-	1.49	1.53	2.65	-	0.05		1.69	1.65	2.40	-
Selenium	mg/L	0.00004	0.00004	0.00004	0.00004	0.00014	0.00014	3.61	0.00	0.00004	0.00004	0.00015	0.00016	4.50	0.00
Silver	mg/L	0.000005	0.000005	0.000005	0.000005	0.000008	0.000008	0.00	0.00	0.000005	0.000005	0.000005	0.000005	0.00	0.00
Sodium (total)	mg/L	0.05	0.05	0.05	-	1.17	1.17	0.00	-	0.05		1.25	1.28	2.37	-
Strontium	mg/L	0.00005	0.0001	0.0001	0.0001	0.0891	0.0903	1.34	**68.42**	0.00005	0.00005	0.0963	0.0970	0.72	0.00
Thallium	mg/L	0.000002	0.000002	0.000002	0.000002	0.00001	0.00001	1.05	0.00	0.000002	0.000002	0.000009	0.000010	9.84	0.00
Tin	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Titanium	mg/L	0.0005	0.0005	0.0005	0.0005	0.0056	0.0066	17.02	0.00	0.0005	0.0005	0.0031	0.0025	21.90	0.00
Uranium	mg/L	0.000002	0.000002	0.000002	0.000002	0.00353	0.00356	0.85	0.00	0.000002	0.000002	0.003970	0.003960	0.25	0.00
Vanadium	mg/L	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	3.17	0.00	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Zinc	mg/L	0.0001	0.0001	0.0001	0.0001	0.0029	0.0031	5.98	0.00	0.0001	0.0001	0.0013	0.0015	14.49	0.00
Zirconium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0003	0.0003	20.00	0.00	0.0001	0.0001	0.0002	0.0004	**58.82**	0.00
Dissolved Metals															
Aluminum	mg/L	0.0005	0.0005	0.0005	0.0005	0.0321	0.0319	0.62	0.00	0.0007	0.0005	0.0335	0.0319	4.89	**27.59**
Antimony	mg/L	0.00002	0.00002	0.00002	0.00002	0.00057	0.00057	1.23	0.00	0.00002	0.00002	0.00058	0.00058	0.52	0.00
Arsenic	mg/L	0.00002	0.00002	0.00002	0.00002	0.00140	0.00141	0.71	0.00	0.00002	0.00002	0.00152	0.00151	0.66	0.00
Barium	mg/L	0.00002	0.00002	0.00002	0.00002	0.01060	0.01080	1.87	0.00	0.00002	0.00002	0.01090	0.01070	1.85	0.00
Beryllium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	9.52	0.00	0.00001	0.00001	0.00001	0.00001	9.52	0.00
Boron	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
Cadmium	mg/L	0.000005	0.000005	0.000005	0.000005	0.000017	0.000017	1.77	0.00	0.000005	0.000005	0.000016	0.000015	3.19	0.00
Chromium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Copper	mg/L	0.00005	0.00005	0.00005	0.00005	0.00375	0.00373	0.53	0.00	0.00005	0.00005	0.00387	0.00387	0.00	0.00
Iron	mg/L	0.001	0.001	0.001	0.001	0.041	0.040	2.97	0.00	0.001	0.001	0.035	0.034	3.76	0.00
Lead	mg/L	0.000005	0.000005	0.000005	0.000005	0.000110	0.000103	6.57	0.00	0.000005	0.000005	0.00014	0.00014	2.17	0.00
Lithium	mg/L	0.0005	0.0005	0.0005	0.0005	0.0013	0.0013	1.59	0.00	0.0005	0.0005	0.0011	0.0012	3.48	0.00
Manganese	mg/L	0.00005	0.00005	0.00005	0.00005	0.01770	0.01810	2.23	0.00	0.00005	0.00005	0.0155	0.0157	1.28	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.00005	0.00435	0.00448	2.94	0.00	0.00005	0.00005	0.00450	0.00463	2.85	0.00
Nickel	mg/L	0.00002	0.00002	0.00002	0.00002	0.00452	0.00463	2.40	0.00	0.00002	0.00002	0.00427	0.00422	1.18	0.00
Selenium	mg/L	0.00004	0.00004	0.00004	0.00004	0.00013	0.00014	2.96	0.00	0.00004	0.00004	0.00013	0.00015	12.86	0.00

Parameter	Sample Date		7/13/2021							8/3/2021					
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Silver	mg/L	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Strontium	mg/L	0.00005	0.00005	0.00021	0.00005	0.08680	0.08970	3.29	**122.18**	0.00005	0.00005	0.0939	0.0955	1.69	0.00
Thallium	mg/L	0.000002	0.000002	0.000002	0.000002	0.000008	0.000008	1.31	0.00	0.000002	0.000002	0.000009	0.000007	15.19	0.00
Tin	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Titanium	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Uranium	mg/L	0.000002	0.000002	0.000002	0.000002	0.003420	0.003440	0.58	0.00	0.000002	0.000002	0.00377	0.00381	1.06	0.00
Vanadium	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Zinc	mg/L	0.0001	0.0001	0.0001	0.0001	0.0012	0.0017	33.91	0.00	0.0002	0.0001	0.0005	0.0006	17.24	**57.14**
% Exceedance*								1%	1%					1%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-95 Meadowbank 2021 Phaser Attenuation Pond QAQC (ST-43)

Parameter	Sample Date		8/3/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
Hardness, as CaCO3	mg/L	0.5	0.5	-	63	63.3	0.48	-
Total alkalinity, as CaCO3	mg/L	1	1	1	22	22	0.00	0.00
TDS	mg/L	10	10	10	100	80	22.22	0.00
TSS	mg/L	1	1	1	1	1	0.00	0.00
Major Ions								
Chloride	mg/L	1	1	1	3.2	2.5	**24.56**	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	37	37	0.00	0.00
Nutrients and Chlorophyll a								
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.2	0.38	**62.07**	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.32	0.36	11.76	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals								
Aluminum	mg/L	0.0005	0.0012	0.0005	0.0451	0.0456	1.10	**83.04**
Arsenic	mg/L	0.00002	0.00002	0.00002	0.00074	0.00075	2.01	0.00
Barium	mg/L	0.00002	0.00002	0.00002	0.0105	0.0104	0.96	0.00
Cadmium	mg/L	0.000005	0.000005	0.000005	0.000030	0.000034	10.03	0.00
Chromium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Copper	mg/L	0.00005	0.00005	0.00005	0.00335	0.00335	0.00	0.00
Iron	mg/L	0.001	0.001	0.001	0.227	0.225	0.88	0.00
Lead	mg/L	0.000005	0.000005	0.000005	0.000246	0.000257	4.37	0.00
Manganese	mg/L	0.00005	0.00005	0.00005	0.01120	0.01120	0.00	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.00188	0.00177	6.03	0.00
Nickel	mg/L	0.00002	0.00002	0.00002	0.00388	0.00392	1.03	0.00
Selenium	mg/L	0.00004	0.00004	0.00004	0.00008	0.00008	8.81	0.00
Silver	mg/L	0.000005	0.000005	0.000005	0.000014	0.000016	10.74	0.00
Thallium	mg/L	0.000002	0.000002	0.000002	0.000010	0.000010	5.94	0.00
Zinc	mg/L	0.0001	0.0001	0.0001	0.0018	0.0016	8.80	0.00
% Exceedance*							0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-96 Meadowbank 2021 East Dike Seepage QAQC (ST-S-1)

Parameter	Sample date		6/7/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Turbidity	NTU	0.1	0.1	0.1	0.1	2	1.8	10.53	0.00
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	35.1	34.3	2.31	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	31	30	3.28	0.00
TDS	mg/L	10	10	10	10	25	30	18.18	0.00
TSS	mg/L	1	1	1	1	10	11	9.52	0.00
Major Ions									
Chloride	mg/L	1	1	1.0	1	2.2	1.3	**51.43**	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.11	9.52	0.00
Sulfate	mg/L	1	1	1	1	7.7	7.8	1.29	0.00
Nutrients and Chlorophyll a									
Ammonia (NH3)	mg/L	0.061	0.084	0.061	-	0.1	0.095	5.13	-
Ammonia Nitrogen	mg/L	0.05	0.07	0.05	0.05	0.08	0.08	7.41	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.11	0.11	0.00	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Nitrate + nitrite	mg/L	0.1	0.1	0.1	-	0.11	0.11	0.00	-
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.162	0.166	2.44	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0011	0.0010	0.96	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.010	0.009	3.21	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Calcium (total)	mg/L	0.05	0.05	0.05	-	10.90	10.70	1.85	-
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0014	0.0013	2.21	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.27	0.28	1.45	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	3.64	0.00
Magnesium (total)	mg/L	0.05	0.05	0.05	-	1.88	1.82	3.24	-
Manganese	mg/L	0.001	0.001	0.001	0.001	0.011	0.010	4.69	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.002	0.001	**22.22**	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-97 Meadowbank 2021 Saddle Dam 1 QAQC (ST-S-2)

Parameter	Sample date		6/16/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	44.6	46	3.09	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	23	24	4.26	0.00
TDS	mg/L	10	10	10	10	60	65	8.00	0.00
TSS	mg/L	1	1	1	1	10	10	0.00	0.00
Major Ions									
Chloride	mg/L	1	1	1	1	1.6	1.4	13.33	0.00
Cyanide	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	4.72	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	1	31	32	3.17	0.00
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.08	0.06	**38.85**	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.25	0.25	0.00	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.373	0.318	15.92	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0075	0.0077	1.84	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.006	0.006	1.80	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	8.00	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.004	0.003	8.96	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0022	0.0023	8.00	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.68	0.66	3.01	0.00
Lead	mg/L	0.0002	0.000	0.000	0.000	0.002	0.002	3.64	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.053	0.055	4.44	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.003	0.003	2.99	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.005	0.005	0.00	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-98 Meadowbank 2021 Central Dike Seepage QAQC (ST-S-5)

Parameter	Sample Date		1/18/2021			2/1/2021							4/5/2021						
	Unit	MDL	Duplicate	Original	RPD (FD/N)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																			
Turbidity	NTU	0.1	5.1	5.2	1.94	0.1	0.1	7.8	7.5	3.92	0.00	0.1	0.1	0.1	0.1	6.6	6.6	0.00	0.00
Hardness, as CaCO3	mg/L	0.5	839	812	3.27	0.5	-	858	893	4.00	-	0.50	0.5	0.5	-	938	868	7.75	-
Total alkalinity, as CaCO3	mg/L	1	130	130	0.00	2.2	1	130	130	0.00	**75.00**	1.0	1	1	1.0	120	120	0.00	0.00
TDS	mg/L	10	2740	2630	4.10	10	10	2460	2600	5.53	0.00	10	10	10	10	2580	2620	1.54	0.00
TSS	mg/L	1	4	3	**28.57**	1	1	4	4	0.00	0.00	1	1	1	1	3	3	0.00	0.00
Dissolved organic carbon	mg/L	0.4	24	24	0.00	0.4	0.4	25	25	0.00	0.00	0.40	0.4	0.4	0.40	24	24	0.00	0.00
Major Ions																			
Chloride	mg/L	1	250	240	4.08	1	1	240	240	0.00	0.00	1	1	1	1	240	250	4.08	0.00
Cyanide	mg/L	0.005	0.071	0.072	1.40	0.005	0.005	0.067	0.067	0.00	0.00	0.0050	0.005	0.005	0.005	0.093	0.089	4.40	0.00
Fluoride	mg/L	0.1	0.5	0.48	4.08	0.1	0.1	0.49	0.46	6.32	0.00	0.10	0.1	0.1	0.1	0.55	0.49	11.54	0.00
Sulfate	mg/L	1	1500	1500	0.00	1	1	1500	1500	0.00	0.00	1	1	1	1	1600	1500	6.45	0.00
Nutrients and Chlorophyll a																			
Ammonia Nitrogen	mg/L	0.05	29	29	0.00	0.05	0.05	32	32	0.00	0.00	0.05	0.05	0.05	0.05	33	33	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.00	0.1	0.1	0.1	0.1	0.00	0.00	0.10	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Nitrite	mg/L	0.01	0.044	0.044	0.00	0.01	0.01	0.04	0.039	2.53	0.00	0.010	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals																			
Aluminum	mg/L	0.003	0.006	0.006	0.00	0.003	0.003	0.006	0.006	0.00	0.00	0.003	0.003	0.003	0.003	0.005	0.006	**26.42**	0.00
Arsenic	mg/L	0.0001	0.0408	0.0396	2.99	0.0001	0.0001	0.0495	0.0508	2.59	0.00	0.0001	0.0001	0.0001	0.0001	0.0455	0.045	1.10	0.00
Barium	mg/L	0.001	0.019	0.019	0.522	0.001	0.001	0.020	0.021	2.46	0.00	0.001	0.001	0.001	0.001	0.021	0.021	0.48	0.00
Cadmium	mg/L	0.00001	0.00002	0.00002	0.00	0.00001	0.00001	0.00002	0.00002	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Calcium (total)	mg/L	0.05	261	256	1.93	0.05	-	271	282	3.98	-	0.05	0.05	0.05	-	305	279	8.90	-
Chromium	mg/L	0.001	0.002	0.002	0.00	0.001	0.001	0.002	0.002	0.00	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0005	0.001	0.001	0.00	0.0005	0.0005	0.001	0.001	0.00	0.00	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Iron	mg/L	0.01	1.11	1.13	1.79	0.01	0.01	1.25	1.27	1.59	0.00	0.01	0.01	0.01	0.01	1.42	1.32	7.30	0.00
Lead	mg/L	0.0002	0.0004	0.0004	0.00	0.0002	0.0002	0.0004	0.0004	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Magnesium (total)	mg/L	0.05	45.4	41.7	8.50	0.05	-	43.7	46	5.13	-	0.05	0.05	0.05	-	42.6	41.7	2.14	-
Manganese	mg/L	0.001	1.71	1.7	0.59	0.001	0.001	1.53	1.62	5.71	0.00	0.001	0.001	0.001	0.001	1.84	1.75	5.01	0.00
Mercury	mg/L	0.00001/0.0001*	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001/0.0001*	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.146	0.142	2.78	0.001	0.001	0.164	0.167	1.81	0.00	0.001	0.001	0.001	0.001	0.17	0.167	1.78	0.00
Nickel	mg/L	0.001	0.005	0.0041	19.78	0.001	0.001	0.003	0.0032	6.45	0.00	0.001	0.001	0.001	0.001	0.0037	0.0036	2.74	0.00
Selenium	mg/L	0.0001	0.0005	0.0006	14.8148	0.0001	0.0001	0.0006	0.0006	3.5714	0.0000	0.0001	0.0001	0.0001	0.0001	0.0006	0.0006	0.0000	0.0000
Silver	mg/L	0.00002	0.00004	0.00004	0.00	0.00002	0.00002	0.00004	0.00004	0.00	0.00	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00002	0.00002	0.00	0.00001	0.00001	0.00002	0.00002	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Zinc	mg/L	0.005	0.01	0.01	0.00	0.005	0.005	0.01	0.01	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Dissolved Metals																			
Aluminum	mg/L	0.003	0.006	0.006	0.00	0.003	0.003	0.006	0.006	0.00	0.00	0.003	0.003	0.003	0.003	0.006	0.006	0.00	0.00
Arsenic	mg/L	0.0001	0.0152	0.0163	6.98	0.0001	0.0001	0.0207	0.0209	0.96	0.00	0.0001	0.0001	0.0001	0.0001	0.0188	0.0195	3.66	0.00
Barium	mg/L	0.001	0.019	0.020	6.650	0.001	0.001	0.020	0.021	1.942	0.000	0.001	0.001	0.001	0.001	0.021	0.021	0.95	0.00
Cadmium	mg/L	0.00001	0.00002	0.00002	0.00	0.00001	0.00001	0.00002	0.00002	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00
Chromium	mg/L	0.001	0.002	0.002	0.00	0.001	0.001	0.002	0.002	0.00	0.00	0.001	0.001	0.001	0.001	0.002	0.002	0.00	0.00
Copper	mg/L	0.0002	0.0004	0.0004	0.00	0.0002	0.0002	0.0004	0.0004	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0004	0.00165	**121.95**	0.00
Iron	mg/L	0.005	0.371	0.358	3.57	0.005	0.005	0.402	0.4	0.50	0.00	0.005	0.005	0.005	0.005	0.37	0.388	4.75	0.00
Lead	mg/L	0.0002	0.0004	0.0004	0.00	0.0002	0.0002	0.0004	0.0004	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00
Manganese	mg/L	0.001	1.75	1.8	2.82	0.001	0.001	1.58	1.62	2.50	0.00	0.001	0.001	0.001	0.001	1.78	1.75	1.70	0.00
Mercury	mg/L	0.00001/0.0001*	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001/0.0001*	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.141	0.15	6.19	0.001	0.001	0.166	0.166	0.00	0.00	0.001	0.001	0.001	0.001	0.166	0.166	0.00	0.00
Nickel	mg/L	0.001	0.004	0.004	10.000	0.001	0.001	0.003	0.003	3.175	0.000	0.001	0.001	0.001	0.001	0.004	0.004	2.74	0.00

Parameter	Sample Date		1/18/2021			2/1/2021							4/5/2021						
	Unit	MDL	Duplicate	Original	RPD (FD/N)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Selenium	mg/L	0.0001	0.0005	0.0005	1.90	0.0001	0.0001	0.0004	0.0004	0.00	0.00	0.0001	0.0001	0.0001	0.0001	0.00068	0.00069	1.46	0.00
Silver	mg/L	0.00002	0.00004	0.00004	0.00	0.00002	0.00002	0.00004	0.00004	0.00	0.00	0.00002	0.00002	0.00002	0.00002	0.00004	0.00004	0.00	0.00
Thallium	mg/L	0.00001	0.00002	0.00002	0.00	0.00001	0.00001	0.00002	0.00002	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00
Zinc	mg/L	0.005	0.01	0.01	0.00	0.005	0.005	0.01	0.01	0.00	0.00	0.005	0.005	0.005	0.005	0.01	0.01	0.00	0.00
Exceedances**					0%					0%	0%							0%	0%

Parameter	Sample Date		10/4/2021							11/1/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																
Turbidity	NTU	0.1	0.1	0.1	0.1	0.7	0.9	**25.00**	0.00	0.1	0.1	0.1	5.8	6.7	14.40	0.00
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	541	571	5.40	-	0.5	0.5	-	774	769	0.65	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	110	110	0.00	0.00	1	1	1	140	140	0.00	0.00
TDS	mg/L	10	10	10	10	1320	1140	14.63	0.00	10	10	10	2070	2060	0.48	0.00
TSS	mg/L	1	1	1	1	1	2	**66.67**	0.00	1	1	1	4	4	0.00	0.00
Dissolved organic carbon	mg/L	0.4	0.4	0.4	0.4	5.6	6.2	10.17	0.00	0.4	0.4	0.4	17	17	0.00	0.00
Major Ions																
Chloride	mg/L	1	1	1	1	73	84	14.01	0.00	1	1	1	160	160	0.00	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.025	0.029	14.81	0.00	0.005	0.005	0.005	0.058	0.062	6.67	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.34	0.36	5.71	0.00	0.1	0.1	0.1	0.54	0.32	**51.16**	0.00
Sulfate	mg/L	1	1	1	1	540	590	8.85	0.00	-	-	-	1200	1200	0.00	-
Nutrients and Chlorophyll a																
Ammonia Nitrogen	mg/L	0.05	0.14	0.24	0.05	7.5	8.1	7.69	**131.03**	0.13	0.05	0.05	21	21	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	4.61	4.25	8.13	0.00	0.1	0.1	0.1	0.16	0.16	0.00	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.089	0.081	9.41	0.00	0.01	0.01	0.01	0.021	0.021	0.00	0.00
Total Metals																
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.014	0.011	**23.62**	0.00	0.003	0.003	0.003	0.008	0.010	**23.73**	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0329	0.032	2.77	0.00	0.0001	0.0001	0.0001	0.0628	0.0632	0.63	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.020	0.019	3.13	0.00	0.001	0.001	0.001	0.019	0.019	1.05	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00009	0.00008	10.53	0.00	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00
Calcium (total)	mg/L	0.05	0.05	0.05	-	154	166	7.50	-	0.05	0.05	-	237	236	0.42	-
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.002	0.002	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0014	0.0011	**23.29**	0.00	0.0005	0.0005	0.0005	0.0010	0.0010	0.00	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.282	0.335	17.18	0.00	0.01	0.01	0.01	1.64	1.64	0.00	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00
Magnesium (total)	mg/L	0.05	0.05	0.05	-	37.9	37.6	0.79	-	0.05	0.05	-	44.50	43.70	1.81	-
Manganese	mg/L	0.001	0.001	0.001	0.001	0.761	0.857	11.867	0.000	0.001	0.001	0.001	1.670	1.620	3.04	0.00
Mercury	mg/L	0.00001/0.0001*	0.00001	0.00001	0.00001	0.0001*	0.0001*	0.00*	0.00	0.00001	0.00001	0.00001	0.0001*	0.0001*	0.00*	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.056	0.066	17.13	0.00	0.001	0.001	0.001	0.125	0.124	0.80	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.042	0.036	14.71	0.00	0.001	0.001	0.001	0.005	0.004	4.44	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0007	0.0007	1.48	0.00	0.0001	0.0001	0.0001	0.0019	0.0019	0.53	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00002	0.00004	0.00004	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00003	0.00003	7.41	0.00	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.010	0.010	0.00	0.00
Dissolved Metals																
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.005	0.003	**35.90**	0.00	0.003	0.003	0.003	0.006	0.006	0.00	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0205	0.0205	0.00	0.00	0.0001	0.0001	0.0001	0.0259	0.0265	2.29	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.018	0.018	0.00	0.00	0.001	0.001	0.001	0.017	0.018	5.62	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00009	0.00009	7.73	0.00	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.002	0.002	0.00	0.00

Parameter	Sample Date		10/4/2021							11/1/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Copper	mg/L	0.0002	0.0002	0.0002	0.0002	0.0012	0.0012	6.67	0.00	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00
Iron	mg/L	0.005	0.005	0.005	0.005	0.015	0.014	5.67	0.00	0.005	0.005	0.005	0.178	0.18	1.12	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0004	0.0004	0.00	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.698	0.683	2.17	0.00	0.001	0.001	0.001	1.66	1.7	2.38	0.00
Mercury	mg/L	0.00001/0.0001*	0.00001	0.00001	0.00001	0.0001*	0.0001*	0.00*	0.00	0.00001	0.00001	0.00001	0.0001*	0.0001*	0.00*	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.051	0.0521	2.13	0.00	0.001	0.001	0.001	0.122	0.123	0.82	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.0416	0.0412	0.97	0.00	0.001	0.001	0.001	0.004	0.005	2.25	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0008	0.0008	1.24	0.00	0.0001	0.0001	0.0001	0.0017	0.0016	8.43	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00002	0.00004	0.00004	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00003	0.00003	15.87	0.00	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.010	0.010	0.00	0.00
Exceedances**								0%	0%						0%	0%

Footnotes:
*Different MDL.
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-99 Meadowbank 2021 Sewage Treatment Plan QAQC (STP)

STP-IN Parameter	Sample Date		7/5/2021				10/5/2021				12/6/2021		
	Unit	MDL	Trip Blank	Duplicate	Original	RPD (FD/N)	Trip Blank	Duplicate	Original	RPD (FD/N)	Duplicate	Original	RPD (FD/N)
Conventional Parameters													
TSS	mg/L	1	1	71	64	10.37	1	120	110	8.70	131	105	22.03
Nutrients and Chlorophyll a													
Ammonia (NH3)	mg/L	0.061	0.061	110	110	0.00	0.061	110	100	9.52	-	-	-
Ammonia Nitrogen	mg/L	0.05/0.01*	0.05	93	92	1.08	0.05	93	85	8.99	99.91*	99.32*	0.59*
Nitrate	mg/L	0.10/0.01*	0.1	0.1	0.1	0.00	0.1	0.1	0.1	0.00	0.21*	0.18*	15.38*
Nitrite	mg/L	0.010/0.01*	0.01	0.012	0.01	18.18	0.01	0.011	0.01	9.52	0.03*	0.03*	0.00*
Total Kjeldahl nitrogen	mg/L	0.10/0.05*	0.1	100	99	1.01	0.12	97	96	1.04	130*	120*	8.00*
Biochemical Oxygen Demand, 5 Day	mg/L	2/1*	2	210	170	21.05	2	160	180	11.76	183*	172*	6.20*
Chemical oxygen demand	mg/L	4/7*	4	440	430	2.30	4	500	510	1.98	331*	377*	12.99*
Total phosphorus	mg/L	0.001/0.01*	0.001	13	12	8.00	0.001	11	12	8.70	10.34*	9.40*	9.52*
% Exceedance**						11%				0%			13%

STP-LJ-MIX Parameter	Sample Date		7/5/2021				10/5/2021			12/6/2021		
	Unit	MDL	Trip Blank	Duplicate	Original	RPD (FD/N)	Duplicate	Original	RPD (FD/N)	Duplicate	Original	RPD (FD/N)
Conventional Parameters												
TSS	mg/L	1	1	4	20	*133.33*	27	24	11.76	8	11	*31.58*
Nutrients and Chlorophyll a												
Ammonia (NH3)	mg/L	0.061	0.061	26	17	41.86	27	21	25.00	-	-	-
Ammonia Nitrogen	mg/L	0.05/0.01*	0.05	22	14	44.44	22	18	20.00	10.14*	10.20*	0.59*
Nitrate	mg/L	0.10/0.01*	0.1	26.6	38.4	36.31	18.9	18.9	0.00	21.6*	19.9*	8.19*
Nitrite	mg/L	0.010/0.01*	0.01	0.066	0.015	**125.93**	0.143	0.142	0.70	0.09*	0.31*	*110.00**
Total Kjeldahl nitrogen	mg/L	0.10/0.05*	0.1	24	16	40.00	20	15	28.57	12*	13*	8.00*
Biochemical Oxygen Demand, 5 Day	mg/L	2/1*	2	4	15	**115.79**	5	7	**33.33**	4*	5*	**22.22***
Chemical oxygen demand	mg/L	4/7*	4	56	42	28.57	61	65	6.35	49*	56*	13.33*
% Exceedance**						63%			38%			0%

STP-SEP Parameter	Sample Date		7/5/2021				10/5/2021			12/6/2021		
	Unit	MDL	Trip Blank	Duplicate	Original	RPD (FD/N)	Duplicate	Original	RPD (FD/N)	Duplicate	Original	RPD (FD/N)
Conventional Parameters												
TSS	mg/L	1	1	7	6	15.38	7	8	13.33	14	14	0.00
Nutrients and Chlorophyll a												
Ammonia (NH3)	mg/L	0.061	0.066	13	14	7.41	30	29	3.39	-	-	-
Ammonia Nitrogen	mg/L	0.05/0.01*	0.054	11	11	0.00	25	24	4.08	26.78*	26.84*	0.22*
Nitrate	mg/L	0.10/0.01*	0.1	23.7	23.8	0.42	15.2	15.1	0.66	14.4*	13.4*	7.19*
Nitrite	mg/L	0.010/0.01*	0.01	0.01	0.01	0.00	0.594	0.593	0.17	2.29*	2.38*	3.85*
Total Kjeldahl nitrogen	mg/L	0.10/0.05*	0.1	13	12	8.00	30	24	22.22	33*	34*	2.99*
Biochemical Oxygen Demand, 5 Day	mg/L	2/1*	2	5	4	**22.22**	12	6	**66.67**	107*	11*	162.71*
Chemical oxygen demand	mg/L	4/7*	4	40	39	2.53	60	60	0.00	75*	63*	17.39*
% Exceedance**						0%			13%			14%

Footnotes:
*Different MDL due to different laboratory.
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-100 Meadowbank 2021 Bulk Fuel QAQC (ST-37, ST-38, ST-40.2, ST-40.3)

Parameter	Sample date		ST-38							ST-40.3							ST-37						
			6/7/2021							6/7/2021							6/7/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																							
TSS	mg/L	1	1	1	1	2	3	**40.00**	0.00	1	1	1	6	5	18.18	0.00	1	1	1	3	3	0.00	0.00
Nutrients and Chlorophyll a																							
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.061	0.061	0.00	-	0.067	0.061	-	0.061	0.061	0.00	-	0.061	0.065	-	1.2	1.2	0.00	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.055	0.05	0.05	0.05	0.05	0.00	0.00	0.05	0.053	0.05	1	0.98	2.02	5.83
General Organics																							
Total oil and grease	mg/L	0.5	0.5	0.5	0.5	0.5	0.5	0.00	0.00	0.5	0.5	0.5	0.5	0.5	0.00	0.00	0.5	0.5	0.5	0.9	0.5	**57.14**	0.00
Total Metals																							
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	12.50	0.00	0.0001	0.0001	0.0001	0.0011	0.0011	3.67	0.00	0.0001	0.0001	0.0001	0.0094	0.0097	2.52	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0011	0.0011	2.74	0.00	0.0005	0.0005	0.0005	0.0023	0.0022	3.54	0.00	0.0005	0.0005	0.0005	0.0033	0.0035	5.90	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.00	0.00	0.0002	0.0002	0.0002	0.0007	0.0007	4.51	0.00	0.0002	0.0002	0.0002	0.0004	0.0004	2.74	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.0051	0.0053	3.85	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.006	0.006	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Volatile Organics																							
Benzene	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Ethylbenzene	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Toluene	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Xylenes	mg/L	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.00	0.00	0.0004	0.0004	0.0004	0.0004	0.0004	0.00	0.00	0.0004	0.0004	0.0004	0.0004	0.0004	0.00	0.00
% Exceedance*								0%	0%						0%	0%						0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL

Table 8-101 Meadowbank 2021 Assay Road Seepage QAQC (TPL-Assay)

Parameter	Sample date		7/13/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	42.5	42.2	0.71	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	27	25	7.69	0.00
Carbonate, as CaCO3	mg/L	1	1	1	-	1	1	0.00	-
Bicarbonate, as CaCO3	mg/L	1	1	1	-	27	25	7.69	-
TDS	mg/L	10	10	10	10	45	55	**20.00**	0.00
TSS	mg/L	1	1	1	1	1	1	0.00	0.00
Total organic carbon	mg/L	0.4	0.4	0.4	0.4	2.1	2.1	0.00	0.00
Dissolved organic carbon	mg/L	0.4	0.4	0.4	0.4	2	2	0.00	0.00
Colour	TCU	2	2	2	2	3	3	0.00	0.00
Major Ions									
Bromide	mg/L	1	1	1	1	1	1	0.00	0.00
Chloride	mg/L	1	1	1	1	5.8	5.7	1.74	0.00
Cyanide	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Silica	mg/L	0.05	0.05	0.05	0.05	0.93	0.83	11.36	0.00
Sulfate	mg/L	1	1	1	1	18	18	0.00	0.00
Thiocyanate	mg/L	0.2	0.2	0.2	0.2	0.2	0.2	0.00	0.00
Nutrients and Chlorophyll a									
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.061	0.061	0.00	0.00
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	0.1	0.1	0.14	**33.33**	0.00
Total phosphorus	mg/L	0.001	0.001	0.016	0.002	0.002	0.003	**50.98**	*165.71*
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.019	0.017	12.60	0.00
Antimony	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0011	0.0011	1.77	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.01	0.01	7.41	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Cobalt	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0009	0.0009	2.17	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.05	0.05	8.33	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Lithium	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.00	0.00
Magnesium (total)	mg/L	0.05	0.05	0.05	-	2.92	2.87	1.73	-
Manganese	mg/L	0.001	0.001	0.001	0.001	0.006	0.006	1.74	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Potassium (total)	mg/L	0.05	0.05	0.05	-	1.57	1.50	4.56	-
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Sodium (total)	mg/L	0.05	0.05	0.05	-	2.23	2.12	5.06	-
Strontium	mg/L	0.001	0.001	0.001	0.001	0.066	0.064	2.00	0.00
Tellurium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Uranium	mg/L	0.0001	0.0001	0.0001	0.0033	0.0003	0.0003	7.69	*188.24*
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Dissolved Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.005	0.006	9.52	0.00
Antimony	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0011	0.0010	0.96	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.007	0.007	1.46	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.00
Cobalt	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.00

Parameter	Sample date		7/13/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Copper	mg/L	0.0002	0.0002	0.0002	0.0002	0.0008	0.00	1.26	0.00
Iron	mg/L	0.005	0.005	0.005	0.005	0.012	0.01	3.25	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.00
Lithium	mg/L	0.002	0.002	0.002	0.002	0.002	0.00	0.00	0.00
Magnesium (Dissolved)	mg/L	0.05	0.05	0.05	-	2.94	2.90	1.37	-
Manganese	mg/L	0.001	0.001	0.001	0.001	0.003	0.00	6.06	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	9.52	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00
Strontium	mg/L	0.001	0.001	0.001	0.001	0.064	0.06	1.09	0.00
Tellurium	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.01	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.01	0.00	0.00
Uranium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0002	0.00	0.00	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.01	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.01	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-102 Meadowbank 2021 Landfarm (ST-14b)

Parameter	Sample date		7/9/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
TSS	**mg/L**	1	1	1	12	98	156.36	0.00
Total Metals								
Arsenic	**mg/L**	0.0001	0.0001	0.0001	0.0347	0.0355	2.28	0.00
Copper	**mg/L**	0.0005	0.0005	0.0005	0.0042	0.0042	1.19	0.00
Lead	**mg/L**	0.0002	0.0002	0.0002	0.0002	0.0002	4.88	0.00
Nickel	**mg/L**	0.001	0.001	0.001	0.024	0.024	0.41	0.00
Volatile Organics								
Benzene	**mg/L**	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Ethylbenzene	**mg/L**	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Toluene	**mg/L**	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Xylenes	**mg/L**	0.0004	0.0004	0.0004	0.0004	0.0004	2.41	0.00
F2 (C10-C16)	**mg/L**	0.1	0.10	0.10	0.10	0.10	0.00	0.00
F3 (C16-C34)	**mg/L**	0.2	0.20	0.20	0.20	0.20	0.00	0.00
F4 (C34-C50)	**mg/L**	0.2	0.20	0.20	0.20	0.20	0.00	0.00
% Exceedance*							8%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

8.5.7.2 *Whale Tail Site*

The following presents the percentage of duplicate and field samples collected from each of the monitoring programs:

- MDMER and EEM monitoring programs: 28 duplicate samples, 27 field blanks and 27 trip blanks were collected from a total of 83 samples, representing 33.73%;

- Surface water monitoring programs: 41 duplicate samples, 37 field blanks and 18 trip blanks were collected from a total of 216 samples, representing 19%;

- STP monitoring program: 3 duplicate samples, 3 field blanks, and 2 trip blanks were collected from a total of 12 samples, representing 25%; and

- Bulk fuel storage facilities monitoring program: no duplicate, field blanks or trip blank samples for 2021 as no water was discharged from secondary containment.

This represents approximately 23.15% of the samples collected, which is higher than the QA/QC duplicate program objective of 10%.

Analytical precision is a measurement of the variability associated with duplicate analyses of the same sample in the laboratory. Duplicate results were assessed using the relative percent difference (RPD) between measurements. The equation used to calculate a RPD is:

RPD = (A-B)/ ((A+B)/2)*100; where: A = field sample; B = duplicate sample.

Large variations in RPD values are often observed between duplicate samples when the concentrations of analytes are low and approaching the detection limit. Consequently, a RPD of 20% for concentrations of field and duplicates samples that both exceed 10x the method detection limit (MDL) is considered notable. The analytical precision of one QAQC sampling event is characterized as:

-High, when less than 10% of the parameters have variations that are notable;

-Medium, when 10 to 30% of the parameters have variations that are notable;

-Low, when more than 30% of the parameters have variations that are notable.

Results of the QA/QC data are presented in Tables 8-103 to 8-126 for the MDMER and EEM, Surface Water, STP, respectively. The following is a brief summary of the QA/QC results, per sampling program:

- MDMER and EEM (Tables 8-103 and 8-104): All the duplicate samples collected were considered as having high analytical precision.

- Surface Water (Tables 8-105 – 8-115 and 8-117 – 8-126): All QAQC sampling events conducted within the surface water quality program are rated as having high analytical precision except for two (2) having a medium analytical precision of 10% and 21%.

- STP (Table 8-116): Analytical precision is rated high for all sampling events except for two sampling events with both having medium analytical precision at 12%.

RPD values were also calculated for field blanks and lab blanks in 2021 as per the QA/QC Plan. All field blank samples are considered to have high analytical precision.

The QA/QC plan was followed, and samples were collected by qualified technicians. It is common to have some RPD exceedances as a result of the discrete differences in the original and field duplicates. Given the variability of these exceedances (occurring with different parameters, on different dates for different sampling programs) and the high number of successful samples, it is evident that field QA/QC standards during water sampling were maintained during sampling in 2021. Agnico Eagle technicians will continue to follow standard QA/QC procedures for surface water sampling that requires the use of sample bottles that are provided by an accredited laboratory, proper handling and storage of bottles to prevent cross-contamination between areas and, if appropriate, thoroughly rinsing the sample containers with sample water prior to sample collection.

Each equipment used for field measurement are calibrated prior each usage. Calibration datasheets are kept for future reference, if needed.

QA/QC methods and results for specific field programs are discussed separately in their respective reports; these field programs are presented in the Appendices listed below:

- Appendix 33: *Core Receiving Environment Monitoring Program 2021* – Sections 3;
- Appendix 42: *2021 Groundwater Monitoring Report* – Sections 5.0 (Whale Tail Report);
- Appendix 50: *Air Quality and Dustfall Monitoring Report 2021* – Section 4.4

Table 8-103 Whale Tail 2021 MDMER QAQC (ST-MDMER-5-7-8-11)

ST-MDMER-5	Sample date		3/2/2021							4/9/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																
TSS	mg/L	1	1	1	1	1	1	0.00	0.00	1	1	1	1	2	**66.67**	0.00
Major Ions																
Cyanide	mg/L	0.0050	0.005	0.005	0.005	0.0068	0.0067	1.48	0.00	0.005	0.005	0.005	0.0051	0.0051	0.00	0.00
Total Metals																
Arsenic	mg/L	0.00010	0.0001	0.0001	0.00010	0.00148	0.00153	3.32	0.00	0.0001	0.0001	0.00010	0.00192	0.00198	3.08	0.00
Copper	mg/L	0.00050	0.0005	0.0005	0.00050	0.00163	0.00157	3.75	0.00	0.0005	0.0005	0.00050	0.00116	0.00114	1.74	0.00
Lead	mg/L	0.00020	0.0002	0.0002	0.00020	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.00020	0.0002	0.0002	0.00	0.00
Nickel	mg/L	0.0010	0.001	0.001	0.0010	0.0046	0.0041	11.49	0.00	0.001	0.001	0.0010	0.0024	0.0024	0.00	0.00
Zinc	mg/L	0.0050	0.005	0.005	0.0050	0.0055	0.0057	3.57	0.00	0.005	0.005	0.0050	0.005	0.005	0.00	0.00
Radionuclides																
Radium-226	Bq/l	0.0050	0.005	0.005	0.005	0.044	0.005	**159.18**	0.00	0.005	0.005	0.005	0.0090	0.005	**57.14**	0.00
% Exceedance*								**0%**	**0%**						**0%**	**0%**

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

ST-MDMER-7	Sample date		6/14/2021							6/21/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																
TSS	mg/L	1	1	1	1	1	1	0.00	0.00	1	1	1	1	1	0.00	0.00
Major Ions																
Cyanide	mg/L	0.0050	0.005	0.005	0.005	0.011	0.010	9.52	0.00	0.005	0.005	0.005	0.0063	0.0065	3.12	0.00
Nutrients and Chlorophyll a																
Ammonia Nitrogen	mg/L	0.050	0.05	0.051	0.05	0.69	0.69	0.00	1.98	0.05	0.05	0.05	0.57	0.56	1.77	0.00
Un-Ionized Ammonia, calculated	mg/L	-	0.00061	0.00061	-	0.0013	0.0013	0.00	-	-	-	-	0.0022	0.0021	4.65	-
Total Metals																
Arsenic	mg/L	0.00010	0.0001	0.0001	0.0001	0.00320	0.00319	0.31	0.00	0.0001	0.0001	0.0001	0.00385	0.00382	0.78	0.00
Copper	mg/L	0.00050	0.0005	0.0005	0.0005	0.00102	0.00105	2.90	0.00	0.0005	0.0005	0.0005	0.00102	0.00102	0.00	0.00
Lead	mg/L	0.00020	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Nickel	mg/L	0.0010	0.001	0.001	0.001	0.0106	0.0109	2.79	0.00	0.001	0.001	0.001	0.0076	0.0075	1.32	0.00
Zinc	mg/L	0.0050	0.005	0.005	0.005	0.0065	0.0064	1.55	0.00	0.005	0.005	0.005	0.0055	0.0055	0.00	0.00
Radionuclides																
Radium-226	Bq/l	0.0050	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.0080	**46.15**	0.00
% Exceedance*								0%	0%						0%	0%

ST-MDMER-7	Sample date		7/26/2021						8/23/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters														
TSS	mg/L	1	1	1	1	1	0.00	0.00	1	1	2	1	**66.67**	0.00
Major Ions														
Cyanide	mg/L	0.0050	0.005	0.005	0.0066	0.0065	1.53	0.00	0.005	0.005	0.012	0.012	0.00	0.00
Nutrients and Chlorophyll a														
Ammonia Nitrogen	mg/L	0.050	0.05	0.05	0.92	0.88	4.44	0.00	0.05	0.05	1.1	1.1	0.00	0.00
Un-Ionized Ammonia, calculated	mg/L	-	0.00061	-	0.0013	0.0012	8.00	-	-	-	0.0020	0.0020	0.00	-
Total Metals														
Arsenic	mg/L	0.00010	0.0001	0.0001	0.00357	0.00353	1.13	0.00	0.0001	0.0001	0.0145	0.0146	0.69	0.00
Copper	mg/L	0.00050	0.0005	0.0005	0.00075	0.00067	11.27	0.00	0.0005	0.0005	0.00567	0.00212	*91.14*	0.00
Lead	mg/L	0.00020	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.00048	0.00028	**52.63**	0.00
Nickel	mg/L	0.0010	0.001	0.001	0.0091	0.0092	1.09	0.00	0.001	0.001	0.0342	0.0350	2.31	0.00
Zinc	mg/L	0.0050	0.005	0.005	0.0062	0.005	**21.43**	0.00	0.005	0.005	0.0079	0.0115	**37.11**	0.00
Radionuclides														
Radium-226	Bq/l	0.0050	0.005	0.005	0.005	0.005	0.00	0.00	0.0080	0.005	0.015	0.021	**33.33**	**46.15**
% Exceedance*							0%	0%					0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

ST-MDMER-8	Sample date		6/19/2021							7/26/2021						8/23/2021					
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																					
TSS	mg/L	1	1	1	1	1	1	0.00	0.00	1	1	1	1	0.00	0.00	1	1	1	6	**142.86**	0.00
Major Ions																					
Cyanide	mg/L	0.0050	0.005	0.005	0.005	0.0057	0.0057	0.00	0.00	0.005	0.005	0.0068	0.0068	0.00	0.00	0.005	0.005	0.010	0.010	0.00	0.00
Nutrients and Chlorophyll a																					
Ammonia Nitrogen	mg/L	0.050	0.05	0.093	0.05	0.66	0.65	1.53	**60.14**	0.05	0.05	0.95	0.89	6.52	0.00	0.05	0.05	1.0	1.0	0.00	0.00
Un-Ionized Ammonia, calculated	mg/L	-	-	-	-	0.0017	0.0016	6.06	-	0.00061	-	0.0015	0.0014	6.90	-	-	-	0.0024	0.0024	0.00	-
Total Metals																					
Arsenic	mg/L	0.00010	0.0001	0.0001	0.0001	0.00344	0.00358	3.99	0.00	0.0001	0.0001	0.00368	0.00374	1.62	0.00	0.0001	0.0001	0.0199	0.0197	1.01	0.00
Copper	mg/L	0.00050	0.0005	0.0005	0.0005	0.00069	0.00072	4.26	0.00	0.0005	0.0005	0.00071	0.00067	5.80	0.00	0.0005	0.0005	0.00138	0.00114	19.05	0.00
Lead	mg/L	0.00020	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Nickel	mg/L	0.0010	0.001	0.001	0.001	0.0080	0.0084	4.88	0.00	0.001	0.001	0.0094	0.0093	1.07	0.00	0.001	0.001	0.0353	0.0353	0.00	0.00
Zinc	mg/L	0.0050	0.005	0.005	0.005	0.0071	0.0079	10.67	0.00	0.005	0.005	0.0051	0.0051	0.00	0.00	0.005	0.005	0.0055	0.0060	8.70	0.00
Radionuclides																					
Radium-226	Bq/l	0.0050	0.005	0.005	0.005	0.0060	0.010	**50.00**	0.00	0.005	0.005	0.0080	0.0050	**46.15**	0.00	0.0060	0.005	0.014	0.012	15.38	18.18
% Exceedance*								0%	0%					0%	0%					0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

ST-MDMER-11	Sample date		1/4/2021						2/1/2021						
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters															
TSS	mg/L	1	1	1	1	1	0.00	0.00	1	1	1	1	1	0.00	0.00
Major Ions															
Cyanide	mg/L	0.005/0.001*	0.001*	0.001*	0.016	0.016	0.00	0.00*	0.005	0.005	0.005	0.011	0.011	0.00	0.00
Nutrients and Chlorophyll a															
Ammonia Nitrogen	mg/L	0.050	-		-	-	-	-	-	-	-	-	-	-	-
Un-Ionized Ammonia, calculated	mg/L	-	-		-	-	-	-	-	-	-	-	-	-	-
Total Metals															
Arsenic	mg/L	0.0001/0.0005*	0.0005*	0.0005*	0.00216	0.00229	5.84	0.00*	0.0001	0.0001	0.0001	0.00150	0.00147	2.02	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.00139	0.00152	8.93	0.00	0.0005	0.0005	0.0005	0.00078	0.00105	**29.51**	0.00
Lead	mg/L	0.0002/0.00017*	0.00017*	0.0003*	0.0002	0.0002	0.00	**55.32***	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Nickel	mg/L	0.001/0.0005*	0.0005*	0.0005*	0.0024	0.0025	4.08	0.00*	0.001	0.001	0.001	0.0033	0.0033	0.00	0.00
Zinc	mg/L	0.005/0.001*	0.001*	0.001*	0.005	0.005	0.00	0.00*	0.005	0.005	0.005	0.005	0.0127	**87.01**	0.00
Radionuclides															
Radium-226	Bq/l	0.005/0.002*	0.005*	0.002*	0.0080	0.014	**54.55**	**85.71***	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance**							**0%**	**0%**						**0%**	**0%**

ST-MDMER-11	Sample date		6/7/2021							10/4/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																
TSS	mg/L	1	1	1	1	6	6	0.00	0.00	1	1	1	2	2	0.00	0.00
Major Ions																
Cyanide	mg/L	0.005/0.001*	0.005	0.005	0.005	0.025	0.025	0.00	0.00	0.005	0.005	0.005	0.0063	0.0063	0.00	0.00
Nutrients and Chlorophyll a																
Ammonia Nitrogen	mg/L	0.050	0.053	0.05	0.05	1.4	1.4	0.00	0.00	0.085	0.05	0.05	0.48	0.41	15.73	0.00
Un-Ionized Ammonia, calculated	mg/L	-	0.00061	0.00061	-	0.0022	0.0022	0.00	-	0.00061	0.00061	-	0.0012	0.0010	18.18	-
Total Metals																
Arsenic	mg/L	0.0001/0.0005*	0.0001	0.0001	0.0001	0.00732	0.00761	3.88	0.00	0.0001	0.0001	0.0001	0.00563	0.00547	2.88	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.00219	0.00231	5.33	0.00	0.0005	0.0005	0.0005	0.00084	0.00082	2.41	0.00
Lead	mg/L	0.0002/0.00017*	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Nickel	mg/L	0.001/0.0005*	0.001	0.001	0.001	0.0109	0.0111	1.82	0.00	0.001	0.001	0.001	0.0219	0.0219	0.00	0.00
Zinc	mg/L	0.005/0.001*	0.005	0.005	0.005	0.0124	0.0155	**22.22**	0.00	0.005	0.005	0.005	0.0056	0.0055	1.80	0.00
Radionuclides																
Radium-226	Bq/l	0.005/0.002*	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance**								**0%**	**0%**						**0%**	**0%**

ST-MDMER-11	Sample date		10/11/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
TSS	mg/L	1	1	1	1	2	2	0.00	0.00
Major Ions									
Cyanide	mg/L	0.005/0.001*	0.005	0.005	0.005	0.0060	0.0061	1.65	0.00
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg/L	0.050	0.095	0.071	0.05	0.54	0.53	1.87	**34.71**
Un-Ionized Ammonia, calculated	mg/L	-	0.00080	0.00061	-	0.0045	0.0044	2.25	-
Total Metals									
Arsenic	mg/L	0.0001/0.0005*	0.0001	0.0001	0.0001	0.00267	0.00250	6.58	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.00116	0.00144	**21.54**	0.00
Lead	mg/L	0.0002/0.00017*	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Nickel	mg/L	0.001/0.0005*	0.001	0.001	0.001	0.0235	0.0220	6.59	0.00
Zinc	mg/L	0.005/0.001*	0.005	0.005	0.005	0.0061	0.0056	8.55	0.00
Radionuclides									
Radium-226	Bq/l	0.005/0.002*	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance**								**0%**	**0%**

Footnotes:
*Different MDL (different lab).
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-104 Whale Tail 2021 EEM QAQC

ST-MDMER-8-EEM	Sample date		6/21/2021							7/19/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																
Hardness, as CaCO3	mg/L	0.50	0.5	0.5	-	75.9	75.0	1.19	-	0.5	0.5	-	107	109	1.85	-
Total alkalinity, as CaCO3	mg/L	1.0	1	2.2	1	29	32	9.84	**75.00**	1	1	1	35	37	5.56	0.00
Major Ions																
Chloride	mg/L	1.0	1	1	1	24	24	0.00	0.00	1	1	1	32	33	3.08	0.00
Sulfate	mg/L	1.0	1	1	1	33	31	6.25	0.00	1	1	1	48	47	2.11	0.00
Nutrients and Chlorophyll a																
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.67	0.66	1.50	-	0.061	0.061	-	0.99	0.98	1.02	-
Ammonia Nitrogen	mg/L	0.050	0.05	0.05	0.05	0.55	0.54	1.83	0.00	0.05	0.05	0.05	0.81	0.81	0.00	0.00
Nitrate	mg/L	0.10	1	0.1	0.1	0.76	0.80	5.13	0.00	0.1	0.1	0.1	1.58	1.59	0.63	0.00
Nitrite	mg/L	0.010	0.1	0.01	0.01	0.095	0.119	*22.43*	0.00	0.01	0.01	0.01	0.172	0.172	0.00	0.00
Total phosphorus	mg/L	0.0010	0.0023	0.0016	0.0010	0.001	0.0018	**57.14**	**46.15**	0.0018	0.001	0.0017	0.0026	0.0036	**32.26**	**51.85**
Total Metals																
Aluminum	mg/L	0.0030	0.003	0.003	0.0030	0.0089	0.0073	19.75	0.00	0.003	0.003	0.0030	0.0091	0.0089	2.22	0.00
Cadmium	mg/L	0.000010	0.00001	0.00001	0.000010	0.00001	0.000012	18.18	0.00	0.00001	0.00001	0.000010	0.00001	0.000013	**26.09**	0.00
Chromium	mg/L	0.0010	0.001	0.001	0.0010	0.001	0.001	0.00	0.00	0.001	0.001	0.0010	0.001	0.001	0.00	0.00
Cobalt	mg/L	0.00020	0.0002	0.0002	0.00020	0.00096	0.00095	1.05	0.00	0.0002	0.0002	0.00020	0.00100	0.00101	1.00	0.00
Iron	mg/L	0.010	0.01	0.01	0.010	0.249	0.247	0.81	0.00	0.01	0.01	0.010	0.083	0.082	1.21	0.00
Manganese	mg/L	0.0010	0.001	0.001	0.0010	0.143	0.140	2.12	0.00	0.001	0.001	0.0010	0.160	0.156	2.53	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.0010	0.001	0.001	0.0010	0.0016	0.0017	6.06	0.00	0.001	0.001	0.0010	0.0026	0.0026	0.00	0.00
Selenium	mg/L	0.00010	0.0001	0.0001	0.00010	0.00016	0.00017	6.06	0.00	0.0001	0.0001	0.00010	0.00035	0.00037	5.56	0.00
Thallium	mg/L	0.000010	0.00001	0.00001	0.000010	0.000012	0.000017	**34.48**	0.00	0.00001	0.00001	0.000010	0.000018	0.000019	5.41	0.00
Uranium	mg/L	0.00010	0.0001	0.0001	0.00010	0.00044	0.00044	0.00	0.00	0.0001	0.0001	0.00010	0.00085	0.00085	0.00	0.00
% Exceedance*								0%	0%						0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the results is within 10X the MDL and the other one exceeds 10x the MDL.

ST-MDMER-11-EEM	Sample date		6/14/2021							10/25/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																
Hardness, as CaCO3	mg/L	0.50	0.5	0.5	-	75.5	76.7	1.58	-	0.5	0.5	-	123	122	0.82	-
Total alkalinity, as CaCO3	mg/L	1.0	1	1	1	31	31	0.00	0.00	1.8	1	1	36	34	5.71	0.00
Major Ions																
Chloride	mg/L	1.0	1	1	1	24	24	0.00	0.00	1	1	1	31	31	0.00	0.00
Sulfate	mg/L	1.0	1	1	1	37	37	0.00	0.00	1	1	1	67	68	1.48	0.00
Nutrients and Chlorophyll a																
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.78	0.84	7.41	-	0.061	0.076	-	0.26	0.23	12.24	-
Ammonia Nitrogen	mg/L	0.050	0.05	0.05	0.05	0.64	0.69	7.52	0.00	0.05	0.063	0.05	0.21	0.19	10.00	**23.01**
Nitrate	mg/L	0.10	0.1	0.1	0.1	1.14	1.12	1.77	0.00	0.1	0.1	0.1	1.05	1.06	0.95	0.00
Nitrite	mg/L	0.010	0.01	0.01	0.01	0.092	0.092	0.00	0.00	0.01	0.01	0.01	0.027	0.027	0.00	0.00
Total phosphorus	mg/L	0.0010	0.001	0.0024	0.0013	0.0013	0.0036	**93.88**	**59.46**	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Total Metals																
Aluminum	mg/L	0.0030	0.003	0.003	0.0030	0.0142	0.0115	**21.01**	0.00	0.003	0.003	0.0030	0.0095	0.0080	17.14	0.00
Cadmium	mg/L	0.000010	0.00001	0.00001	0.000010	0.000013	0.000012	8.00	0.00	0.00001	0.00001	0.000010	0.000021	0.000023	9.09	0.00
Chromium	mg/L	0.0010	0.001	0.001	0.0010	0.001	0.001	0.00	0.00	0.001	0.001	0.0010	0.001	0.001	0.00	0.00
Cobalt	mg/L	0.00020	0.0002	0.0002	0.00020	0.00157	0.00155	1.28	0.00	0.0002	0.0002	0.00020	0.00335	0.00325	3.03	0.00
Iron	mg/L	0.010	0.01	0.01	0.010	0.183	0.179	2.21	0.00	0.01	0.01	0.010	0.383	0.349	9.29	0.00
Manganese	mg/L	0.0010	0.001	0.001	0.0010	0.225	0.229	1.76	0.00	0.001	0.001	0.0010	0.330	0.327	0.91	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.0010	0.001	0.001	0.0010	0.0019	0.0019	0.00	0.00	0.001	0.001	0.0010	0.0023	0.0022	4.44	0.00
Selenium	mg/L	0.00010	0.0001	0.0001	0.00010	0.00020	0.00021	4.88	0.00	0.0001	0.0001	0.00010	0.00020	0.00020	0.00	0.00
Thallium	mg/L	0.000010	0.00001	0.00001	0.000010	0.000013	0.000014	7.41	0.00	0.00001	0.00001	0.000010	0.000011	0.00001	9.52	0.00
Uranium	mg/L	0.00010	0.0001	0.0001	0.00010	0.00044	0.00044	0.00	0.00	0.0001	0.0001	0.00010	0.00059	0.00056	5.22	0.00
% Exceedance*								0%	0%						0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the results is within 10X the MDL and the other one exceeds 10x the MDL.

WTSE-1	Sample date		1/3/2021			10/3/2021						
	Unit	MDL	Duplicate	Original	RPD (FD/N)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters												
Hardness, as CaCO3	mg/L	0.50	37.8	37.6	0.53	0.5	0.5	-	27.5	27.4	0.36	-
Total alkalinity, as CaCO3	mg/L	1.0	15	16	6.45	1	1.2	1	11	13	16.67	18.18
TSS	mg/L	1	1	1	0.00	1	1	1	2	1	**66.67**	0.00
Major Ions												
Chloride	mg/L	1.0	17	16	6.06	1	1	1	9.9	10	1.01	0.00
Cyanide	mg/L	0.0050	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Sulfate	mg/L	1.0	7.7	7.6	1.31	1	1	1	6.1	6.2	1.63	0.00
Nutrients and Chlorophyll a												
Ammonia (NH3)	mg/L	0.061	0.14	0.14	0.00	0.061	0.061	-	0.061	0.061	0.00	-
Ammonia Nitrogen	mg/L	0.050	0.12	0.11	8.70	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.10	0.23	0.22	4.44	0.1	0.1	0.1	0.17	0.17	0.00	0.00
Nitrite	mg/L	0.010	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total phosphorus	mg/L	0.0010	0.0015	0.0016	6.45	0.001	0.001	0.001	0.0051	0.0031	**48.78**	0.00
Total Metals												
Aluminum	mg/L	0.0005	0.00851	0.00729	15.44	0.0005	0.0005	0.0005	0.0140	0.0175	22.22	0.00
Arsenic	mg/L	0.00002	0.000740	0.000703	5.13	0.00002	0.00002	0.00002	0.000868	0.000847	2.45	0.00
Cadmium	mg/L	0.000005	0.000005	0.000005	0.00	0.000005	0.000005	0.000005	0.000005	0.000005	0.00	0.00
Chromium	mg/L	0.0001	0.00016	0.00017	6.06	0.0001	0.0001	0.0001	0.00019	0.00020	5.13	0.00
Cobalt	mg/L	0.000005	0.000105	0.000107	1.89	0.000005	0.000005	0.000005	0.0000699	0.0000730	4.34	0.00
Copper	mg/L	0.00005	0.000778	0.000657	16.86	0.00005	0.00005	0.00005	0.000577	0.000595	3.07	0.00
Iron	mg/L	0.001	0.112	0.108	3.64	0.001	0.001	0.001	0.0765	0.0836	8.87	0.00
Lead	mg/L	0.000005	0.0000221	0.0000230	3.99	0.000005	0.000005	0.000005	0.0000240	0.0000255	6.06	0.00
Manganese	mg/L	0.00005	0.0359	0.0354	1.40	0.00005	0.00005	0.00005	0.0110	0.0111	0.90	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.00005	0.000601	0.000580	3.56	0.00005	0.00005	0.00005	0.000320	0.000314	1.89	0.00
Nickel	mg/L	0.00002	0.00211	0.00211	0.00	0.00002	0.00002	0.00002	0.00169	0.00169	0.00	0.00
Selenium	mg/L	0.00004	0.00004	0.00004	0.00	0.00004	0.00004	0.00004	0.00004	0.00004	0.00	0.00
Thallium	mg/L	0.000002	0.0000040	0.0000045	11.76	0.000002	0.000002	0.000002	0.0000033	0.0000035	5.88	0.00
Uranium	mg/L	0.000002	0.000123	0.000124	0.81	0.000002	0.000002	0.000002	0.0000786	0.0000798	1.52	0.00
Zinc	mg/L	0.0001	0.00086	0.00072	17.72	0.0001	0.0001	0.0001	0.00043	0.00030	**35.62**	0.00
Radionuclides												
Radium-226	Bq/l	0.0050	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*					0%						4%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

ST-MDMER-7-EEM	Sample date		7/19/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
Hardness, as CaCO3	mg/L	0.50	0.5	-	111	108	2.74	-
Total alkalinity, as CaCO3	mg/L	1.0	1	1	34	35	2.90	0.00
Major Ions								
Chloride	mg/L	1.0	1	1	33	33	0.00	0.00
Sulfate	mg/L	1.0	1	1	46	46	0.00	0.00
Nutrients and Chlorophyll a								
Ammonia (NH3)	mg/L	0.061	0.061	-	0.98	1.0	2.02	-
Ammonia Nitrogen	mg/L	0.050	0.05	0.05	0.80	0.82	2.47	0.00
Nitrate	mg/L	0.10	0.1	0.1	1.58	1.57	0.63	0.00
Nitrite	mg/L	0.010	0.01	0.01	0.173	0.173	0.00	0.00
Nitrate + nitrite	mg/L	0.10	0.1	-	1.76	1.74	1.14	-
Total phosphorus	mg/L	0.0010	0.001	0.001	0.001	0.001	0.00	0.00
Total Metals								
Aluminum	mg/L	0.0030	0.003	0.003	0.0058	0.0043	**29.70**	0.00
Cadmium	mg/L	0.000010	0.00001	0.00001	0.00001	0.000012	18.18	0.00
Chromium	mg/L	0.0010	0.001	0.001	0.001	0.001	0.00	0.00
Cobalt	mg/L	0.00020	0.0002	0.0002	0.00102	0.00099	2.99	0.00
Iron	mg/L	0.010	0.01	0.01	0.064	0.061	4.80	0.00
Manganese	mg/L	0.0010	0.001	0.001	0.159	0.156	1.90	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.0010	0.001	0.001	0.0027	0.0026	3.77	0.00
Selenium	mg/L	0.00010	0.0001	0.0001	0.00035	0.00036	2.82	0.00
Thallium	mg/L	0.000010	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Uranium	mg/L	0.00010	0.0001	0.0001	0.00086	0.00083	3.55	0.00
% Exceedance*							0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the results is within 10X the MDL and the other one exceeds 10x the MDL.

ST-MDMER-5-EEM-WTSE	Sample date		3/31/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.50	0.78	0.5	-	42.0	42.7	1.65	-
Total alkalinity, as CaCO3	mg/L	1.0	1	3.8	1	20	17	16.22	**116.67**
TSS	mg/L	1	1	1	1	1	1	0.00	0.00
Major Ions									
Chloride	mg/L	1.0	1	1	1	19	19	0.00	0.00
Cyanide	mg/L	0.0050	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Sulfate	mg/L	1.0	1	1	1	8.8	8.8	0.00	0.00
Nutrients and Chlorophyll a									
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.061	0.061	0.00	-
Ammonia Nitrogen	mg/L	0.050	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.10	0.1	0.1	0.1	0.44	0.46	4.44	0.00
Nitrite	mg/L	0.010	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total phosphorus	mg/L	0.0010	0.001	0.0014	0.001	0.0042	0.0021	**66.67**	**33.33**
Total Metals									
Aluminum	mg/L	0.00050	0.0005	0.00194	0.00050	0.00637	0.00697	9.00	**118.03**
Arsenic	mg/L	0.000020	0.00002	0.00002	0.000020	0.000775	0.000801	3.30	0.00
Cadmium	mg/L	0.0000050	0.000005	0.000005	0.0000050	0.0000056	0.000005	11.32	0.00
Chromium	mg/L	0.00010	0.0001	0.0001	0.00010	0.00018	0.00018	0.00	0.00
Cobalt	mg/L	0.0000050	0.000005	0.000005	0.0000050	0.000117	0.000117	0.00	0.00
Copper	mg/L	0.000050	0.00005	0.000063	0.000050	0.000709	0.000717	1.12	**23.01**
Iron	mg/L	0.0010	0.001	0.001	0.0010	0.103	0.104	0.97	0.00
Lead	mg/L	0.0000050	0.000005	0.0000097	0.0000050	0.0000203	0.0000284	**33.26**	**63.95**
Manganese	mg/L	0.000050	0.00005	0.00005	0.000050	0.0487	0.0485	0.41	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.000050	0.00005	0.00005	0.000050	0.000736	0.000715	2.89	0.00
Nickel	mg/L	0.000020	0.00002	0.00002	0.000020	0.00246	0.00256	3.98	0.00
Selenium	mg/L	0.000040	0.00004	0.00004	0.000040	0.000048	0.000043	10.99	0.00
Thallium	mg/L	0.0000020	0.000002	0.000002	0.0000020	0.0000048	0.0000039	**20.69**	0.00
Uranium	mg/L	0.0000020	0.000002	0.000002	0.0000020	0.000146	0.000150	2.70	0.00
Zinc	mg/L	0.00010	0.0001	0.00079	0.00010	0.00249	0.00209	17.47	**155.06**
Radionuclides									
Radium-226	Bq/l	0.0050	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

EEM-7-MAME-2	Sample date		8/3/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.50	0.5	0.5	-	55.3	52.0	6.15	-
Total alkalinity, as CaCO3	mg/L	1.0	1	1	1	15	15	0.00	0.00
TSS	mg/L	1	1	1	1	1	1	0.00	0.00
Major Ions									
Chloride	mg/L	1.0	1	1	1	21	21	0.00	0.00
Cyanide	mg/L	0.0050	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Sulfate	mg/L	1.0	1	1	1	18	18	0.00	0.00
Nutrients and Chlorophyll a									
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.11	0.12	8.70	-
Ammonia Nitrogen	mg/L	0.050	0.05	0.05	0.05	0.091	0.095	4.30	0.00
Nitrate	mg/L	0.10	0.1	0.1	0.1	0.54	0.62	13.79	0.00
Nitrite	mg/L	0.010	0.01	0.01	0.01	0.026	0.026	0.00	0.00
Total phosphorus	mg/L	0.0010	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Total Metals									
Aluminum	mg/L	0.00050	0.0005	0.00097	0.00050	0.0131	0.0126	3.89	**63.95**
Arsenic	mg/L	0.000020	0.00002	0.00002	0.000020	0.00313	0.00307	1.94	0.00
Cadmium	mg/L	0.0000050	0.000005	0.000005	0.0000050	0.000005	0.000005	0.00	0.00
Chromium	mg/L	0.00010	0.0001	0.0001	0.00010	0.00018	0.00018	0.00	0.00
Cobalt	mg/L	0.0000050	0.000005	0.000005	0.0000050	0.000140	0.000139	0.72	0.00
Copper	mg/L	0.000050	0.00005	0.00005	0.000050	0.000551	0.000534	3.13	0.00
Iron	mg/L	0.0010	0.001	0.001	0.0010	0.105	0.102	2.90	0.00
Lead	mg/L	0.0000050	0.000005	0.000005	0.0000050	0.0000272	0.0000300	9.79	0.00
Manganese	mg/L	0.000050	0.00005	0.00005	0.000050	0.0183	0.0177	3.33	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.000050	0.00005	0.00005	0.000050	0.000798	0.000787	1.39	0.00
Nickel	mg/L	0.000020	0.00002	0.00002	0.000020	0.00208	0.00207	0.48	0.00
Selenium	mg/L	0.000040	0.00004	0.00004	0.000040	0.000097	0.000094	3.14	0.00
Thallium	mg/L	0.0000020	0.000002	0.000002	0.0000020	0.0000045	0.0000045	0.00	0.00
Uranium	mg/L	0.0000020	0.000002	0.000002	0.0000020	0.000247	0.000245	0.81	0.00
Zinc	mg/L	0.00010	0.00045	0.00042	0.00010	0.00297	0.00088	*108.57*	**123.08**
Radionuclides									
Radium-226	Bq/l	0.0050	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Water Quality Monitoring Reference Area Third Portage Lake (ST-MMER-5-EEM-TPS)														
Parameter	**Sample date**	**MDL**	**3/29/2021**						**5/18/2021**					
	Sample type		**Field Blank**	**Lab Blank**	**Duplicate**	**Original**	**RPD (N/FD)**	**RPD (FB/LB)**	**Field Blank**	**Lab Blank**	**Duplicate**	**Original**	**RPD (N/FD)**	**RPD (FB/LB)**
Conventional Parameters														
Hardness, as CaCO3	mg/L	0.50	0.5	-	9.69	9.69	0.00	-	0.5	-	10.3	10.1	1.96	-
Total alkalinity, as CaCO3	mg/L	1.0	1.0	1.0	6.3	5.9	6.56	0.00	1.5	1.0	6.4	6.8	6.06	**40.00**
TSS	mg/L	1	1	1	1	1	0.00	0.00	1	1	1	1	0.00	0.00
Major Ions														
Chloride	mg/L	1.0	1	1.0	1.6	1.4	13.33	0.00	1	1.0	1	1	0.00	0.00
Cyanide	mg/L	0.0050	0.005	0.0050	0.005	0.005	0.00	0.00	0.005	0.0050	0.005	0.005	0.00	0.00
Sulfate	mg/L	1.0	1	1.0	4.1	4.3	4.76	0.00	1	1.0	4.8	4.7	2.11	0.00
Nutrients and Chlorophyll a														
Ammonia (NH3)	mg/L	0.061	0.061	-	0.061	0.061	0.00	-	0.061	-	0.061	0.061	0.00	-
Ammonia Nitrogen	mg/L	0.050	0.05	0.050	0.05	0.05	0.00	0.00	0.05	0.050	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.10	0.1	0.10	0.1	0.1	0.00	0.00	-	-	-	-	-	-
Nitrite	mg/L	0.010	0.01	0.010	0.01	0.01	0.00	0.00	-	-	-	-	-	-
Total phosphorus	mg/L	0.0010	0.0016	0.0010	0.0011	0.001	9.52	**46.15**	0.001	0.0010	0.001	0.001	0.00	0.00
Total Metals														
Aluminum	mg/L	0.0005	0.00158	0.00050	0.00249	0.00274	9.56	**103.85**	0.00062	0.00050	0.00161	0.00144	11.15	**21.43**
Arsenic	mg/L	0.00002	0.00002	0.00002	0.000147	0.000145	1.37	0.00	0.00002	0.00002	0.000152	0.000188	**21.18**	0.00
Cadmium	mg/L	0.000005	0.000005	0.000005	0.000005	0.000005	0.00	0.00	0.000005	0.000005	0.000005	0.000005	0.00	0.00
Chromium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Cobalt	mg/L	0.000005	0.000005	0.000005	0.0000057	0.0000064	11.57	0.00	0.000005	0.000005	0.0000060	0.0000096	**46.15**	0.00
Copper	mg/L	0.00005	0.00005	0.00005	0.000336	0.000356	5.78	0.00	0.00005	0.00005	0.000381	0.000349	8.77	0.00
Iron	mg/L	0.001	0.001	0.001	0.0019	0.0017	11.11	0.00	0.0022	0.001	0.0016	0.0019	17.14	**75.00**
Lead	mg/L	0.000005	0.000005	0.000005	0.0000057	0.0000057	0.00	0.00	0.0000176	0.000005	0.0000058	0.0000116	**66.67**	**111.50**
Manganese	mg/L	0.00005	0.00005	0.00005	0.000501	0.000511	1.98	0.00	0.000207	0.00005	0.000458	0.000441	3.78	**122.18**
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.00005	0.00005	0.00005	0.000102	0.000103	0.98	0.00	0.00005	0.00005	0.000141	0.000114	**21.18**	0.00
Nickel	mg/L	0.00002	0.00002	0.00002	0.000354	0.000378	6.56	0.00	0.00002	0.00002	0.000415	0.000363	13.37	0.00
Selenium	mg/L	0.00004	0.00004	0.00004	0.00004	0.00004	0.00	0.00	0.00004	0.00004	0.00004	0.00004	0.00	0.00
Thallium	mg/L	0.000002	0.000002	0.000002	0.000002	0.000002	0.00	0.00	0.000002	0.000002	0.000002	0.000002	0.00	0.00
Uranium	mg/L	0.000002	0.000002	0.000002	0.0000316	0.0000311	1.59	0.00	0.000002	0.000002	0.0000305	0.0000336	9.67	0.00
Zinc	mg/L	0.0001	0.00050	0.00050	0.00073	0.00060	19.55	0.00	0.00087	0.0001	0.00104	0.00097	6.97	**158.76**
Radionuclides														
Radium-226	Bq/l	0.0050	0.005	0.0050	0.005	0.005	0.00	0.00	0.005	0.0050	0.005	0.005	0.00	0.00
% Exceedance*							0%	0%					0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Water Quality Monitoring Reference Area Third Portage Lake (ST-MMER-11-EEM-TPS)																	
Parameter	**Sample date**	**MDL**	**10/3/2021**							**MDL**	**11/21/2021**						
	Sample type		**Trip Blank**	**Field Blank**	**Lab Blank**	**Duplicate**	**Original**	**RPD (N/FD)**	**RPD (FB/LB)**		**Trip Blank**	**Field Blank**	**Lab Blank**	**Duplicate**	**Original**	**RPD (N/FD)**	**RPD (FB/LB)**
Conventional Parameters																	
Hardness, as CaCO3	mg/L	0.50	0.5	0.5	-	9.12	9.11	0.11	-	1	1	1	1	11	15	30.77	0.00
Total alkalinity, as CaCO3	mg/L	1.0	1	1	1.0	5.6	6.9	**20.80**	0.00	2	2	2	-	8	8	0.00	-
TSS	mg/L	1	1	1	1	1	1	0.00	0.00	1	1	1	1	1	1	0.00	0.00
Major Ions																	
Chloride	mg/L	1.0	1	1	1.0	1	1.5	**40.00**	0.00	0.5	0.5	0.5	0.5	0.8	0.8	0.00	0.00
Cyanide	mg/L	0.0050	0.005	0.005	0.0050	0.005	0.005	0.00	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Sulfate	mg/L	1.0	1	1	1.0	4.4	4.6	4.44	0.00	0.6	0.6	0.6	0.6	4.9	4.4	10.75	0.00
Nutrients and Chlorophyll a																	
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.061	0.061	0.00	-		-	-	-	-	-	-	-
Ammonia Nitrogen	mg/L	0.050	0.05	0.05	0.050	0.05	0.05	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	**66.67**	0.00
Un-Ionized Ammonia, calculated	mg/L		-	-	-	-	-	-	-	0.01	0.01	0.01	0.12	0.01	0.01	0.00	*169.23*
Nitrate	mg/L	0.10	-	-	-	-	0.1	-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Nitrite	mg/L	0.010	-	-	-	-	0.01	-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total phosphorus	mg/L	0.0010	0.001	0.001	0.0010	0.001	0.0011	9.52	0.00	0.01	0.04	0.05	0.01	0.03	0.03	0.00	**133.33**
Total Metals																	
Aluminum	mg/L	0.0005	0.003	0.003	0.003	0.0108	0.0085	**23.83**	0.00	0.005	0.005	0.005	0.006	0.005	0.005	0.00	18.18
Arsenic	mg/L	0.00002	0.0001	0.0001	0.0001	0.00021	0.00019	10.00	0.00	0.0005	0.0024	0.0022	0.0005	0.0018	0.0018	0.00	**125.93**
Cadmium	mg/L	0.000005	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00002	0.00002	0.00006	0.00002	0.00004	0.00002	**66.67**	**100.00**
Chromium	mg/L	0.0001	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.00	0.00
Cobalt	mg/L	0.000005	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Copper	mg/L	0.00005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00	0.0005	0.0005	0.0005	0.0005	0.0005	0.0008	**46.15**	0.00
Iron	mg/L	0.001	0.01	0.01	0.01	0.028	0.013	**73.17**	0.00	0.01	0.01	0.01	0.01	0.02	0.11	*138.46*	0.00
Lead	mg/L	0.000005	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.00017	0.00017	0.00017	0.00030	0.00017	0.00017	0.00	**55.32**
Manganese	mg/L	0.00005	0.001	0.001	0.001	0.0014	0.0013	7.41	0.00	0.0005	0.0005	0.0005	0.0005	0.0010	0.0014	**33.33**	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.00005	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Nickel	mg/L	0.00002	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.0005	0.0005	0.0005	0.0005	0.0008	0.0005	**46.15**	0.00
Selenium	mg/L	0.00004	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0005	0.0005	0.0005	0.0010	0.0023	0.0005	**128.57**	**66.67**
Thallium	mg/L	0.000002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.0002	0.0002	0.0002	0.0008	0.0002	0.0002	0.00	**120.00**
Uranium	mg/L	0.000002	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Zinc	mg/L	0.0001	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Radionuclides																	
Radium-226	Bq/l	0.0050	0.005	0.005	0.0050	0.005	0.005	0.00	0.00	0.01	-	-	-	-	0.005	-	-
% Exceedance*								0%	0%							4%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-105 Whale Tail 2021 Attenuation Pond Pre-Treatment QAQC (ST-WT-1)

Parameter	Sample date		2/1/2021						4/9/2021			6/7/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Duplicate	Original	RPD (FD/N)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																	
Hardness, as CaCO3	mg/L	0.5	0.5	-	94.5	94.4	0.11	-	81.1	80.4	0.87	0.5	-	99.3	100	0.70	-
Total alkalinity, as CaCO3	mg/L	1	1.3	1	50	50	0.00	**26.09**	44	43	2.30	1	1	48	47	2.11	0.00
TDS	mg/L	10	10	10	120	125	4.08	0.00	145	140	3.51	10	10	220	180	20.00	0.00
TSS	mg/L	1	1	1	56	50	11.32	0.00	72	48	40.00	1	1	79	87	9.64	0.00
Major Ions																	
Chloride	mg/L	1	1	1	36	36	0.00	0.00	28	29	3.51	1	1	27	26	3.77	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.15	0.16	6.45	0.00	0.12	0.11	8.70	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	18	18	0.00	0.00	17	17	0.00	1	1	27	29	7.14	0.00
Nutrients and Chlorophyll a																	
Ammonia (NH3)	mg/L	0.061	0.061	-	1	1	0.00	-	0.36	0.36	0.00	0.061	-	1.9	2	5.13	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.82	0.82	0.00	0.00	0.3	0.29	3.39	0.05	0.05	1.6	1.7	6.06	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.62	0.62	0.00	0.00	0.52	0.53	1.90	0.10	0.10	2.27	2.24	1.33	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.03	0.03	7.69	0.00	0.021	0.02	4.88	0.01	0.01	0.16	0.16	1.26	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	0.037	0.037	0.00	0.00	0.014	0.018	25.00	0.001	0.001	0.059	0.068	14.17	0.00
Total Metals																	
Aluminum	mg/L	0.003	0.003	0.003	0.765	0.717	6.48	0.00	0.108	0.121	11.35	0.003	0.003	2.410	2.460	2.05	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0113	0.0114	0.88	0.00	0.0137	0.0135	1.47	0.0001	0.0001	0.0418	0.0421	0.72	0.00
Barium	mg/L	0.001	0.001	0.001	0.057	0.057	0.35	0.00	0.048	0.048	0.63	0.001	0.001	0.071	0.071	0.56	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	9.52	0.00001	0.00001	0.00002	0.00003	8.00	0.00
Chromium	mg/L	0.001	0.001	0.001	0.005	0.005	8.51	0.00	0.001	0.001	18.18	0.001	0.001	0.049	0.048	1.84	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0020	0.0019	6.12	0.00	0.0013	0.0013	1.56	0.0005	0.0005	0.0060	0.0068	13.27	0.00
Iron	mg/L	0.01	0.01	0.01	2.03	1.92	5.57	0.00	1.09	1.09	0.00	0.01	0.01	4.34	4.27	1.63	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0010	0.0010	0.00	0.00	0.0005	0.0005	2.11	0.000	0.000	0.004	0.009	77.13	0.00
Manganese	mg/L	0.001	0.001	0.001	0.336	0.339	0.89	0.00	0.234	0.233	0.43	0.001	0.001	0.237	0.236	0.42	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.006	0.006	1.80	0.00	0.004	0.004	0.00	0.001	0.001	0.004	0.004	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.006	0.006	0.00	0.00	0.003	0.003	0.00	0.001	0.001	0.027	0.027	1.13	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.00	0.0001	0.0001	0.0003	0.0003	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00	0.00001	0.00001	0.00	0.00001	0.00001	0.00005	0.00005	1.90	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	3.92	0.005	0.005	0.011	0.013	11.86	0.00
% Exceedance*							0%	0%			7%					7%	0%

Parameter	Sample date		8/3/2021							10/18/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	182	182	0.00	-	0.5	0.5	-	111	114	2.67	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	62	63	1.60	0.00	1	1	1	41	42	2.41	0.00
TDS	mg/L	10	10	10	10	300	285	5.13	0.00	10	10	10	140	160	13.33	0.00
TSS	mg/L	1	1	1	1	230	240	4.26	0.00	1	1	1	110	110	0.00	0.00
Major Ions																
Chloride	mg/L	1	1	1	1	39	38	2.60	0.00	1	1	1	26	26	0.00	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.2	0.2	6.06	0.00	0.1	0.1	0.1	0.13	0.13	0.00	0.00
Sulfate	mg/L	1	1	1	1	85	88	3.47	0.00	1	1	1	44	43	2.30	0.00
Nutrients and Chlorophyll a																
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	2.800	2.800	0.00	-	0.061	0.061	-	0.20	0.25	**22.22**	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	2.30	2.30	0.00	0.00	0.05	0.05	0.05	0.17	0.21	**21.05**	0.00
Nitrate	mg/L	0.1	0.10	0.10	0.10	4.22	5.86	32.54	0.00	0.1	0.1	0.1	0.67	0.69	2.94	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.80	0.83	3.31	0.00	0.01	0.01	0.01	0.06	0.04	**37.74**	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	0.001	0.210	0.220	4.65	0.00	0.001	0.001	0.001	0.091	0.09	1.10	0.00
Total Metals																
Aluminum	mg/L	0.003	0.003	0.003	0.003	3.480	3.420	1.74	0.00	0.003	0.003	0.003	1.450	1.740	18.18	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0712	0.0713	0.14	0.00	0.0001	0.0001	0.0001	0.0259	0.0264	1.91	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.111	0.112	0.90	0.00	0.001	0.001	0.001	0.061	0.064	5.75	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00003	0.00003	15.87	0.00	0.00001	0.00001	0.00001	0.00003	0.00003	3.17	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.042	0.041	0.97	0.00	0.001	0.001	0.001	0.017	0.019	14.53	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0049	0.0049	0.00	0.00	0.0005	0.0005	0.0005	0.0024	0.0026	9.52	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	6.74	6.55	2.86	0.00	0.01	0.01	0.01	3.18	3.63	13.22	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0030	0.0030	1.35	0.00	0.0002	0.0002	0.0002	0.0013	0.0015	12.36	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.646	0.649	0.46	0.00	0.001	0.001	0.001	0.368	0.379	2.95	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.007	0.007	0.00	0.00	0.001	0.001	0.001	0.003	0.003	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.039	0.039	0.52	0.00	0.001	0.001	0.001	0.014	0.015	6.94	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0010	0.0010	2.08	0.00	0.0001	0.0001	0.0001	0.0003	0.0003	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00003	0.00002	**24.00**	0.00	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00006	0.00006	1.71	0.00	0.00001	0.00001	0.00001	0.00003	0.00003	9.84	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.015	0.014	2.80	0.00	0.005	0.005	0.005	0.008	0.009	13.95	0.00
% Exceedance*								4%	0%						0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-106 Whale Tail 2021 Whale Tail Attenuation Pond Discharge to Mammoth Lake West Diffuser QAQC (ST-WT-2)

Parameter	Sample date		7/19/2021			7/26/2021							8/9/2021					
	Unit	MDL	Duplicate	Original	RPD (FD/N)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																		
Hardness, as CaCO3	mg/L	0.5	108	107	0.93	0.5	0.5	-	132	131	0.76	-	0.5	-	128	129	0.78	-
Total alkalinity, as CaCO3	mg/L	1	35	35	0.00	1.7	1	1	34	35	2.90	0.00	1	1	36	36	0.00	0.00
Carbonate, as CaCO3	mg/L	1	1	1	0.00	1	1	1	1	1	0.00	0.00	1	1	1	1	0.00	0.00
Bicarbonate, as CaCO3	mg/L	1	35	34	2.90	1.7	1	1	34	35	2.90	0.00	1	1	36	36	0.00	0.00
TDS	mg/L	10	280	150	60.47	10	10	10	255	240	6.06	0.00	10	10	125	175	33.33	0.00
TSS	mg/L	1	1	1	0.00	1	1	1	1	1	0.00	0.00	1	1	1	1	0.00	0.00
Total organic carbon	mg/L	0.4	2.9	3	3.39	0.4	0.4	0.4	3.3	3.3	0.00	0.00	0.4	0.4	3.7	3.4	8.45	0.00
Dissolved organic carbon	mg/L	0.4	2.9	2.6	10.91	0.4	0.4	0.4	2.9	2.9	0.00	0.00	0.4	0.4	3	3	0.00	0.00
Major Ions																		
Chloride	mg/L	1	33	33	0.00	1	1	1	40	40	0.00	0.00	1	1	37	37	0.00	0.00
Silica	mg/L	0.05	5.7	5.6	1.77	0.05	0.05	0.05	5.6	5.6	0.00	7.69	0.05	0.05	6.1	5.9	3.33	0.00
Sulfate	mg/L	1	46	48	4.26	1	1	1	51	53	3.85	0.00	1	1	58	58	0.00	0.00
Nutrients and Chlorophyll a																		
Ammonia (NH3)	mg/L	0.061	1	0.97	3.05	0.061	0.061	-	1.2	1.2	0.00	-	0.061	-	0.99	0.98	1.02	-
Ammonia Nitrogen	mg/L	0.05	0.83	0.79	4.94	0.05	0.05	0.05	0.95	0.96	1.05	0.00	0.05	0.05	0.82	0.81	1.23	0.00
Nitrate	mg/L	0.1	1.57	1.59	1.27	0.1	0.1	0.1	2.4	2.44	0.82	0.00	0.1	0.1	2.64	2.63	0.38	0.00
Nitrite	mg/L	0.01	0.18	0.17	1.14	0.01	0.01	0.01	0.21	0.208	0.00	0.00	0.01	0.01	0.19	0.19	1.08	0.00
Total Kjeldahl nitrogen	mg/L	0.1	0.87	0.88	1.14	0.1	0.1	0.1	1.1	1.1	0.00	0.00	0.1	0.1	1.1	1.2	8.70	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	9.52	0.005	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.001	8.00	0.00
Dissolved phosphorus	mg/L	0.001	0.001	0.001	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.002	0.001	46.15	0.00
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals																		
Aluminum	mg/L	0.003	0.005	0.006	17.82	0.003	0.003	0.003	0.008	0.005	47.93	0.00	0.003	0.003	0.012	0.008	*42.49*	0.00
Antimony	mg/L	0.0005	0.0048	0.0047	2.10	0.0005	0.0005	0.0005	0.0064	0.0064	0.31	0.00	0.0005	0.0005	0.0069	0.0070	1.87	0.00
Arsenic	mg/L	0.0001	0.0052	0.0050	2.75	0.0001	0.0001	0.0001	0.0036	0.0035	2.85	0.00	0.0001	0.0001	0.0051	0.0051	0.20	0.00
Barium	mg/L	0.001	0.038	0.038	1.58	0.001	0.001	0.001	0.041	0.040	2.46	0.00	0.001	0.001	0.052	0.052	0.39	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.00	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	8.70	0.00	0.00001	0.00001	0.00002	0.00001	**32.26**	0.00
Calcium (total)	mg/L	0.05	30	30	1.68	0.05	0.05	-	36.6	36.2	1.10	-	0.05	-	35.10	35.10	0.00	-
Chromium	mg/L	0.001	0.001	0.001	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0005	0.0012	0.0012	2.45	0.0005	0.0005	0.0005	0.0007	0.0007	0.00	0.00	0.0005	0.0005	0.0011	0.0010	10.73	0.00
Iron	mg/L	0.01	0.07	0.06	3.08	0.01	0.01	0.01	0.13	0.12	4.88	0.00	0.01	0.01	0.18	0.16	11.63	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Lithium	mg/L	0.002	0.005	0.004	4.55	0.002	0.002	0.002	0.006	0.006	3.39	0.00	0.002	0.002	0.006	0.006	1.65	0.00
Magnesium (total)	mg/L	0.05	8.11	8.02	1.12	0.05	0.05	-	9.78	9.80	0.20	-	0.05	-	9.94	9.93	0.10	-
Manganese	mg/L	0.001	0.163	0.161	1.23	0.001	0.001	0.001	0.152	0.152	0.00	0.00	0.001	0.001	0.258	0.258	0.00	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.003	0.003	0.00	0.001	0.001	0.001	0.003	0.003	0.00	0.00	0.001	0.001	0.003	0.003	3.51	0.00
Nickel	mg/L	0.001	0.009	0.009	1.08	0.001	0.001	0.001	0.009	0.009	1.08	0.00	0.001	0.001	0.012	0.012	0.00	0.00
Potassium (total)	mg/L	0.05	6.86	6.83	0.44	0.05	0.05	-	9.54	9.41	1.37	-	0.05	-	9.03	9.06	0.33	-
Selenium	mg/L	0.0001	0.0004	0.0004	0.00	0.0001	0.0001	0.0001	0.0005	0.0005	2.15	0.00	0.0001	0.0001	0.0004	0.0004	9.76	0.00
Sodium (total)	mg/L	0.05	5.57	5.49	1.45	0.05	0.05	-	6.90	6.92	0.29	-	0.05	-	7.01	7.05	0.57	-
Strontium	mg/L	0.001	0.239	0.239	0.00	0.001	0.001	0.001	0.285	0.276	3.21	0.00	0.001	0.001	0.281	0.287	2.11	0.00
Thallium	mg/L	0.00001	0.00002	0.00002	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	16.67	0.00	0.00001	0.00001	0.00002	0.00002	0.00	0.00
Tin	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00

Parameter	Sample date		7/19/2021			7/26/2021							8/9/2021					
	Unit	MDL	Duplicate	Original	RPD (FD/N)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Uranium	mg/L	0.0001	0.0009	0.0009	2.30	0.0001	0.0001	0.0001	0.0012	0.0012	0.00	0.00	0.0001	0.0001	0.0012	0.0012	0.84	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.006	0.005	14.81	0.00	0.005	0.005	0.007	0.007	2.90	0.00
Dissolved Metals																		
Aluminum	mg/L	0.003	0.003	0.003	0.00	0.003	0.003	0.003	0.003	0.003	0.00	0.00	0.003	0.003	0.003	0.003	0.00	0.00
Antimony	mg/L	0.0005	0.005	0.005	1.66	0.0005	0.0005	0.0005	0.0063	0.0062	1.27	0.00	0.0005	0.0005	0.0070	0.0069	1.43	0.00
Arsenic	mg/L	0.0001	0.005	0.005	0.88	0.0001	0.0001	0.0001	0.0031	0.0030	0.33	0.00	0.0001	0.0001	0.0041	0.0041	1.46	0.00
Barium	mg/L	0.001	0.038	0.039	1.04	0.001	0.001	0.001	0.042	0.041	1.21	0.00	0.001	0.001	0.052	0.052	0.58	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.00	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00002	0.00002	15.38	0.00
Chromium	mg/L	0.001	0.001	0.001	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0002	0.0011	0.0012	1.74	0.0002	0.0002	0.0002	0.0011	0.0009	16.49	0.00	0.0002	0.0002	0.0015	0.0014	3.41	0.00
Iron	mg/L	0.005	0.016	0.016	2.52	0.005	0.005	0.005	0.059	0.056	6.44	0.00	0.005	0.005	0.064	0.065	2.32	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	4.88	0.00
Lithium	mg/L	0.002	0.004	0.004	0.00	0.002	0.002	0.002	0.006	0.006	0.00	0.00	0.002	0.002	0.006	0.006	1.65	0.00
Manganese	mg/L	0.001	0.163	0.169	3.61	0.001	0.001	0.001	0.150	0.150	0.00	0.00	0.001	0.001	0.261	0.257	1.54	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.003	0.003	0.00	0.001	0.001	0.001	0.003	0.003	3.51	0.00	0.001	0.001	0.003	0.003	0.00	0.00
Nickel	mg/L	0.001	0.009	0.009	1.07	0.001	0.001	0.001	0.009	0.009	1.10	0.00	0.001	0.001	0.012	0.011	4.29	0.00
Selenium	mg/L	0.0001	0.0004	0.0004	2.74	0.0001	0.0001	0.0001	0.0005	0.0004	8.89	0.00	0.0001	0.0001	0.0004	0.0004	9.76	0.00
Strontium	mg/L	0.001	0.231	0.235	1.72	0.001	0.001	0.001	0.299	0.305	1.99	0.00	0.001	0.001	0.292	0.292	0.00	0.00
Thallium	mg/L	0.00001	0.00002	0.00002	6.45	0.00001	0.00001	0.00001	0.00002	0.00002	6.45	0.00	0.00001	0.00001	0.00001	0.00002	6.90	0.00
Tin	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Uranium	mg/L	0.0001	0.0008	0.0008	1.21	0.0001	0.0001	0.0001	0.0011	0.0011	0.93	0.00	0.0001	0.0001	0.0012	0.0012	0.00	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Zinc	mg/L	0.005	0.006	0.007	7.52	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.006	0.006	3.39	0.00
Volatile Organics																		
F2 (C10-C16)	mg/L	100	0.1	0.1	0.00	0.1	0.1	0.1	0.1	0.1	0.00	0.00	0.1	0.1	0.1	0.1	0.00	0.00
F3 (C16-C34)	mg/L	200	0.2	0.2	0.00	0.2	0.2	0.2	0.2	0.2	0.00	0.00	0.2	0.2	0.2	0.2	0.00	0.00
F4 (C34-C50)	mg/L	200	0.2	0.2	0.00	0.2	0.2	0.2	0.2	0.2	0.00	0.00	0.2	0.2	0.2	0.2	0.00	0.00
% Exceedance*					1%						1%	0%					3%	0%

Footnotes:

RPD = Relative Percent Difference; MDL: Mean Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-107 Whale Tail 2021 Whale Tail Attenuation Pond Discharge to Mammoth Lake East Diffuser QAQC (ST-WT-2a)

Parameter	Sample date		7/19/2021			7/26/2021					8/9/2021					
	Unit	MDL	Duplicate	Original	RPD (FD/N)	Trip Blank	Field Blank	Lab Blank	Original	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																
Hardness, as CaCO3	mg/L	0.5	109	108	0.92	0.5	0.5	-	128	-	0.5	-	130	134	3.03	-
Total alkalinity, as CaCO3	mg/L	1	35	36	2.82	1	1	1	35	0.00	1	1	37	37	0.00	0.00
Carbonate, as CaCO3	mg/L	1	1	1	0.00	1	1	1	1	0.00	1	1	1	1	0.00	0.00
Bicarbonate, as CaCO3	mg/L	1	35	35	0.00	1	1	1	34	0.00	1	1	37	37	0.00	0.00
TDS	mg/L	10	140	145	3.51	10	10	10	225	0.00	10	10	185	205	10.26	0.00
TSS	mg/L	1	4	1	**120.00**	1	1	1	1	0.00	1	1	1	1	0.00	0.00
Total organic carbon	mg/L	0.4	3	3.1	3.28	0.4	0.4	0.4	3.4	0.00	0.4	0.4	3.4	3.5	2.90	0.00
Dissolved organic carbon	mg/L	0.4	2.7	2.7	0.00	0.4	0.4	0.4	2.9	0.00	0.4	0.4	3	3.1	3.28	0.00
Major Ions																
Chloride	mg/L	1	33	33	0.00	1	1	1	40	0.00	1	1	37	37	0.00	0.00
Silica	mg/L	0.05	5.7	5.7	0.00	0.05	0.05	0.05	5.60	7.69	0.05	0.05	5.9	5.9	0.00	0.00
Sulfate	mg/L	1	47	48	2.11	1	1	1	51	0.00	1	1	59	58	1.71	0.00
Nutrients and Chlorophyll a																
Ammonia (NH3)	mg/L	0.061	0.97	0.96	1.04	0.061	0.061	-	1.1	-	0.061	-	0.98	0.99	1.02	-
Ammonia Nitrogen	mg/L	0.05	0.80	0.79	1.26	0.05	0.05	0.05	0.95	0.00	0.05	0.05	0.80	0.82	2.47	0.00
Nitrate	mg/L	0.1	1.6	1.6	0.63	0.1	0.1	0.1	2.46	0.00	0.1	0.1	2.6	2.6	0.38	0.00
Nitrite	mg/L	0.01	0.17	0.17	0.58	0.01	0.01	0.01	0.21	0.00	0.01	0.01	0.19	0.19	0.54	0.00
Total Kjeldahl nitrogen	mg/L	0.1	0.8	0.9	19.05	0.1	0.1	0.1	1.2	0.00	0.1	0.1	1.1	1	12.56	0.00
Total phosphorus	mg/L	0.001	0.004	0.003	8.96	0.001	0.001	0.001	0.001	0.00	0.001	0.001	0.002	0.002	16.22	0.00
Dissolved phosphorus	mg/L	0.001	0.001	0.001	0.00	0.001	0.001	0.001	0.001	0.00	0.001	0.001	0.001	0.001	0.00	0.00
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals																
Aluminum	mg/L	0.003	0.006	0.008	**26.09**	0.003	0.003	0.003	0.006	0.00	0.003	0.003	0.007	0.006	13.33	0.00
Antimony	mg/L	0.0005	0.0047	0.0048	1.05	0.0005	0.0005	0.0005	0.0061	0.00	0.0005	0.0005	0.0070	0.0072	2.82	0.00
Arsenic	mg/L	0.0001	0.0051	0.0052	2.52	0.0001	0.0001	0.0001	0.0034	0.00	0.0001	0.0001	0.0051	0.0052	2.73	0.00
Barium	mg/L	0.001	0.037	0.038	1.33	0.001	0.001	0.001	0.039	0.00	0.001	0.001	0.051	0.052	1.93	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.00	0.0001	0.0001	0.0001	0.0001	0.00	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	**24.00**	0.00001	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	16.67	0.00
Calcium (total)	mg/L	0.05	30.4	29.9	1.66	0.05	0.05	-	35.60	-	0.05	-	35.90	36.80	2.48	-
Chromium	mg/L	0.001	0.001	0.001	0.00	0.001	0.001	0.001	0.001	0.00	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0005	0.0027	0.0025	8.97	0.0005	0.0005	0.0005	0.0007	0.00	0.0005	0.0005	0.0009	0.0011	13.86	0.00
Iron	mg/L	0.01	0.07	0.08	7.89	0.01	0.01	0.01	0.12	0.00	0.01	0.01	0.15	0.16	3.28	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.00	0.0002	0.0002	0.0002	0.0002	0.00	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Lithium	mg/L	0.002	0.004	0.004	0.00	0.002	0.002	0.002	0.006	0.00	0.002	0.002	0.006	0.006	1.63	0.00
Magnesium (total)	mg/L	0.05	8.02	8.19	2.10	0.05	0.05	-	9.51	-	0.05	-	9.89	10.20	3.09	-
Manganese	mg/L	0.001	0.160	0.161	0.62	0.001	0.001	0.001	0.146	0.00	0.001	0.001	0.261	0.261	0.00	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.003	0.003	3.77	0.001	0.001	0.001	0.003	0.00	0.001	0.001	0.003	0.003	0.00	0.00
Nickel	mg/L	0.001	0.009	0.009	1.09	0.001	0.001	0.001	0.009	0.00	0.001	0.001	0.012	0.012	0.82	0.00
Potassium (total)	mg/L	0.05	6.82	6.96	2.03	0.05	0.05	-	9.10	-	0.05	-	9.36	9.22	1.51	-
Selenium	mg/L	0.0001	0.0003	0.0004	8.45	0.0001	0.0001	0.0001	0.0005	0.00	0.0001	0.0001	0.0004	0.0004	5.00	0.00
Sodium (total)	mg/L	0.05	5.49	5.57	1.45	0.05	0.05	-	6.64	-	0.05	-	7.16	7.16	0.00	-
Strontium	mg/L	0.001	0.232	0.237	2.13	0.001	0.001	0.001	0.274	0.00	0.001	0.001	0.292	0.298	2.03	0.00
Thallium	mg/L	0.00001	0.00002	0.00002	6.06	0.00001	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00002	0.00002	0.00	0.00
Tin	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Uranium	mg/L	0.0001	0.0008	0.0009	5.85	0.0001	0.0001	0.0001	0.0011	0.00	0.0001	0.0001	0.0012	0.0012	0.00	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.00

Parameter	Sample date		7/19/2021			7/26/2021					8/9/2021					
	Unit	MDL	Duplicate	Original	RPD (FD/N)	Trip Blank	Field Blank	Lab Blank	Original	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Zinc	mg/L	0.005	0.012	0.010	16.74	0.005	0.005	0.005	0.005	0.00	0.005	0.005	0.007	0.007	0.00	0.00
Dissolved Metals																
Aluminum	mg/L	0.003	0.004	0.005	22.73	0.003	0.003	0.003	0.005	0.00	0.003	0.003	0.003	0.003	0.00	0.00
Antimony	mg/L	0.0005	0.0048	0.0049	2.69	0.0005	0.0005	0.0005	0.0064	0.00	0.0005	0.0005	0.0071	0.0069	2.73	0.00
Arsenic	mg/L	0.0001	0.0049	0.0051	3.79	0.0001	0.0001	0.0001	0.0035	0.00	0.0001	0.0001	0.0042	0.0041	1.92	0.00
Barium	mg/L	0.001	0.039	0.039	1.53	0.001	0.001	0.001	0.041	0.00	0.001	0.001	0.052	0.051	1.75	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.00	0.0001	0.0001	0.0001	0.0001	0.00	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	8.70	0.00001	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	16.67	0.00
Chromium	mg/L	0.001	0.001	0.001	0.00	0.001	0.001	0.001	0.001	0.00	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0002	0.0022	0.0026	17.34	0.0002	0.0002	0.0002	0.0009	0.00	0.0002	0.0002	0.0011	0.0012	3.48	0.00
Iron	mg/L	0.005	0.064	0.065	1.71	0.005	0.005	0.005	0.107	0.00	0.005	0.005	0.058	0.065	10.08	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.00	0.0002	0.0002	0.0002	0.0002	0.00	0.0002	0.0002	0.0002	0.0003	12.77	0.00
Lithium	mg/L	0.002	0.004	0.004	2.35	0.002	0.002	0.002	0.006	0.00	0.002	0.002	0.006	0.006	1.63	0.00
Manganese	mg/L	0.001	0.164	0.171	4.18	0.001	0.001	0.001	0.151	0.00	0.001	0.001	0.250	0.257	2.76	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.003	0.003	3.92	0.001	0.001	0.001	0.003	0.00	0.001	0.001	0.003	0.003	0.00	0.00
Nickel	mg/L	0.001	0.01	0.01	8.08	0.001	0.001	0.001	0.009	0.00	0.001	0.001	0.012	0.012	0.87	0.00
Selenium	mg/L	0.0001	0.0004	0.0004	0.00	0.0001	0.0001	0.0001	0.0005	0.00	0.0001	0.0001	0.0004	0.0004	2.47	0.00
Strontium	mg/L	0.001	0.232	0.237	2.13	0.001	0.001	0.001	0.294	0.00	0.001	0.001	0.285	0.290	1.74	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00002	0.00001	6.90	0.00
Tin	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Uranium	mg/L	0.0001	0.0008	0.0008	2.44	0.0001	0.0001	0.0001	0.0011	0.00	0.0001	0.0001	0.0012	0.0012	0.00	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.00
Zinc	mg/L	0.005	0.013	0.013	0.77	0.005	0.005	0.005	0.005	0.00	0.005	0.005	0.006	0.006	3.57	0.00
Volatile Organics																
F2 (C10-C16)	mg/L	0.1	0.1	0.1	0.00	0.1	0.1	0.1	0.1	0.00	0.1	0.1	0.1	0.1	0.00	0.00
F3 (C16-C34)	mg/L	0.2	0.2	0.2	0.00	0.2	0.2	0.2	0.2	0.00	0.2	0.2	0.2	0.2	0.00	0.00
F4 (C34-C50)	mg/L	0.2	0.2	0.2	0.00	0.2	0.2	0.2	0.2	0.00	0.2	0.2	0.2	0.2	0.00	0.00
% Exceedance*					0%					0%					0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-108 Whale Tail 2021 WRSF QAQC (ST-WT-3)

Parameter	Sample date		7/4/2021						9/5/2021						
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters															
Hardness, as CaCO3	mg/L	0.5	0.5	-	82.5	79.4	3.83	-	0.5	0.5	-	90.1	101	11.41	-
Total alkalinity, as CaCO3	mg/L	1	1	1	24	22	8.70	0.00	1	1	1	21	17	21.05	0.00
TDS	mg/L	10	10	10	165	170	2.99	0.00	10	10	10	165	170	2.99	0.00
TSS	mg/L	1	1	1	3	4	**28.57**	0.00	1	1	1	6	3	**66.67**	0.00
Major Ions															
Chloride	mg/L	1	1	1	6.2	5.7	8.40	0.00	1	1	1	5.1	5.8	12.84	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	54	54	0.00	0.00	1	1	1	54	70	25.81	0.00
Nutrients and Chlorophyll a															
Ammonia (NH3)	mg/L	0.061	0.061	-	0.26	0.29	10.91	-	0.061	0.061	-	0.061	0.061	0.00	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.22	0.24	8.70	0.00	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	2.4	2.4	0.00	0.00	0.1	0.1	0.1	2.01	3.26	**47.44**	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.02	0.02	6.45	0.00	0.01	0.01	0.01	0.01	0.01	**26.09**	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	0.005	0.003	**48.10**	0.00	0.001	0.001	0.001	0.001	0.004	**111.11**	0.00
Total Metals															
Aluminum	mg/L	0.003	0.003	0.003	0.159	0.147	7.84	0.00	0.003	0.003	0.003	0.070	0.074	5.70	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0031	0.0029	6.62	0.00	0.0001	0.0001	0.0001	0.0026	0.0020	27.07	0.00
Barium	mg/L	0.001	0.001	0.001	0.036	0.035	3.40	0.00	0.001	0.001	0.001	0.033	0.035	5.60	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00003	0.00003	12.90	0.00	0.00001	0.00001	0.00001	0.00002	0.00001	**22.22**	0.00
Chromium	mg/L	0.001	0.001	0.001	0.003	0.002	8.00	0.00	0.001	0.001	0.001	0.001	0.001	9.52	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0020	0.0019	7.25	0.00	0.0005	0.0005	0.0005	0.0019	0.0017	8.40	0.00
Iron	mg/L	0.01	0.01	0.01	0.58	0.47	20.95	0.00	0.01	0.01	0.01	0.64	0.27	82.22	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0003	0.0002	16.67	0.00	0.0002	0.0002	0.0002	0.0003	0.0002	**33.33**	0.00
Manganese	mg/L	0.001	0.001	0.001	0.130	0.145	10.91	0.00	0.001	0.001	0.001	0.020	0.022	7.13	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	9.52	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.018	0.018	0.57	0.00	0.001	0.001	0.001	0.009	0.008	9.52	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0005	0.0005	6.45	0.00	0.0001	0.0001	0.0001	0.0007	0.0009	19.11	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00003	0.00003	0.00	0.00	0.00001	0.00001	0.00001	0.00002	0.00002	16.22	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Dissolved Metals															
Aluminum	mg/L	0.003	0.003	0.003	0.017	0.015	15.87	0.00	0.003	0.003	0.003	0.018	0.018	0.00	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0019	0.0018	1.09	0.00	0.0001	0.0001	0.0001	0.0020	0.0019	3.08	0.00
Barium	mg/L	0.001	0.001	0.001	0.033	0.033	0.91	0.00	0.001	0.001	0.001	0.031	0.031	1.62	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00003	0.00004	**29.41**	9.52	0.00001	0.00001	0.00001	0.00001	0.00001	16.67	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0002	0.000	0.000	0.002	0.002	4.17	0.00	0.0002	0.0002	0.0002	0.0020	0.0019	3.05	0.00
Iron	mg/L	0.005	0.005	0.005	0.166	0.164	1.21	0.00	0.005	0.005	0.005	0.451	0.428	5.23	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0004	**59.65**	0.00
Manganese	mg/L	0.001	0.001	0.001	0.138	0.138	0.00	0.00	0.001	0.001	0.001	0.017	0.017	1.16	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.016	0.016	1.86	0.00	0.001	0.001	0.001	0.008	0.008	2.50	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0005	0.0005	1.98	0.00	0.0001	0.0001	0.0001	0.0006	0.0006	1.63	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00003	0.00003	3.51	0.00	0.00001	0.00001	0.00001	0.00002	0.00002	6.06	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*							2%	0%						9%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-109 Whale Tail 2021 Pit Sump QAQC (ST-WT-4)

Parameter	Sample date		3/10/2021							4/4/2021						8/2/2021					
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																					
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	140	139	0.72	-	0.5	-	125	126	0.80	-	0.5	-	209	209	0.00	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	58	59	1.71	0.00	1	1	57	58	1.74	0.00	1	1	74	74	0.00	0.00
TDS	mg/L	10	10	10	10	225	225	0.00	0.00	10	10	245	290	16.82	0.00	10	10	400	370	7.79	0.00
TSS	mg/L	1	1	1	1	16	17	6.06	0.00	1	1	7	7	0.00	0.00	1	1	4	6	**40.00**	0.00
Major Ions																					
Chloride	mg/L	1	1	1	1	43	43	0.00	0.00	1	1	45	44	2.25	0.00	1	1	46	47	2.15	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.18	0.2	10.53	0.00	0.1	0.1	0.21	0.19	10.00	0.00	0.1	0.1	0.19	0.18	5.41	0.00
Sulfate	mg/L	1	1	1	1	38	38	0.00	0.00	1	1	26	26	0.00	0.00	1	1	110	110	0.00	0.00
Nutrients and Chlorophyll a																					
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.44	0.46	4.44	-	0.061	-	1.1	1.1	0.00	-	0.061	-	1.8	1.8	0.00	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.36	0.38	5.41	0.00	0.05	0.05	0.93	0.91	2.17	0.00	0.05	0.05	1.5	1.5	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.00	0.00	0.1	0.1	0.78	0.78	0.00	0.00	0.1	0.1	5.66	5.34	5.82	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.012	0.014	15.38	0.00	0.01	0.01	0.05	0.05	0.00	0.00	0.01	0.01	0.87	0.87	0.12	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	0.001	0.026	0.028	7.41	0.00	0.0019	0.001	0.004	0.005	15.05	**62.07**	0.001	0.001	0.01	0.010	3.05	0.00
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	9.52	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
Total Metals																					
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.663	0.99	39.56	0.00	0.003	0.003	0.439	0.465	5.75	0.00	0.003	0.003	0.148	0.157	5.90	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0438	0.0446	1.81	0.00	0.0001	0.0001	0.0271	0.027	0.37	0.00	0.0001	0.0001	0.108	0.107	0.93	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.0848	0.087	2.56	0.00	0.001	0.001	0.085	0.084	0.47	0.00	0.001	0.001	0.094	0.094	0.21	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00004	0.00003	5.71	0.00	0.00001	0.00001	0.00001	0.00001	8.70	0.00	0.00001	0.00001	0.00001	0.000012	18.18	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.019	0.031	45.73	0.00	0.001	0.001	0.014	0.015	7.41	0.00	0.001	0.001	0.003	0.004	8.70	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0067	0.0074	9.10	0.00	0.0005	0.0005	0.0020	0.0029	**34.29**	0.00	0.0005	0.0005	0.0018	0.0019	8.70	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	1.26	1.82	36.36	0.00	0.01	0.01	0.72	0.76	4.32	0.00	0.01	0.01	0.622	0.636	2.23	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0102	0.0109	6.64	0.00	0.0002	0.0002	0.0015	0.0015	2.70	0.00	0.0002	0.0002	0.0020	0.0023	14.29	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.255	0.263	3.09	0.00	0.001	0.001	0.16	0.16	2.55	0.00	0.001	0.001	0.264	0.273	3.35	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.009	0.008	4.65	0.00	0.001	0.001	0.010	0.010	0.00	0.00	0.001	0.001	0.009	0.009	1.12	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.021	0.023	11.82	0.00	0.001	0.001	0.007	0.007	2.74	0.00	0.001	0.001	0.019	0.0196	3.11	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	13.33	0.00	0.0001	0.0001	0.0002	0.0002	4.44	0.00	0.0001	0.0001	0.0011	0.0011	2.71	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	9.09	0.00	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00003	0.00003	14.29	0.00	0.00001	0.00001	0.00003	0.00003	0.00	0.00	0.00001	0.00001	0.00002	0.00002	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.015	0.006	**87.38**	0.00	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.0053	0.005	5.83	0.00
% Exceedance*								10%	0%					0%	0%					0%	0%

Parameter	Sample date		10/17/2021							11/15/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	158	160	1.26	-	0.5	0.5	-	177	182	2.79	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	57	58	1.74	0.00	1	1.3	1	70	70	0.00	**26.09**
TDS	mg/L	10	10	10	10	455	235	63.77	0.00	10	10	10	310	290	6.67	0.00
TSS	mg/L	1	1	1	1	3	3	0.00	0.00	1	1	1	75	72	4.08	0.00
Major Ions																
Chloride	mg/L	1	1	1	1	43	42	2.35	0.00	1	1	1	57	56	1.77	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.21	0.21	0.00	0.00	0.1	0.1	0.1	0.24	0.24	0.00	0.00
Sulfate	mg/L	1	1	1	1	61	63	3.23	0.00	1	1	1	64	65	1.55	0.00
Nutrients and Chlorophyll a																
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.26	0.3	14.29	-	0.084	0.066	-	1.2	1.3	8.00	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.22	0.24	8.70	0.00	0.069	0.054	0.05	1	1	0.00	7.69
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.17	0.25	**38.10**	0.00	0.1	0.1	0.1	2.54	2.62	3.10	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.02	**62.86**	0.00	0.01	0.01	0.01	0.31	0.32	4.15	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	0.001	0.005	0.005	2.11	0.00	0.001	0.001	0.001	0.091	0.093	2.17	0.00
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.076	0.11	*36.56*	0.00
Total Metals																
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.039	0.043	9.01	0.00	0.003	0.003	0.003	1.37	1.53	11.03	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0391	0.0409	4.50	0.00	0.0001	0.0001	0.0001	0.384	0.387	0.78	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.105	0.109	3.74	0.00	0.001	0.001	0.001	0.068	0.069	1.45	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00002	**30.30**	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	8.00	0.00	0.001	0.001	0.001	0.037	0.040	8.10	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0008	0.0008	5.13	0.00	0.0005	0.0005	0.0005	0.0015	0.0017	8.10	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.534	0.55	2.95	0.00	0.01	0.01	0.01	3.81	4.46	15.72	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	2.67	0.00	0.0002	0.0002	0.0002	0.0011	0.0011	0.89	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.315	0.325	3.13	0.00	0.001	0.001	0.001	0.233	0.246	5.43	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.005	0.005	5.71	0.00	0.001	0.001	0.001	0.009	0.009	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.009	0.010	4.21	0.00	0.001	0.001	0.001	0.061	0.062	2.29	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.0001	0.0004	0.0004	5.56	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00002	0.00002	0.000023	13.95	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.000011	0.00001	9.52	0.00	0.00001	0.00001	0.00001	0.000038	0.000042	10.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.007	0.007	7.41	0.00
% Exceedance*								3%	0%						2%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-110 Whale Tail 2021 South Whale Tail Channel (Lake A45) QAQC (ST-WT-13)

Parameter	Sample date		8/1/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Turbidity	NTU	0.1	0.1	0.1	0.1	0.1	0.4	**120.00**	0.00
TSS	mg/L	1	1	1	1	1	2	**66.67**	0.00
Major Ions									
Sulfate	mg/L	1	1	1	1	2.5	2.4	4.08	0.00
Nutrients and Chlorophyll a									
Ammonia Nitrogen	mg/L	0.05	0.07	0.05	0.05	0.05	0.05	0.00	0.00
Un-Ionized Ammonia, calculated	mg/L	-	0.001	0.001	-	0.001	0.001	0.00	-
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.007	0.007	1.44	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0004	0.0004	2.47	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL**.**

Table 8-111 Whale Tail 2021 Lake A16 Outlet QAQC (ST-WT-14)

Parameter	Sample date		9/12/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	40.3	41.1	1.97	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	11	11	0.00	0.00
Carbonate, as CaCO3	mg/L	1	1	1	-	1	1	0.00	-
Bicarbonate, as CaCO3	mg/L	1	1	1	-	11	11	0.00	-
TDS	mg/L	10	10	10	10	75	65	14.29	0.00
TSS	mg/L	1	1	1	1	1	1	0.00	0.00
Total organic carbon	mg/L	0.4	0.4	0.4	0.4	1.5	1.5	0.00	0.00
Dissolved organic carbon	mg/L	0.4	0.4	0.4	0.4	1.4	1.4	0.00	0.00
Major Ions									
Chloride	mg/L	1	1	1	1	14	14	0.00	0.00
Silica	mg/L	0.05	0.05	0.05	0.05	1	1.1	9.52	0.00
Sulfate	mg/L	1	1	1	1	14	14	0.00	0.00
Nutrients and Chlorophyll a									
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.061	0.061	0.00	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.4	0.4	2.53	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	0.001	0.001	0.002	**40.00**	18.18
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.006	0.007	13.74	0.00
Antimony	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0002	0.0003	4.08	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.019	0.019	2.08	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	16.67	0.00
Calcium (total)	mg/L	0.05	0.05	0.05	-	11.50	11.70	1.72	-
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0007	0.0007	0.00	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Lithium	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.00	0.00
Magnesium (total)	mg/L	0.05	0.05	0.05	-	2.82	2.87	1.76	-
Manganese	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.002	0.002	10.00	0.00
Potassium (total)	mg/L	0.05	0.05	0.05	-	2.48	2.53	2.00	-
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Sodium (total)	mg/L	0.05	0.05	0.05	-	1.79	1.81	1.11	-
Strontium	mg/L	0.001	0.001	0.001	0.001	0.067	0.067	0.15	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Uranium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00

Parameter	Sample date		9/12/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Dissolved Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.005	0.005	6.06	0.00
Antimony	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0016	0.0015	4.50	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.019	0.020	1.54	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	8.00	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0002	0.0002	0.0002	0.0002	0.0009	0.0009	7.82	0.00
Iron	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Lithium	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.00	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.002	0.002	0.00	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.003	0.003	3.92	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Strontium	mg/L	0.001	0.001	0.001	0.001	0.065	0.066	1.82	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Uranium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL

Table 8-112 Whale Tail 2021 Lake A15 QAQC (ST-WT-15)

Parameter	Sample date		9/12/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	38.5	38.7	0.52	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	12	12	0.00	0.00
Carbonate, as CaCO3	mg/L	1	1	1	-	1	1	0.00	-
Bicarbonate, as CaCO3	mg/L	1	1	1	-	12	12	0.00	-
TDS	mg/L	10	10	10	10	75	75	0.00	0.00
TSS	mg/L	1	1	1	1	1	1	0.00	0.00
Total organic carbon	mg/L	0.4	0.4	0.4	0.4	2.5	2.5	0.00	0.00
Dissolved organic carbon	mg/L	0.4	0.4	0.4	0.4	2.3	2.4	4.26	0.00
Major Ions									
Chloride	mg/L	1	1	1	1	14	14	0.00	0.00
Silica	mg/L	0.05	0.05	0.05	0.05	0.51	0.49	4.00	0.00
Sulfate	mg/L	1	1	1	1	13	13	0.00	0.00
Nutrients and Chlorophyll a									
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.061	0.061	0.00	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.34	0.34	0.00	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	0.1	0.11	0.11	0.00	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	0.001	0.003	0.002	**46.15**	18.18
Orthophosphate (P)	mg/L	0.01	0.010	0.010	0.010	0.023	0.010	**78.79**	0.00
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.006	0.006	3.57	0.00
Antimony	mg/L	0.0005	0.0005	0.0005	0.0005	0.0009	0.0009	0.00	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0010	0.0010	0.97	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.016	0.016	0.63	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Calcium (total)	mg/L	0.05	0.05	0.05	-	11.10	11.10	0.00	-
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	3.77	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.02	0.02	15.38	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Lithium	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.00	0.00
Magnesium (total)	mg/L	0.05	0.05	0.05	-	2.63	2.65	0.76	-
Manganese	mg/L	0.001	0.001	0.001	0.001	0.003	0.003	0.00	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Potassium (total)	mg/L	0.05	0.05	0.05	-	2.58	2.65	2.68	-
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Sodium (total)	mg/L	0.05	0.05	0.05	-	1.83	1.81	1.10	-
Strontium	mg/L	0.001	0.001	0.001	0.001	0.076	0.076	0.53	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00

Parameter	Sample date		9/12/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Uranium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Dissolved Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.003	0.003	0.00	0.00
Antimony	mg/L	0.0005	0.0005	0.0005	0.0005	0.0009	0.0009	2.20	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0010	0.0010	0.00	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.017	0.017	0.60	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0002	0.0002	0.0002	0.0002	0.0005	0.0006	3.64	0.00
Iron	mg/L	0.005	0.005	0.005	0.005	0.005	0.006	13.08	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Lithium	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.00	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Strontium	mg/L	0.001	0.001	0.001	0.001	0.074	0.078	5.56	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Uranium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-113 Whale Tail Dike Seepage 2021 QAQC (ST-WT-17)

Parameter	Sample date		1/3/2021			7/4/2021						8/15/2021							10/11/2021	10/18/2021						12/5/2021
	Unit	MDL	Duplicate	Original	RPD (FD/N)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank
Conventional Parameters																										
Hardness, as CaCO3	mg/L	0.50/1*	56.7	56.6	0.18	0.5	-	55.6	55.9	0.54	-	0.5	0.5	-	54.1	55.4	2.37	-	0.5	0.5	-	53.8	53.2	1.12	-	1*
Total alkalinity, as CaCO3	mg/L	1/2*	36	35	2.82	1	1	35	35	0.00	0.00	1	1	1	35	34	2.90	0.00	1	1	1	37	37	0.00	0.00	5*
TDS	mg/L	10/2*	90	80	11.76	10	10	95	95	0.00	0.00	10	10	10	85	90	5.71	0.00	10	10	10	90	95	5.41	0.00	2*
TSS	mg/L	1	2	2	0.00	1	1	1	2	**66.67**	0.00	1	1	1	1	2	**66.67**	0.00	1	1	1	2	2	0.00	0.00	1
Major Ions																										
Chloride	mg/L	1/0.5*	15	15	0.00	1	1	15	15	0.00	0.00	1	1	1	12	12	0.00	0.00	1	1	1	12	12	0.00	0.00	0.5*
Fluoride	mg/L	0.10/0.02*	0.1	0.13	**26.09**	0.1	0.1	0.1	0.11	9.52	0.00	0.1	0.1	0.1	0.1	0.1	0.00	0.00	0.1	0.1	0.1	0.1	0.1	0.00	0.00	0.02*
Sulfate	mg/L	1/0.6*	9	8.9	1.12	1	1	12	12	0.00	0.00	1	1	1	13	14	7.41	0.00	1	1	1	12	12	0.00	0.00	0.6*
Nutrients and Chlorophyll a																										
Ammonia (NH3)	mg/L	0.061	0.061	0.061	0.00	0.061	-	0.061	0.061	0.00	-	0.061	0.061	-	0.061	0.061	0.00	-	0.061	0.061	-	0.061	0.061	0.00	-	-
Ammonia Nitrogen	mg/L	0.05/0.01*	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.01*
Nitrate	mg/L	0.10/0.01*	0.35	0.33	5.88	0.1	0.1	0.38	0.38	0.00	0.00	0.1	0.1	0.1	0.42	0.42	0.00	0.00	0.1	0.1	0.1	0.27	0.26	3.77	0.00	0.01*
Nitrite	mg/L	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	9.52	0.00	0.01
Total phosphorus	mg/L	0.001/0.01*	0.0034	0.003	12.50	0.001	0.001	0.003	0.001	**88.37**	0.00	0.001	0.001	0.001	0.002	0.002	**24.39**	0.00	0.001	0.001	0.001	0.008	0.007	9.52	0.00	0.02*
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	**26.09**	0.00	0.01
General Organics																										
Total oil and grease	mg/L	0.5/0.01*	0.7	0.5	**33.33**	0.5	0.5	0.5	0.5	0.00	0.00	0.5	0.5	0.5	0.5	0.5	0.00	0.00	0.5	0.5	0.5	0.5	0.5	0.00	0.00	0.02*
Total Metals																										
Aluminum	mg/L	0.0030/0.005*	0.0256	0.0252	1.57	0.003	0.003	0.137	0.046	99.29	0.00	0.003	0.003	0.003	0.034	0.028	19.23	0.00	0.003	0.003	0.003	0.051	0.059	15.47	0.00	0.005*
Arsenic	mg/L	0.00010/0.0005*	0.00526	0.00531	0.95	0.0001	0.0001	0.0058	0.0055	4.76	0.00	0.0001	0.0001	0.0001	0.0072	0.0074	2.19	0.00	0.0001	0.0001	0.0001	0.009	0.009	0.12	0.00	0.0005*
Barium	mg/L	0.0010/0.0005*	0.0267	0.0268	0.37	0.001	0.001	0.024	0.024	0.00	0.00	0.001	0.001	0.001	0.022	0.023	1.34	0.00	0.001	0.001	0.001	0.022	0.023	0.89	0.00	0.0005*
Cadmium	mg/L	0.000010/0.00002*	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	9.52	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00002*
Chromium	mg/L	0.0010/0.0006*	0.001	0.001	0.00	0.001	0.001	0.003	0.001	**109.09**	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.0006*
Copper	mg/L	0.0005	0.00127	0.00128	0.78	0.0005	0.0005	0.0012	0.0011	0.87	0.00	0.0005	0.0005	0.0005	0.0012	0.0012	1.68	0.00	0.0005	0.0005	0.0005	0.0014	0.0014	0.00	0.00	0.0005
Iron	mg/L	0.01	0.091	0.09	1.10	0.01	0.01	0.24	0.09	*90.48*	0.00	0.01	0.01	0.01	0.07	0.06	12.31	0.00	0.01	0.01	0.01	0.09	0.10	6.32	0.00	0.01
Lead	mg/L	0.00020/0.00017*	0.00023	0.00022	4.44	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.00017*
Manganese	mg/L	0.0010/0.0005*	0.0199	0.02	0.50	0.001	0.001	0.080	0.081	1.37	0.00	0.001	0.001	0.001	0.052	0.054	3.60	0.00	0.001	0.001	0.001	0.086	0.088	1.61	0.00	0.0005*
Mercury	mg/L	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00002
Molybdenum	mg/L	0.0010/0.0005*	0.0013	0.0013	0.00	0.001	0.001	0.002	0.002	6.45	0.00	0.001	0.001	0.001	0.002	0.002	0.00	0.00	0.001	0.001	0.001	0.003	0.003	0.00	0.00	0.0005*
Nickel	mg/L	0.0010/0.0005*	0.001	0.001	0.00	0.001	0.001	0.002	0.001	**45.16**	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.0005*
Selenium	mg/L	0.00010/0.0005*	0.0001	0.0001	0.00	0.0001	0.0001	0.0001	0.0001	9.52	0.00	0.0001	0.0001	0.0001	0.0001	0.0001	8.00	0.00	0.0001	0.0001	0.0001	0.0002	0.0002	0.00	0.00	0.0005*
Silver	mg/L	0.000020/0.0001*	0.00002	0.00002	0.00	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.0001*
Thallium	mg/L	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	-
Zinc	mg/L	0.0050/0.001*	0.005	0.005	0.00	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.001*
% Exceedance**					3%					1%	0%						0%	0%						0%	0%	

Footnotes:
*Different MDL (different lab).
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-114 Whale Tail IVR Pit Sump 2021 QAQC (ST-WT-18)

Parameter	Sample date		8/20/2021						9/5/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters														
Hardness, as CaCO3	**mg/L**	0.5	0.5	-	907	929	2.4	-	0.5	-	1030	1080	4.74	-
Total alkalinity, as CaCO3	**mg/L**	1	1	1	120	110	8.7	0	1	1	110	110	0	0
TDS	**mg/L**	10	10	10	1010	1030	1.96	0	10	10	1000	1080	7.69	0
TSS	**mg/L**	1	1	1	1200	4000	107.69	0	1	1	3600	5700	45.16	0
Major Ions														
Chloride	mg/L	1	1	1	190	200	5.13	0	1	1	170	170	0	0
Fluoride	mg/L	0.1	0.1	0.1	0.19	0.19	0	0	0.1	0.1	0.2	0.21	4.88	0
Sulfate	mg/L	1	1	1	230	230	0	0	1	1	310	310	0	0
Nutrients and Chlorophyll a														
Ammonia (NH3)	mg/L	0.061	0.061	-	9.2	9.1	1.09	-	0.061	-	10	10	0	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	7.5	7.5	0	0	0.05	0.05	8.6	8.5	1.17	0
Nitrate	mg/L	0.1	0.1	0.1	14.2	14.1	0.71	0	0.1	0.1	16	16	0	0
Nitrite	mg/L	0.01	0.01	0.01	1.92	1.89	1.57	0	0.01	0.01	1.83	1.79	2.21	0
Total phosphorus	mg/L	0.001	0.0013	0.001	2.5	2.6	3.92	**26.09**	0.001	0.001	1.5	2.2	37.84	0
Orthophosphate (P)	mg/L	0.01	0.01	0.01	1.1	1.1	0	0	0.01	0.01	1.4	1.4	0	0
Total Metals														
Aluminum	mg/L	0.003	0.003	0.003	14.7	22.9	43.62	0	0.003	0.003	19.1	19.5	2.07	0
Arsenic	mg/L	0.0001	0.0001	0.0001	3.15	3.08	2.25	0	0.0001	0.0001	4.92	5.18	5.15	0
Barium	mg/L	0.001	0.001	0.001	0.295	0.443	40.11	0	0.001	0.001	0.325	0.356	9.1	0
Cadmium	mg/L	0.00001	0.00001	0.00001	0.000235	0.000216	8.43	0	0.00001	0.00001	0.00022	0.00026	16.67	0
Chromium	mg/L	0.001	0.001	0.001	0.441	0.826	60.77	0	0.001	0.001	0.771	0.759	1.57	0
Copper	mg/L	0.0005	0.0005	0.0005	0.0104	0.012	14.29	0	0.0005	0.0005	0.0578	0.0623	7.49	0
Iron	mg/L	0.01	0.01	0.01	30	43	35.62	0	0.01	0.01	39.2	42.9	9.01	0
Lead	mg/L	0.0002	0.0002	0.0002	0.0229	0.0254	10.35	0	0.0002	0.0002	0.0171	0.0222	*25.95*	0
Manganese	mg/L	0.001	0.001	0.001	2.2	2.19	0.46	0	0.001	0.001	2.61	2.96	12.57	0
Mercury	mg/L	0.00001/0.0001*	0.00001	0.00001	0.0001*	0.0001*	0	0	0.00001	0.00001	0.0001*	0.0001*	0	0
Molybdenum	mg/L	0.001	0.001	0.001	0.005	0.005	0	0	0.001	0.001	0.01	0.01	0	0
Nickel	mg/L	0.001	0.001	0.001	0.616	0.711	14.32	0	0.001	0.001	0.733	0.801	8.87	0
Selenium	mg/L	0.0001	0.0001	0.0001	0.00268	0.00256	4.58	0	0.0001	0.0001	0.0032	0.0033	3.08	0
Silver	mg/L	0.00002	0.00002	0.00002	0.00018	0.00048	**90.91**	0	0.00002	0.00002	0.00041	0.00031	**27.78**	0
Thallium	mg/L	0.00001	0.00001	0.00001	0.000959	0.0012	22.33	0	0.00001	0.00001	0.00072	0.0008	10.53	0
Zinc	mg/L	0.005	0.005	0.005	0.042	0.057	**30.3**	0	0.005	0.005	0.07	0.081	14.57	0
% Exceedance**							21%	0%					7%	0%

Footnotes:
*Different MDL.
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
** Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-115 Whale Tail Groundwater Storage Pond 1 2021 QAQC (ST-WT-20)

Parameter	Sample date		6/8/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters									
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	694	687	1.01	-
Total alkalinity, as CaCO3	mg/L	1	1.7	1	1	39	38	2.60	0.00
TDS	mg/L	10	10	10	10	1010	990	2.00	0.00
TSS	mg/L	1	1	1	1	14	13	7.41	0.00
Major Ions									
Chloride	mg/L	1	1	1	1	500	490	2.02	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	1	14	14	0.00	0.00
Nutrients and Chlorophyll a									
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	3.8	3.8	0.00	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	3.1	3.1	0.00	-
Un-Ionized Ammonia, calculated	mg/L	0.00061	0.00061	0.00061	-	0.0023	0.0023	0.00	-
Nitrate	mg/L	0.1	0.1	0.1	0.1	8.92	9.08	1.78	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.19	0.187	1.06	0.00
Total Metals									
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.351	0.329	6.47	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0942	0.0914	3.02	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.184	0.182	1.09	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00013	0.00013	3.10	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.012	0.011	6.90	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0009	0.0009	8.99	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.57	0.54	5.98	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	9.23	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.492	0.480	2.47	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.003	0.002	8.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.048	0.047	1.91	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	4.65	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Sodium (total)	mg/L	0.05	0.05	0.05	-	8.52	8.32	2.38	-
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00007	0.00007	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-116 Whale Tail 2021 STP QAQC (ST-WT-11)

Parameter	Sample date		1/4/2021			2/1/2021				3/8/2021		
	Unit	MDL H2lab	Duplicate	Original	RPD (FD/N)	Field Blank	Lab Blank	Original	RPD (FB/LB)	Duplicate	Original	RPD (FD/N)
Conventional Parameters												
Hardness	mg/L	1	75	65	14.29	1	1	91	0.00	141	121	15.27
Total alkalinity, as CaCO3	mg/L	2	62	63	1.60	2	5	62	**85.71**	13	96	*152.29*
TDS	mg/L	1	340	337	0.89	8	1	362	**155.56**	417	444	6.27
TSS	mg/L	1	1	1	0.00	1	1	1	0.00	1	1	0.00
Major Ions												
Chloride	mg/L	0.5	73.1	74.2	1.49	0.5	0.5	80.4	0.00	81.8	79.1	3.36
Fluoride	mg/L	0.02	0.05	0.05	0.00	0.02	0.02	0.06	0.00	0.06	0.07	15.38
Sulfate	mg/L	0.6	23.8	22.6	5.17	0.6	0.6	24.8	0.00	25.1	25.1	0.00
Nutrients and Chlorophyll a												
Ammonia	mg/L	-	-	-	-	-	-	-	-	-	-	-
Ammonia Nitrogen	mg/L	0.01	0.11	0.11	0.00	0.01	0.01	0.14	0.00	0.11	0.12	8.70
Nitrate	mg/L	0.01	6.79	8.42	21.43	0.01	0.01	10.8	0.00	30	29.2	2.70
Nitrite	mg/L	0.01	0.08	0.04	**66.67**	0.01	0.01	0.13	0.00	0.13	0.13	0.00
Biochemical Oxygen Demand, 5 Day	mg/L	1	1	1	0.00	1	1	1	0.00	1	1	0.00
Total phosphorus	mg/L	0.01	4.21	3.82	9.71	0.01	0.05	6.53	**133.33**	5.74	7.13	21.60
Orthophosphate (P)	mg/L	0.01	4.78	4.65	2.76	0.01	0.01	6.53	0.00	7.59	7.54	0.66
General Organics												
Total oil and grease	mg/L	1	3	3	0.00	1	1	1	0.00	2	1	**66.67**
Total Metals												
Aluminum	mg/L	0.005	0.018	0.023	**24.39**	0.006	0.006	0.028	0.00	0.005	0.005	0.00
Arsenic	mg/L	0.0005	0.0064	0.0049	*26.55*	0.0005	0.0005	0.0051	0.00	0.0035	0.0029	18.75
Barium	mg/L	0.0005	0.0083	0.0095	13.48	0.0005	0.0005	0.0101	0.00	0.0258	0.0147	**54.81**
Cadmium	mg/L	0.00002	0.00002	0.00002	0.00	0.00007	0.00002	0.00002	**111.11**	0.00021	0.00002	*165.22*
Calcium (total)	mg/L	0.03	21.6	19.3	11.25	0.03	0.03	27.2	0.00	44.3	34.8	**24.02**
Chromium	mg/L	0.0006	0.0008	0.0006	**28.57**	0.0006	0.0006	0.0022	0.00	0.0010	0.0006	**50.00**
Copper	mg/L	0.0005	0.0081	0.0066	20.41	0.0009	0.0005	0.0178	**57.14**	0.0233	0.0174	28.99
Iron	mg/L	0.01	0.04	0.03	**28.57**	0.01	0.01	0.06	0.00	0.02	0.01	**66.67**
Lead	mg/L	0.00017	0.00017	0.00017	0.00	0.00017	0.00030	0.00017	**55.32**	0.00017	0.00017	0.00
Magnesium (total)	mg/L	0.02	5.11	4.15	20.73	0.02	0.02	5.59	0.00	7.32	8.4	13.74
Manganese	mg/L	0.0005	0.0031	0.0025	**21.43**	0.0005	0.0005	0.0032	0.00	0.0398	0.0138	97.01
Mercury	mg/L	0.00001	0.00001	0.00001	0.00	0.00001	0.00001	0.00001	0.00	0.00001	0.00002	**66.67**
Molybdenum	mg/L	0.0005	0.0005	0.0006	18.18	0.0005	0.0005	0.0007	0.00	0.0005	0.0005	0.00
Nickel	mg/L	0.0005	0.0079	0.0069	13.51	0.0005	0.0005	0.0090	0.00	0.0108	0.0097	10.73
Selenium	mg/L	0.0005	0.0005	0.0005	0.00	0.0005	0.0010	0.0005	**66.67**	0.0005	0.0005	0.00
Silver	mg/L	0.0001	0.0001	0.0001	0.00	0.0001	0.0001	0.0001	0.00	0.0001	0.0001	0.00
Titanium	mg/L	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00
Zinc	mg/L	0.001	0.065	0.049	28.07	0.001	0.001	0.067	0.00	0.209	0.082	87.29
% Exceedance****					12%				0%			12%

Parameter	Sample date		MDL Maxxam	10/5/2021							11/1/2021				
	Unit	MDL H2lab		Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Original	RPD (FB/LB)
Conventional Parameters															
Hardness	mg/L	1	0.50	0.5	0.5	-	69	70.4	2.01	-	0.5	0.5	-	57.5	-
Total alkalinity, as CaCO3	mg/L	2	1.0	1	1	1	9.9	8.3	17.58	0.00	1.5	1.3	1	57	**26.09**
TDS	mg/L	1	10	10	10	10	365	340	7.09	0.00	10	10	10	310	0.00
TSS	mg/L	1	1	1	1	1	2	5	**85.71**	0.00	1	1	1	4	0.00
Major Ions															
Chloride	mg/L	0.5	1.0	1	1	1	66	65	1.53	0.00	1	1	1	72	0.00
Fluoride	mg/L	0.02	0.10	0.1	0.1	0.1	0.1	0.1	0.00	0.00	0.1	0.1	0.1	0.11	0.00
Sulfate	mg/L	0.6	1.0	1	1	1	82	77	6.29	0.00	1	1	1	39	0.00
Nutrients and Chlorophyll a															
Ammonia	mg/L	-	0.061	0.061	0.061	-	0.3	0.19	**44.90**	-	0.061	0.061	-	0.16	-
Ammonia Nitrogen	mg/L	0.01	0.050	0.05	0.05	0.05	0.25	0.16	**43.90**	0.00	0.05	0.05	0.05	0.13	0.00
Nitrate	mg/L	0.01	0.10	0.1	0.1	0.1	17.4	16.8	3.51	0.00	0.1	0.1	0.1	12.9	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.012	18.18	0.00	0.01	0.01	0.01	0.01	0.00
Biochemical Oxygen Demand, 5 Day	mg/L	1	2	2	2	2	2	3	**40.00**	0.00	2	2	2	2	0.00
Total phosphorus	mg/L	0.01	0.001	0.003	0.001	0.001	0.440	0.490	10.75	0.00	0.001	0.001	0.001	2.7	0.00
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.01	0.01	0.43	0.46	6.74	0.00	0.01	0.01	0.01	2.7	0.00
General Organics															
Total oil and grease	mg/L	1	0.5	0.5	0.5	0.5	0.5	0.5	0.00	0.00	0.5	0.5	0.5	0.5	0.00
Total Metals															
Aluminum	mg/L	0.005	0.003	0.003	0.003	0.003	0.084	0.095	12.35	0.00	0.003	0.003	0.003	0.048	0.00
Arsenic	mg/L	0.0005	0.0001	0.0001	0.0001	0.0001	0.0050	0.0049	0.20	0.00	0.0001	0.0001	0.0001	0.0090	0.00
Barium	mg/L	0.0005	0.001	0.001	0.001	0.001	0.007	0.008	6.90	0.00	0.001	0.001	0.001	0.002	0.00
Cadmium	mg/L	0.00002	0.00001	0.00001	0.00001	0.00001	0.00006	0.00005	12.39	0.00	0.00001	0.00001	0.00001	0.00003	0.00
Calcium (total)	mg/L	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.0006	0.001	0.001	0.001	0.001	0.001	0.001	18.18	0.00	0.001	0.001	0.001	0.001	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0063	0.0053	16.96	0.00	0.0005	0.0005	0.0005	0.0051	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.01	0.06	0.08	15.83	0.00	0.01	0.01	0.01	0.05	0.00
Lead	mg/L	0.00017	0.0002	0.0002	0.0002	0.0002	0.0008	0.0005	**48.06**	0.00	0.0002	0.0002	0.0002	0.0007	0.00
Magnesium (total)	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	mg/L	0.0005	0.001	0.001	0.001	0.001	0.054	0.053	1.68	0.00	0.001	0.001	0.001	0.006	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00
Molybdenum	mg/L	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.001	0.00
Nickel	mg/L	0.0005	0.001	0.001	0.001	0.001	0.010	0.009	6.52	0.00	0.001	0.001	0.001	0.008	0.00
Selenium	mg/L	0.0005	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.0001	0.0001	0.00
Silver	mg/L	0.0001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00002	0.00002	0.00
Titanium	mg/L	0.01	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00
Zinc	mg/L	0.001	0.005	0.005	0.005	0.005	0.112	0.098	13.13	0.00	0.005	0.005	0.005	0.052	0.00
% Exceedance****									0%	0%					0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-117 Whale Tail 2021 Discharge to Whale Tail South via Permanent Diffuser QAQC (ST-WT-24)

Parameter	Sample date		2/1/2021							10/18/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters																
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	94.4	92.1	2.47	-	0.5	0.5	-	153	154	0.65	-
Total alkalinity, as CaCO3	mg/L	1	2.4	1	1	45	44	2.25	0.00	7.4	1.3	1	36	35	2.82	**26.09**
Carbonate, as CaCO3	mg/L	1	1	1	1	1	1	0.00	0.00	1	1	1	1	1	0.00	0.00
Bicarbonate, as CaCO3	mg/L	1	2.4	1	1	45	44	2.25	0.00	7.4	1.3	1	36	35	2.82	**26.09**
TDS	mg/L	10	10	10	10	120	115	4.26	0.00	10	10	10	225	200	11.76	0.00
TSS	mg/L	1	1	1	1	1	1	0.00	0.00	1	1	1	1	2	**66.67**	0.00
Total organic carbon	mg/L	0.4	0.4	0.4	0.4	2	2	0.00	0.00	0.4	0.4	0.4	2.2	2.2	0.00	0.00
Dissolved organic carbon	mg/L	0.4	0.4	0.4	0.4	1.9	2	5.13	0.00	0.4	0.4	0.4	2.1	2.2	4.65	0.00
Major Ions																
Chloride	mg/L	1	5	1	1	35	36	2.82	0.00	1	1	1	34	34	0.00	0.00
Silica	mg/L	0.05	0.05	0.05	0.05	8.6	8.8	2.30	0.00	0.05	0.05	0.05	7.2	7.2	0.00	0.00
Sulfate	mg/L	1	1	1	1	23	24	4.26	0.00	1	1	1	86	87	1.16	0.00
Nutrients and Chlorophyll a																
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.97	1	3.05	-	0.061	0.061	-	0.55	0.54	1.83	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.8	0.83	3.68	0.00	0.05	0.05	0.05	0.45	0.44	2.25	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.1	0.6	0.7	12.50	0.00	0.1	0.1	0.1	2.38	2.36	0.84	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.02	0.03	**29.63**	0.00	0.01	0.01	0.01	0.061	0.06	1.65	0.00
Total Kjeldahl nitrogen	mg/L	0.1	0.1	0.1	0.1	0.99	1	1.01	0.00	0.1	0.1	0.1	0.52	0.53	1.90	0.00
Total phosphorus	mg/L	0.001	0.001	0.0036	0.002	0.001	0.001	0.00	**57.14**	0.001	0.001	0.001	0.001	0.001	**33.33**	0.00
Dissolved phosphorus	mg/L	0.001	0.001	0.001	0.001	0.001	0.0011	9.52	0.00	0.001	0.001	0.001	0.001	0.001	18.18	0.00
Orthophosphate (P)	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals																
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.007	0.007	1.44	0.00	0.003	0.003	0.003	0.005	0.005	10.10	0.00
Antimony	mg/L	0.0005	0.0005	0.0005	0.0005	0.0012	0.0012	2.45	0.00	0.0005	0.0005	0.0005	0.0076	0.0077	0.52	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0015	0.0015	0.00	0.00	0.0001	0.0001	0.0001	0.0036	0.0035	1.69	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.049	0.050	0.40	0.00	0.001	0.001	0.001	0.051	0.051	0.59	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00004	0.00003	**37.50**	0.00
Calcium (total)	mg/L	0.05	0.05	0.05	-	27.7	27	2.56	-	0.05	0.05	-	42.6	43.1	1.17	-
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0018	0.0009	**68.70**	0.00	0.0005	0.0005	0.0005	0.0008	0.0008	7.50	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	0.07	0.07	1.50	0.00	0.01	0.01	0.01	0.25	0.24	2.90	0.00

Parameter	Sample date		2/1/2021							10/18/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Lithium	mg/L	0.002	0.002	0.002	0.002	0.004	0.004	0.00	0.00	0.002	0.002	0.002	0.005	0.005	0.00	0.00
Magnesium (total)	mg/L	0.05	0.05	0.05	-	6.14	6.03	1.81	-	0.05	0.05	-	11.2	11.2	0.00	-
Manganese	mg/L	0.001	0.001	0.001	0.001	0.336	0.336	0.00	0.00	0.001	0.001	0.001	0.293	0.291	0.68	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.006	0.006	1.80	0.00	0.001	0.001	0.001	0.002	0.003	4.08	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.003	0.003	0.00	0.00	0.001	0.001	0.001	0.025	0.025	0.41	0.00
Potassium (total)	mg/L	0.05	0.05	0.05	-	4.98	4.9	1.62	-	0.05	0.05	-	8.35	8.41	0.72	-
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.0001	0.00034	0.00035	2.90	0.00
Sodium (total)	mg/L	0.05	0.05	0.05	-	5.45	5.43	0.37	-	0.082	0.05	-	7.66	7.49	2.24	-
Strontium	mg/L	0.001	0.001	0.001	0.001	0.225	0.225	0.00	0.00	0.001	0.001	0.001	0.307	0.307	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	8.00	0.00
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Uranium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0014	0.0014	0.72	0.00	0.0001	0.0001	0.0001	0.0011	0.0011	1.89	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.009	0.009	7.91	0.00
Dissolved Metals																
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.003	0.003	0.00	0.00	0.003	0.003	0.003	0.003	0.003	0.00	0.00
Antimony	mg/L	0.0005	0.0005	0.0005	0.0005	0.0012	0.0012	0.81	0.00	0.0005	0.0005	0.0005	0.0075	0.0074	1.74	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0013	0.0014	3.75	0.00	0.0001	0.0001	0.0001	0.0022	0.0023	1.79	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.050	0.050	0.00	0.00	0.001	0.001	0.001	0.049	0.048	1.24	0.00
Beryllium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00
Boron	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.00	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00003	0.00003	3.64	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.00	0.00	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Copper	mg/L	0.0002	0.0002	0.0002	0.0002	0.0010	0.0009	11.11	0.00	0.0002	0.0002	0.0002	0.0012	0.0011	1.74	0.00
Iron	mg/L	0.005	0.005	0.005	0.005	0.010	0.011	6.51	0.00	0.005	0.005	0.005	0.118	0.115	2.58	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Lithium	mg/L	0.002	0.002	0.002	0.002	0.004	0.004	2.53	0.00	0.002	0.002	0.002	0.005	0.006	10.91	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.339	0.333	1.79	0.00	0.001	0.001	0.001	0.307	0.297	3.31	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.006	0.006	0.00	0.00	0.001	0.001	0.001	0.002	0.002	4.26	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.003	0.003	2.99	0.00	0.001	0.001	0.001	0.025	0.025	0.40	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.0001	0.0004	0.0003	2.90	0.00
Strontium	mg/L	0.001	0.001	0.001	0.001	0.228	0.221	3.12	0.00	0.001	0.001	0.001	0.301	0.296	1.68	0.00

Parameter	Sample date		2/1/2021							10/18/2021						
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00001	18.18	0.00
Tin	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Titanium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Uranium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0014	0.0015	1.39	0.00	0.0001	0.0001	0.0001	0.0010	0.0009	7.18	0.00
Vanadium	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.005	0.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.007	0.010	**24.85**	0.00	0.005	0.005	0.005	0.010	0.010	6.97	0.00
Volatile Organics																
F2 (C10-C16)	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.00	0.00	0.1	0.1	0.1	0.1	0.1	0.00	0.00
F3 (C16-C34)	mg/L	0.2	0.2	0.2	0.2	0.2	0.2	0.00	0.00	0.2	0.2	0.2	0.2	0.2	0.00	0.00
F4 (C34-C50)	mg/L	0.2	0.2	0.2	0.2	0.2	0.2	0.00	0.00	0.2	0.2	0.2	0.2	0.2	0.00	0.00
% Exceedance*								0%	0%						0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-118 Whale Tail 2021 Whale Tail WRSF QAQC (ST-WT-30)

Parameter	Sample date		7/4/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
Hardness, as CaCO3	mg/L	0.5	0.5	-	49.1	49.3	0.41	-
Total alkalinity, as CaCO3	mg/L	1	1	1	32	32	0.00	0.00
TDS	mg/L	10	10	10	90	105	15.38	0.00
TSS	mg/L	1	1	1	3	2	**40.00**	0.00
Major Ions								
Chloride	mg/L	1	1	1	2.7	2.7	0.00	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	25	25	0.00	0.00
Nutrients and Chlorophyll a								
Ammonia (NH3)	mg/L	0.061	0.15	-	0.20	0.17	16.22	-
Ammonia Nitrogen	mg/L	0.05	0.13	0.05	0.16	0.14	13.33	**88.89**
Nitrate	mg/L	0.1	0.1	0.1	0.3	0.3	10.53	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals								
Aluminum	mg/L	0.003	0.003	0.003	0.111	0.109	1.82	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0187	0.0187	0.00	0.00
Barium	mg/L	0.001	0.001	0.001	0.035	0.036	0.56	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	10.53	0.00
Chromium	mg/L	0.001	0.001	0.001	0.003	0.003	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0023	0.0022	2.67	0.00
Iron	mg/L	0.01	0.01	0.01	0.28	0.27	5.11	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0003	0.0003	3.51	0.00
Manganese	mg/L	0.001	0.001	0.001	0.086	0.087	0.58	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.014	0.013	3.01	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0004	0.0004	2.30	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	10.00	0.00
Zinc	mg/L	0.005	0.005	0.005	0.008	0.008	7.50	0.00
% Exceedance*							0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-119 Whale Tail 2021 Whale Tail WRSF QAQC (ST-WT-31)

Parameter	Sample date		7/4/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
Hardness, as CaCO3	mg/L	0.5	0.5	-	42.4	39.7	6.58	-
Total alkalinity, as CaCO3	mg/L	1	1	1	23	23	0.00	0.00
TDS	mg/L	10	10	10	65	95	**37.50**	0.00
TSS	mg/L	1	1	1	4	5	**22.22**	0.00
Major Ions								
Chloride	mg/L	1	1	1	3.2	3.1	3.17	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	22	22	0.00	0.00
Nutrients and Chlorophyll a								
Ammonia (NH3)	mg/L	0.061	0.067	-	0.2	0.19	5.13	-
Ammonia Nitrogen	mg/L	0.05	0.055	0.05	0.17	0.15	12.50	9.52
Nitrate	mg/L	0.1	0.1	0.1	0.7	0.7	1.44	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Total Metals								
Aluminum	mg/L	0.003	0.003	0.003	0.245	0.23	5.88	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0086	0.01	5.99	0.00
Barium	mg/L	0.001	0.001	0.001	0.030	0.03	6.10	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00	4.88	0.00
Chromium	mg/L	0.001	0.001	0.001	0.006	0.01	10.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0020	0.00	5.80	0.00
Iron	mg/L	0.01	0.01	0.01	0.38	0.35	7.10	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0004	0.00	10.26	0.00
Manganese	mg/L	0.001	0.001	0.001	0.047	0.04	5.01	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.00	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.010	0.01	6.32	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0006	0.00	12.61	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00	6.06	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.01	0.00	0.00
% Exceedance*							0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-120 Whale Tail 2021 Whale Tail WRSF QAQC (ST-WT-32)

Parameter	Sample date		7/4/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
Hardness, as CaCO3	mg/L	0.5	0.5	-	43.4	44.5	2.50	-
Total alkalinity, as CaCO3	mg/L	1	1	1	23	23	0.00	0.00
TDS	mg/L	10	10	10	90	85	5.71	0.00
TSS	mg/L	1	1	1	5	3	**50.00**	0.00
Major Ions								
Chloride	mg/L	1	1	1	2.5	4.3	**52.94**	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	25	25	0.00	0.00
Nutrients and Chlorophyll a								
Ammonia (NH3)	mg/L	0.061	0.2	-	0.21	0.18	15.38	-
Ammonia Nitrogen	mg/L	0.05	0.16	0.05	0.18	0.15	18.18	**104.76**
Nitrate	mg/L	0.1	0.1	0.1	0.6	0.6	0.00	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.01	7.41	0.00
Total Metals								
Aluminum	mg/L	0.003	0.003	0.003	0.200	0.226	12.21	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0123	0.0131	6.30	0.00
Barium	mg/L	0.001	0.001	0.001	0.042	0.042	1.19	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00003	17.39	0.00
Chromium	mg/L	0.001	0.001	0.001	0.005	0.006	7.27	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0014	0.0015	4.08	0.00
Iron	mg/L	0.01	0.01	0.01	0.29	0.32	9.62	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0004	0.0004	10.53	0.00
Manganese	mg/L	0.001	0.001	0.001	0.095	0.097	2.09	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.010	0.011	4.695	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0006	0.0006	0.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	4.65	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*							0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-121 Whale Tail 2021 Whale Tail WRSF QAQC (ST-WT-33)

Parameter	Sample date		8/21/2021						9/5/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters														
Hardness, as CaCO3	mg/L	0.5	0.5	-	82.8	86.7	4.60	-	0.5	-	111	112	0.90	-
Total alkalinity, as CaCO3	mg/L	1	1	1	54	51	5.71	0.00	1	1	42	42	0.00	0.00
TDS	mg/L	10	10	10	175	145	18.75	0.00	10	10	180	190	5.41	0.00
TSS	mg/L	1	1	1	2	4	**66.67**	0.00	1	1	2	2	0.00	0.00
Major Ions														
Chloride	mg/L	1	1	1	6.3	6.3	0.00	0.00	1	1	7.4	7.8	5.26	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	39	39	0.00	0.00	1	1	59	59	0.00	0.00
Nutrients and Chlorophyll a														
Ammonia (NH3)	mg/L	0.061	0.061	-	0.15	0.15	0.00	-	0.061	-	0.200	0.240	18.18	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.12	0.12	0.00	0.00	0.05	0.05	0.16	0.2	**22.22**	0.00
Nitrate	mg/L	0.1	0.1	0.1	1.54	1.47	4.65	0.00	0.1	0.1	3.5	3.7	4.48	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.145	0.133	8.63	0.00	0.01	0.01	0.06	0.06	8.40	0.00
Total Metals														
Aluminum	mg/L	0.003	0.003	0.003	0.164	0.181	9.86	0.00	0.003	0.003	0.149	0.147	1.35	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0215	0.0222	3.20	0.00	0.0001	0.0001	0.0121	0.0126	4.05	0.00
Barium	mg/L	0.001	0.001	0.001	0.062	0.065	3.62	0.00	0.001	0.001	0.065	0.067	2.42	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00003	0.00003	3.39	0.00	0.00001	0.00001	0.00004	0.00004	4.65	0.00
Chromium	mg/L	0.001	0.001	0.001	0.004	0.005	9.09	0.00	0.001	0.001	0.002	0.002	0.00	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0022	0.0023	4.92	0.00	0.0005	0.0005	0.0020	0.0020	0.99	0.00
Iron	mg/L	0.01	0.01	0.01	0.47	0.50	4.94	0.00	0.01	0.01	0.32	0.33	1.85	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0007	0.0007	7.19	0.00	0.0002	0.0002	0.0004	0.0004	0.00	0.00
Manganese	mg/L	0.001	0.001	0.001	0.396	0.420	5.88	0.00	0.001	0.001	0.314	0.345	9.41	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.002	0.002	0.00	0.00	0.001	0.001	0.001	0.002	6.90	0.00
Nickel	mg/L	0.001	0.001	0.001	0.013	0.014	5.09	0.00	0.001	0.001	0.016	0.017	3.04	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0008	0.0008	1.29	0.00	0.0001	0.0001	0.0010	0.0011	2.84	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00003	0.00004	8.70	0.00	0.00	0.00001	0.000032	0.00003	6.45	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*							0%	0%					0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-122 Whale Tail 2021 IVR WRSF QAQC (ST-WT-34)

Parameter	Sample date		9/7/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
Hardness, as CaCO3	mg/L	0.5	0.5	-	547	558	1.99	-
Total alkalinity, as CaCO3	mg/L	1	1	1	41	42	2.41	0.00
TDS	mg/L	10	10	10	905	855	5.68	0.00
TSS	mg/L	1	1	1	4	4	0.00	0.00
Major Ions								
Chloride	mg/L	1	1	1	350	350	0.00	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	64	63	1.57	0.00
Nutrients and Chlorophyll a								
Ammonia (NH3)	mg/L	0.061	0.061	-	1.4	1.4	0.00	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	1.2	1.1	8.70	0.00
Nitrate	mg/L	0.1	0.1	0.1	2.3	2.3	1.75	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.27	0.26	2.26	0.00
Total Metals								
Aluminum	mg/L	0.003	0.003	0.003	0.062	0.063	0.80	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0245	0.0249	1.62	0.00
Barium	mg/L	0.001	0.001	0.001	0.311	0.306	1.62	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00006	0.00005	5.41	0.00
Chromium	mg/L	0.001	0.001	0.001	0.002	0.002	5.71	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0008	0.0008	1.27	0.00
Iron	mg/L	0.01	0.01	0.01	1.29	1.31	1.54	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Manganese	mg/L	0.001	0.001	0.001	1.200	1.210	0.83	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.002	0.002	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.022	0.021	0.47	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0005	0.0005	4.17	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00004	0.00004	2.47	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*							0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-123 Whale Tail 2021 IVR WRSF QAQC (ST-WT-35)

Parameter	Sample date		9/7/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
Hardness, as CaCO3	mg/L	0.5	0.5	-	85	88.5	4.03	-
Total alkalinity, as CaCO3	mg/L	1	1	1	47	46	2.15	0.00
TDS	mg/L	10	10	10	155	140	10.17	0.00
TSS	mg/L	1	1	1	2	3	**40.00**	0.00
Major Ions								
Chloride	mg/L	1	1	1	10	9.4	6.19	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	44	44	0.00	0.00
Nutrients and Chlorophyll a								
Ammonia (NH3)	mg/L	0.061	0.06	-	0.32	0.34	6.06	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.26	0.28	7.41	0.00
Nitrate	mg/L	0.1	0.1	0.1	0.6	0.6	1.63	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.09	0.08	2.38	0.00
Total Metals								
Aluminum	mg/L	0.003	0.003	0.003	0.099	0.100	1.51	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.1270	0.1330	4.62	0.00
Barium	mg/L	0.001	0.001	0.001	0.074	0.077	3.71	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00002	4.88	0.00
Chromium	mg/L	0.001	0.001	0.001	0.002	0.002	9.09	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0009	0.0010	4.17	0.00
Iron	mg/L	0.01	0.01	0.01	0.27	0.30	8.08	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Manganese	mg/L	0.001	0.001	0.001	0.349	0.358	2.55	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.002	0.002	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.015	0.016	3.87	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0004	0.0004	2.35	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00003	0.00003	6.06	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*							0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

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Table 8-124 Whale Tail 2021 IVR WRSF QAQC (ST-WT-36)

Parameter	Sample date		7/4/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters								
Hardness, as CaCO3	mg/L	0.5	0.5	-	66.6	67.7	1.64	-
Total alkalinity, as CaCO3	mg/L	1	1	1	51	51	0.00	0.00
TDS	mg/L	10	10	10	105	120	13.33	0.00
TSS	mg/L	1	1	1	9	8	11.76	0.00
Major Ions								
Chloride	mg/L	1	1	1	3.8	4	5.13	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.00	0.00
Sulfate	mg/L	1	1	1	9.5	9.7	2.08	0.00
Nutrients and Chlorophyll a								
Ammonia (NH3)	mg/L	0.061	0.15	-	0.8	0.79	1.26	-
Ammonia Nitrogen	mg/L	0.05	0.12	0.05	0.66	0.65	1.53	**82.35**
Nitrate	mg/L	0.1	0.1	0.1	4.6	4.54	0.44	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.14	0.135	1.47	0.00
Total Metals								
Aluminum	mg/L	0.003	0.003	0.003	0.394	0.277	34.87	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0150	0.0153	1.98	0.00
Barium	mg/L	0.001	0.001	0.001	0.056	0.056	0.72	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00002	0.00001	**62.07**	0.00
Chromium	mg/L	0.001	0.001	0.001	0.012	0.0091	*25.00*	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0013	0.0013	3.12	0.00
Iron	mg/L	0.01	0.01	0.01	0.58	0.426	30.28	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0004	0.00036	15.38	0.00
Manganese	mg/L	0.001	0.001	0.001	0.041	0.0377	8.39	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.009	0.0083	8.09	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.00011	16.67	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00003	0.000021	17.39	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*							7%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-125 Whale Tail 2021 IVR Diversion Ditch QAQC (ST-WT-37)

Parameter	Sample date		6/7/2021						9/5/2021					
	Unit	MDL	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters														
TSS	**mg/L**	1	1	1	5	5	0.00	0.00	1	1	1	1	0.00	0.00
Major Ions														
Sulfate	**mg/L**	1	1	1	1	1	0.00	0.00	1	1	4.4	4.4	0.00	0.00
Nutrients and Chlorophyll a														
Ammonia Nitrogen	**mg/L**	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05	0.05	0.05	0.05	0.00	0.00
Un-Ionized Ammonia, calculated	**mg/L**	-	0.00058	-	0.00058	0.00058	0.00	-	-	-	0.00064	0.00064	0.00	-
Total Metals														
Aluminum	**mg/L**	0.003	0.003	0.003	0.293	0.303	3.36	0.00	0.003	0.003	0.042	0.043	3.04	0.00
Arsenic	**mg/L**	0.0001	0.0001	0.0001	0.0049	0.0049	1.02	0.00	0.0001	0.0001	0.0019	0.0019	0.00	0.00
Copper	**mg/L**	0.0005	0.0005	0.0005	0.0007	0.0007	1.38	0.00	0.0005	0.0005	0.0012	0.0013	7.94	0.00
Lead	**mg/L**	0.0002	0.0002	0.0002	0.0002	0.0002	0.00	0.00	0.0002	0.0002	0.0002	0.0002	0.00	0.00
Nickel	**mg/L**	0.001	0.001	0.001	0.004	0.004	10.00	0.00	0.001	0.001	0.002	0.002	0.00	0.00
Zinc	**mg/L**	0.005	0.005	0.005	0.005	0.005	0.00	0.00	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*							0%	0%					0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

Table 8-126 Whale Tail 2021 IVR Attenuation Pond QAQC (ST-WT-23)

Parameter	Sample date		6/7/2021							10/4/2021					
	Unit	MDL	Trip Blank	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)	Field Blank	Lab Blank	Duplicate	Original	RPD (FD/N)	RPD (FB/LB)
Conventional Parameters															
Hardness, as CaCO3	mg/L	0.5	0.5	0.5	-	76.6	74.6	2.65	-	0.5	-	148	148	0.00	-
Total alkalinity, as CaCO3	mg/L	1	1	1	1	43	44	2.30	0.00	1	1	47	45	4.35	0.00
TDS	mg/L	10	10	10	10	180	160	11.76	0.00	10	10	245	290	16.82	0.00
TSS	mg/L	1	1	1	1	15	17	12.50	0.00	1	1	12	13	8.00	0.00
Major Ions															
Chloride	mg/L	1	1.2	1	1	25	25	0.00	0.00	1	1	39	40	2.53	0.00
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.00	0.00	0.1	0.1	0.1	0.12	0.00	0.00
Sulfate	mg/L	1	1	1	1	16	16	0.00	0.00	1	1	67	66	1.50	0.00
Nutrients and Chlorophyll a															
Ammonia (NH3)	mg/L	0.061	0.061	0.061	-	0.99	1	1.01	-	0.061	-	0.52	0.54	3.77	-
Ammonia Nitrogen	mg/L	0.05	0.05	0.05	0.05	0.82	0.83	1.21	0.00	0.05	0.05	0.43	0.44	2.30	0.00
Nitrate	mg/L	0.1	0.10	0.10	0.10	0.52	0.51	1.94	0.00	0.1	0.1	2.91	3.01	3.38	0.00
Nitrite	mg/L	0.01	0.01	0.01	0.01	0.11	0.11	0.94	0.00	0.01	0.01	0.08	0.08	1.21	0.00
Total phosphorus	mg/L	0.001	0.001	0.001	0.001	0.009	0.008	2.38	0.00	0.001	0.001	0.018	0.009	*71.70*	0.00
Total Metals															
Aluminum	mg/L	0.003	0.003	0.003	0.003	0.484	0.409	16.80	0.00	0.003	0.003	0.234	0.243	3.77	0.00
Arsenic	mg/L	0.0001	0.0001	0.0001	0.0001	0.0239	0.0237	0.84	0.00	0.0001	0.0001	0.0459	0.0465	1.30	0.00
Barium	mg/L	0.001	0.001	0.001	0.001	0.044	0.043	1.16	0.00	0.001	0.001	0.051	0.052	1.57	0.00
Cadmium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	15.38	0.00	0.00001	0.00001	0.00002	0.00002	4.65	0.00
Chromium	mg/L	0.001	0.001	0.001	0.001	0.010	0.009	19.15	0.00	0.001	0.001	0.004	0.004	7.41	0.00
Copper	mg/L	0.0005	0.0005	0.0005	0.0005	0.0024	0.0030	**21.81**	0.00	0.0005	0.0005	0.0012	0.0012	1.67	0.00
Iron	mg/L	0.01	0.01	0.01	0.01	1.21	1.10	9.52	0.00	0.01	0.01	0.71	0.72	0.28	0.00
Lead	mg/L	0.0002	0.0002	0.0002	0.0002	0.0012	0.0016	**28.57**	0.00	0.0002	0.0002	0.0004	0.0004	2.67	0.00
Manganese	mg/L	0.001	0.001	0.001	0.001	0.175	0.173	1.15	0.00	0.001	0.001	0.225	0.229	1.76	0.00
Mercury	mg/L	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00	0.00	0.00001	0.00001	0.00001	0.00001	0.00	0.00
Molybdenum	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	8.70	0.00	0.001	0.001	0.003	0.003	0.00	0.00
Nickel	mg/L	0.001	0.001	0.001	0.001	0.014	0.013	4.51	0.00	0.001	0.001	0.024	0.025	2.04	0.00
Selenium	mg/L	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00	0.00	0.0001	0.0001	0.0004	0.0004	8.00	0.00
Silver	mg/L	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00	0.00	0.00002	0.00002	0.00002	0.00002	0.00	0.00
Thallium	mg/L	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00	0.00	0.00001	0.00001	0.00002	0.00002	5.71	0.00
Zinc	mg/L	0.005	0.005	0.005	0.005	0.0057	0.0081	**34.78**	0.00	0.005	0.005	0.005	0.005	0.00	0.00
% Exceedance*								0%	0%					0%	0%

Footnotes:
RPD = Relative Percent Difference; MDL: Method Detection Limit
All value "<DL" have been replaced by "DL".
* Percentage of parameters exceeding the QAQC objectives for one sampling event which corresponds to grey shaded cells.
Bold values correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are within 10x the MDL.
Grey shaded cells correspond to a RPD higher than 20% and for which concentrations of parent and duplicate samples are above 10x the MDL.
Italic values correspond to a RPD higher than 20% and for which one of the result is within 10X the MDL and the other one exceeds 10x the MDL.

8.5.8 Seepage

8.5.8.1 *Meadowbank Site*

As required by NWB Water License 2AM-MEA1530 Part I, Item 14: *The results and interpretation of the Seepage Monitoring program in accordance with Part I, Item 13*
The Seepage Monitoring program includes the following locations:

- **Lake water Seepage Through Dewatering Dikes;**
- **Seepage (of any kind) Through Central Dike;**
- **Seepage and Runoff from the Landfill(s);**
- **Subsurface Seepage and Surface Runoff from Waste Rock Piles;**
- **Seepage at Pit Wall and Pit Wall Freeze/Thaw;**
- **Permafrost Aggradation;**
- **Mill Seepage.**

And

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 10*: Summary of quantities and analysis* of seepage and runoff monitoring from the Landfills, Waste Rock Storage Facility and Central Dike.

8.5.8.1.1 Lake water seepage through dewatering dikes

As discussed previously, see Sections 8.5.3.1.3 regarding East Dike seepage interpretation and monitoring. More information can also be found in the Water Management Report and Plan (Version 10) in Appendix 12.

Seepage flow at East Dike is measured by the flow meters installed in the two seepage collection sumps downstream of East Dike. The average flow measured during the year 2021 was estimated to be around 368 m^3/day. The measured flow is generally decreasing compared to values from the past years. Please refer to Section 8.5.3.1.3 for a discussion regarding East Dike Discharge to Second Portage Lake. This section discusses the water quality monitoring results and compliance with MDMER and Water License. Refer to Table 8-2 in Section 8.3.1.3 above for the volume of water discharged to Second Portage Lake and Portage Pit.

Seepage channels at the toe of Bay-Goose Dike can be observed in the summer. That water naturally reports to the Bay-Goose Pit and is not managed by pumping. Agnico Eagle conducts punctual flow monitoring at predetermined locations to get an estimate of the seepage evolution. The flow in the channels is measured using a bucket and a stopwatch (averaging between 7.1 and 8.3 m^3/day in 2021). The reading frequency is approximately once per week during summer time.

8.5.8.1.2 Seepage through Central Dike

As mentioned in Section 3.1.1c of this report, seepage was observed at the downstream toe of Central Dike since the fall period of 2014. This water was contained between the West road and the Central Dike downstream toe. Agnico Eagle utilized piezometers, thermistors and a groundwater well to monitor the dike integrity, the foundation temperatures, and the piezometric levels within the structure and its foundation. The seepage is located within the mining footprint, away from the receiving environment and

is confined directly downstream. The average seepage rate at Central Dike is within similar trend than in 2020 with variations between 22 m^3/h in March 2021 and 209 m^3/hr in July 2021.

The Central Dike seepage situation is considered under control as Agnico Eagle has the pumping capacity to deal with the seepage flow rate, the integrity of the infrastructure has not been compromised, no tailings were found outside the perimeter of the South Cell TSF.

The monitoring of the Central Dike seepage will continue throughout the operating life of the dike, with analysis of the instrumentation results and water quality monitoring, as required.

8.5.8.1.3 Seepage and runoff from the landfill

Results and interpretation of this monitoring program are discussed in Section 8.5.3.1.23 above.

8.5.8.1.4 Subsurface seepage and surface runoff from waste rock piles

Sections 8.5.3.1.7 and 8.5.3.1.13 provide details regarding seepage monitoring at the Portage and Vault Rock Storage Facilities.

8.5.8.1.5 Seepage at pit wall and pit wall freeze/thaw and permafrost aggradation

No mining activities occurred in Vault Pit, Phaser Pit, BB Phaser Pit, Portage Pit A, Portage Pit E, and Goose Pit. Therefore, any seepage is contributing to the re-flooding of the pits. During the summer of 2021 seepage was observed on the west wall of Portage Pit E and the East wall of Portage Pit A.

Water inflows and seepage were noted in two areas of the Vault Pit in 2021.

No major seepage inflows were observed in BB Phaser Pit. Water inflow, likely from the BB Phaser Pit, was noted at the south end of the Phaser Pit. The pit lake elevation is approximately 20 m higher in the BB Phaser Pit than in the Phaser Pit.

The “2021 Annual Open Pit Geomechanical Inspection” provides more details regarding seepage at pit walls (Appendix 10).

8.5.8.1.6 Mill seepage Meadowbank Site

On November 4th, 2013, it was observed that water was seeping through the road in front of the Assay Lab Road. Construction of an interception trench was completed in April-May 2014 and repairs and sealing of containment structures within the mill were completed during the summer of 2014. In November 2015 work was conducted to repair portions of the mill floor and ensure its watertight integrity. Additional elastomeric sealant was applied in the floor joints. Agnico Eagle also put in place an internal action plan and monitoring program for this seep in 2014. The monitoring is part of the Freshet Action Plan. Refer to Appendix D of the 2021 Water Management Report and Plan (Appendix 12) for more details regarding the monitoring and action taken by Agnico Eagle before, during and after the freshet at this seepage area.

In 2021, pumping of the mill seepage trench occurred from May to November. No flow of water has been pumped during winter months in 2021 in the interception trench and recovery well MW-203 because of frozen conditions. Table 8-127 below presents the volumes of water pumped back to the mill from the

seepage from 2014 to 2021. A significant increase was observed in 2019 compared to previous years. This is mainly attributable to the significant higher volume of rainfall received in 2019. Agnico Eagle is confident that the corrective measures implemented in previous years (refer to previous Annual Report for more information) are still effective and prevent potential contaminated water from reaching any receiving environment.

Table 8-127 Meadowbank Assay Road Seepage pumped volume 2014-2021

Month	Pumped Volume (m^3)							
	2014	2015	2016	2017	2018	2019	2020	2021
January	0	871	0	0	0	0	0	0
February	0	306	0	0	0	0	0	0
March	0	500	0	0	0	0	0	0
April	0	680	0	0	0	0	0	0
May	2,450	347	0	3,025	0	0	0	3,177
June	1,935	10,803	2,588	3,973	5,095	10,058	23,730	1,546
July	1,158	6,633	2,270	4,961	4,148	17,273	4,215	1,075
August	3,979	4,467	3,599	3,782	2,912	22,320	2,975	1,247
September	2,420	4,584	2,109	6,687	1,490	20,225	1,873	1,090
October	1,043	1,188	512	549	0	1,740	0	2,161
November	842	164	0	0	0	0	0	0
December	871	0	0	0	0	0	0	0
Total	**14,698**	**30,543**	**11,078**	**22,977**	**13,645**	**71,616**	**32,792**	**10,296**

Daily visual inspections were conducted during freshet. Prior and after freshet, inspection were conducted weekly and after rain events.

Monthly water quality samples were collected when water was present at the interception trench and Third Portage Lake as well as Monitoring Wells MW-04, MW-05, MW-06, MW-07 and MW-08 (presented on Figure 16 below).). Tables 8-128 and 8-129 contain monitoring results from the interception trench/wells and Third Portage Lake (TPL-Assay), respectively. It should be noted that well MW-04, MW-05, MW-06 and MW-08 were dry in 2021.

In 2021, CN Free results were all below or near the detection limit of the CCME guideline for the Protection of Aquatic Life. Concentrations of CN total are below regulatory water license and MDMER guidelines. Concentrations of copper are below MDMER and/or water licence guidelines at the trench and monitoring wells but all higher than the CCME guideline. Iron concentration are higher than the CCME guideline for two samples taken at the mill trench in June and July.

Monitoring will be continued in 2022 as per the Freshet Action Plan to identify if trending is maintained. Impacts to the environments have been avoided by pumping collected water back to the milling process with no water being discharged to the environment. As well, concentrations at TPL are all below the CCME guideline for the Protection of Aquatic Life for CN Free, copper and iron.

In summary, monitoring in TPL indicates that there has been no impact to the near shore receiving waters. The seepage appears to be effectively contained and the source area has been repaired. Follow up monitoring will continue in 2022 in accordance with the 2022 Freshet Action Plan.

Figure 16 Meadowbank General Layout of the Assay Road Seepage

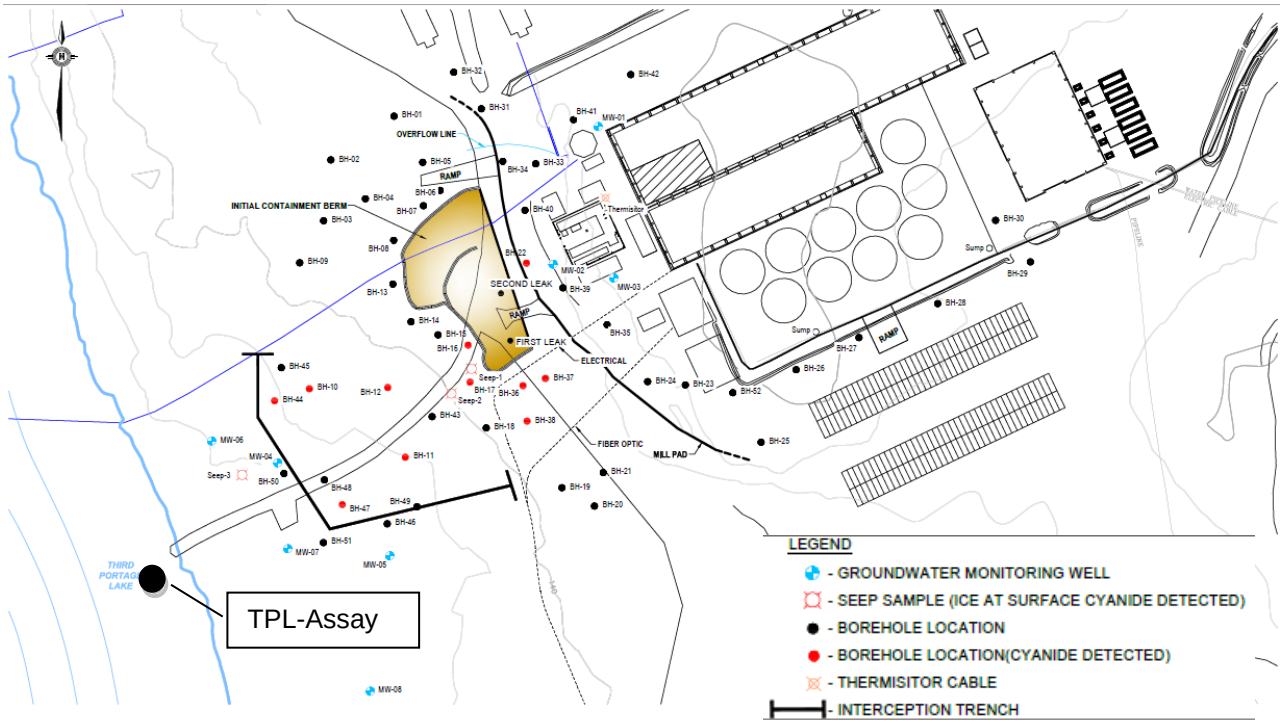


Table 8-128 Meadowbank Assay Road Seepage Trench and Well Water Quality Monitoring 2014-2021

Date	Mill Trench				MW-04				MW-05				MW-06				MW-07				MW-08			
	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)
Regulatory guideline Water License	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**
Regulatory guideline MDMER	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**
Regulatory guideline CCME	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**
2014																								
5/26/2014	0.087		0.01	1	Dry				Dry				Dry				Dry				Dry			
6/17/2014	0.44	0.061	0.057	1.6	Dry				Dry				Dry				0.069		0.14	2.2	0.024	<0.005	0.11	0.41
7/21/2014	0.38	0.020	0.031	1.6	Dry				Not enough water				Dry				Dry				<0.005	<0.01	0.014	0.43
8/19/2014	0.17	0.028	0.012	1.5	0.12		0.076	5.80	<0.005	<0.01	0.031	2.2	0.1		0.24	4.8	0.046	<0.02	0.1	9.4	<0.005	<0.01	0.055	6.40
9/29/2014	0.03		0.008	0.77													0.001		0.134	10.9				
11/18/2014	Frozen				Frozen				Frozen				Frozen				Frozen				Frozen			
2015																								
7/29/2015	0.024		0.005	0.72	Dry				<0.005		0.13	1.49	Dry				Dry				<0.005		0.27	2.92
8/4/2015	0.038	<0.005	0.008	0.6	Dry				Dry				Dry				Dry				<0.005	<0.005	0.17	17.2
9/17/2015	0.030		0.005	0.2	Dry				Dry				Dry				0.008	<0.005	0.047	4.53	<0.005	<0.005	0.016	8.1
2016																								
8/8/2016	0.022	0.016	0.025	0.3	Dry				Dry				Not enough water				<0.005	<0.005	0.295	39.8	<0.005	<0.005	0.371	62.8
8/16/2016	No sample taken				Dry				Dry				Not enough water				0.007		0.181	27.8	<0.005		0.114	19.8
9/6/2016		0.007			Dry				Dry				Dry					<0.005			Not enough water			
10/14/2016	Frozen				Dry				Dry				Dry					0.005			Dry			
2017																								
6/11/2017	0.057		0.005	1.33	Dry				Dry				Dry				Frozen				Dry			
7/4/2017	No sample taken				Not enough water					<0.005			Dry					<0.005				<0.005		
7/9/2017	0.024	0.017	0.004		Dry				Dry				Dry				<0.001				Dry			

Date	Mill Trench				MW-04				MW-05				MW-06				MW-07				MW-08			
	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)
Regulatory guideline Water License	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**
Regulatory guideline MDMER	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**
Regulatory guideline CCME	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**
7/14/2017	0.028	<0.005	0.002		Dry								Dry				No sample taken				No sample taken			
7/18/2017	0.013	<0.005	0.003	0.36	Dry				<0.01	<0.005			Dry				0.002	<0.005	0.067	23.8		<0.005	0.026	10.5
7/28/2017	0.011	<0.005	0.004		Dry				Dry				Dry				No sample taken				No sample taken			
8/22/2017	0.021	0.005	0.003	0.61	Dry				Dry				Dry				0.013	<0.005	0.354	161	Not enough water			
9/19/2017	0.005	0.005	0.005	0.05	Dry				Dry				Dry				0.011	<0.005	0.143	25.9	Dry			
2018																								
6/28/2018	Frozen				Frozen				Frozen				Frozen				Frozen				Frozen			
7/16/2018	0.016	0.014	0.005	0.18	Dry				Dry				Dry				Equipment broken				Frozen			
8/20/2018	0.014	0.015	0.005	0.08	Dry				Dry				Dry				Equipment broken				Dry			
9/17/2018	0.006	<0.005	0.004	0.08	Dry				Dry				Dry				No sample taken				Dry			
9/24/2018	No sample taken				Dry				Dry				Dry				0.004	<0.005	0.051	20.3	Dry			
2019																								
7/8/2019	0.044	0.013	0.006	-	Dry				Dry				Dry				Dry				Dry			
7/9/2019	0.047	< 0.001	0.005	0.04	Dry				Dry				Dry				Dry				Dry			
8/2/2019					Dry				< 0.001	< 0.001	0.008	1.77	0.042	< 0.001	0.014	2.76	0.002	< 0.001	0.036	17.8	Not enough water			
8/17/2019	0.048	0.01	0.004	0.03	Not enough water				Not enough water				Not enough water				Not enough water				Not enough water			
8/30/2019	0.008	0.002	0.004	-	Not enough water				Not enough water				Not enough water				Not enough water				Dry			
9/6/2019	< 0.001	0.001	0.003	-	Not enough water				Not enough water				Not enough water				Not enough water				Dry			
9/26/2019	0.025	0.011	0.006	-	Dry				Dry				Dry				Dry				Dry			
2020																								

Date	Mill Trench				MW-04				MW-05				MW-06				MW-07				MW-08			
	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)	CN t (mg/L)	Free CN (mg/L)	Cu (mg/L)	Fe (mg/L)
Regulatory guideline Water License	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**	**1**	**NA**	**0.2**	**NA**
Regulatory guideline MDMER	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**	**1**	**NA**	**0.6**	**NA**
Regulatory guideline CCME	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**	**NA**	**0.005**	**0.002**	**0.3**
6/8/2020	0.038	0.010	0.007	0.60	Dry				Dry				Dry				Dry				Dry			
7/7/2020	0.025	0.005	0.006	-	Dry				Dry				Dry				Dry				Dry			
7/14/2020	0.038	0.013	0.006	-	Dry				Dry				Dry				Not enough water				Not enough water			
7/27/2020	0.022	0.012	0.004	0.08	Dry				< 0.001	< 0.001	0.008	5.8	Dry				Not enough water				Not enough water			
7/30/2020	0.022	0.017	0.005	-	Dry				Dry				Dry				Not enough water				Not enough water			
8/4/2020	0.01	0.009	0.005	-	Dry				Dry				Dry				Not enough water				Not enough water			
8/10/2020	0.016	0.010	0.004	0.04	Dry				Dry				Dry				0.006	< 0.001	0.026	11	Not enough water			
8/18/2020	0.012	< 0.001	0.004	-	Dry				Dry				Dry				Not enough water				Not enough water			
8/25/2020	0.011	0.010	0.005	-	Dry				Dry				Dry				Not enough water				Not enough water			
9/1/2020	0.062	0.008	0.005	-	Dry				Dry				Dry				Dry				Dry			
9/22/2020	0.006	0.005	0.003	-	Dry				Dry				Dry				Dry				Dry			
9/29/2020	0.008	0.001	0.004	0.14	Dry				Dry				Dry				Dry				Dry			
2021																								
6/16/2021	0.04	0.006	0.005	1.5	Dry				Dry				Dry				Dry				Dry			
7/12/2021	0.061	0.003	0.014	7.33	Dry				Dry				Dry				< 0.0050	0.002	0.033	34.8	Dry			
8/9/2021	0.036	0.021	0.0038	0.174	Dry				Dry				Dry				0.007	0.003	0.014	14.3	Dry			
9/6/2021	0.036	0.003	0.0031	0.072	Dry				Dry				Dry				Dry				Dry			
10/10/2021	0.059	0.025	0.0030	0.103	Dry				Dry				Dry				Dry				Dry			

Table 8-129 Meadowbank Assay Road Seepage 2021 TPL-Assay Water Quality Monitoring

TPL-Assay	Sample date	*Annual Average*							6/27/2021	7/13/2021	8/16/2021	9/6/2021	10/11/2021
Parameter	**Unit**	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Field Measured													
Temperature	°C	*11*	*16*	*15*	*8*	*11*	*11*	*7.22*	6.1	10.1	6.8	9.8	3.3
pH	pH units	*7.7*	*7.4*	*7.6*	*7.4*	*7.4*	*7.9*	*7.598*	7.23	7.87	7.39	7.88	7.62
Conductivity	uS/cm	*93.1*	*94.0*	*104.3*	*105.1*	*86.2*	*98.9*	*99.2*	93.2	106.2	89.8	111.6	95.1
Dissolved oxygen	mg/L	*9.4*	*9.93*	*9.58*	*-*	*11.57*	*10.48*	*10.70*	-	10.76	10.93	-	10.4
Turbidity	NTU	*1.09*	*0.62*	*1.56*	*0.95*	*3.2*	*1.99*	*0.996*	1.58	1.07	0.95	0.66	0.72
Conventional Parameters													
Hardness, as CaCO3	mg/L	*30*	*37*	*34*	*33*	*36*	*51*	*41*	39	42	40	43	41
Total alkalinity, as CaCO3	mg/L	*34*	*27*	*39*	*30*	*22*	*38*	*25*	28	25	24	26	24
TDS	mg/L	*61*	*64*	*63*	*59*	*68*	*65*	*57*	85	55	45	75	25
TSS	mg/L	*1*	*1*	*2*	*1*	*2*	*3*	*1*	1	1	1	< 1	1
Total organic carbon	mg/L	*2.8*	*2.8*	*3.5*	*2.6*	*2.2*	*2.5*	*2*	1.9	2.1	2.1	2.1	1.8
Dissolved organic carbon	mg/L	*2.8*	*1.6*	*3.2*	*2.4*	*2.2*	*1.9*	*1.86*	1.8	2	1.9	1.9	1.7
Colour	TCU	*1*	*3*	*2*	*1*	*1*	*5*	*2.8*	3	3	3	< 2	3
Major Ions													
Bromide	mg/L	*0.03*	*0.02*	*0.07*	*0.05*	*0.06*	*0.07*	*1*	< 1	< 1	< 1	< 1	< 1
Chloride	mg/L	*3.8*	*4.0*	*4.3*	*4.4*	*3.6*	*5.0*	*5.7*	5.1	5.7	4.9	7.6	5.1
Cyanide	mg/L	*0.005*	*0.004*	*0.004*	*0.001*	*0.013*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Cyanide (free)	mg/L	*0.005*	*0.005*	*0.005*	*0.005*	*0.001*	*0.001*	*0.002*	< 0.001	0.002	0.003	< 0.001	< 0.001
Cyanide (WAD)	mg/L	*0.005*	*0.003*	*0.003*	*0.001*	*0.001*	*0.001*	*0.001*	0.001	< 0.001	< 0.001	< 0.001	< 0.001
Fluoride	mg/L	*0.10*	*0.10*	*0.11*	*0.12*	*0.28*	*0.10*	*0.11*	0.12	< 0.10	0.11	0.11	< 0.10
Silica	mg/L	*-*	*0.40*	*0.50*	*0.34*	*0.49*	*0.79*	*0.46*	0.89	0.83	0.27	0.12	0.21
Sulfate	mg/L	*16.4*	*16.2*	*12.2*	*12.2*	*15.5*	*15.6*	*15.4*	15	18	14	16	14
Thiocyanate	mg/L	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Nutrients and Chlorophyll a													
Ammonia Nitrogen	mg/L	*0.01*	*0.01*	*0.04*	*0.01*	*0.02*	*0.02*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate	mg/L	*0.04*	*0.02*	*0.02*	*0.01*	*0.07*	*0.01*	*0.1*	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nitrite	mg/L	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.02*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Kjeldahl nitrogen	mg/L	*1.12*	*0.22*	*0.61*	*0.16*	*0.30*	*0.16*	*0.12*	< 0.10	0.14	0.18	< 0.10	< 0.10
Total phosphorus	mg/L	*0.010*	*0.020*	*0.022*	*0.014*	*0.010*	*0.020*	*0.001*	< 0.001	0.003	< 0.001	< 0.001	< 0.001
Orthophosphate (P)	mg/L	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.07*	*0.01*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorophyll a	mg/L	*-*	*-*	*-*	*-*	*-*	*0.001*	*0.002*	0.001	0.002	0.003	0.002	0.002
Total Metals													
Aluminum	mg/L	*0.006*	*0.006*	*0.006*	*0.017*	*0.013*	*0.022*	*0.014*	0.024	0.017	0.015	0.005	0.007

TPL-Assay	Sample date	*Annual Average*							6/27/2021	7/13/2021	8/16/2021	9/6/2021	10/11/2021
Parameter	**Unit**	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Antimony	mg/L	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0005*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Arsenic	mg/L	*0.0037*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0008*	0.0012	0.0011	0.0007	0.0006	0.0005
Barium	mg/L	*0.0026*	*0.0025*	*0.0022*	*0.0032*	*0.0065*	*0.0050*	*0.0060*	0.0064	0.0065	0.0053	0.0062	0.0054
Beryllium	mg/L	*0.0006*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium	mg/L	*0.00003*	*0.00002*	*0.00002*	*0.00002*	*0.00002*	*0.00002*	*0.00001*	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chromium	mg/L	*0.002*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Copper	mg/L	*0.0005*	*0.0006*	*0.0008*	*0.0006*	*0.0008*	*0.0006*	*0.0008*	0.0008	0.0009	0.0007	0.0007	0.0007
Iron	mg/L	*0.010*	*0.010*	*0.010*	*0.010*	*0.046*	*0.133*	*0.036*	0.057	0.046	0.031	0.028	0.019
Lead	mg/L	*0.0003*	*0.0003*	*0.0026*	*0.0004*	*0.0003*	*0.0002*	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Lithium	mg/L	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.002*	< 0.002	< 0.002	0.002	< 0.002	< 0.002
Magnesium (total)	mg/L	*2.27*	*2.68*	*2.62*	*2.67*	*2.99*	*3.73*	*2.99*	2.87	2.87	3.14	3.12	2.96
Manganese	mg/L	*0.0005*	*0.0014*	*0.0023*	*0.0007*	*0.0066*	*0.0118*	*0.0049*	0.0086	0.0057	0.0029	0.0040	0.0033
Mercury	mg/L	*0.00001*	*0.00002*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Nickel	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	0.001	0.001	< 0.001	< 0.001	< 0.001
Potassium (total)	mg/L	*0.00*	*1.12*	*1.23*	*1.09*	*1.23*	*1.75*	*1.45*	1.44	1.50	1.45	1.51	1.33
Selenium	mg/L	*0.0010*	*0.0010*	*0.0010*	*0.0005*	*0.0005*	*0.0010*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Silver	mg/L	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	*0.04*	*0.04*	*0.05*	*0.04*	*0.07*	*0.05*	*0.06*	0.06	0.06	0.06	0.07	0.06
Thallium	mg/L	*0.00500*	*0.00080*	*0.00080*	*0.00020*	*0.00020*	*0.00020*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Tin	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Titanium	mg/L	*0.010*	*0.010*	*0.010*	*0.010*	*0.010*	*0.010*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Uranium	mg/L	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0002*	0.0002	0.0003	0.0002	0.0003	0.0003
Vanadium	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Dissolved Metals													
Aluminum	mg/L	*0.011*	*0.018*	*0.010*	*0.009*	*0.003*	*0.006*	*0.004*	< 0.003	0.006	0.004	< 0.003	0.003
Antimony	mg/L	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0005*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Arsenic	mg/L	*0.0005*	*0.0005*	*0.0018*	*0.0005*	*0.0005*	*0.0005*	*0.0007*	0.0010	0.0010	0.0006	0.0006	0.0005
Barium	mg/L	*0.0038*	*0.0028*	*0.0033*	*0.0031*	*0.0052*	*0.0042*	*0.0117*	0.0064	0.0068	0.0052	0.0061	0.0340
Beryllium	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.000*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Boron	mg/L	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.05*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium	mg/L	*0.00002*	*0.00002*	*0.00002*	*0.00002*	*0.00002*	*0.00002*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chromium	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

TPL-Assay	Sample date	*Annual Average*							6/27/2021	7/13/2021	8/16/2021	9/6/2021	10/11/2021
Parameter	**Unit**	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***					
Cobalt	mg/L	*0.0005*	*0.0005*	*0.0013*	*0.0005*	*0.0005*	*0.0005*	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Copper	mg/L	*0.0005*	*0.0007*	*0.0009*	*0.0008*	*0.0005*	*0.0005*	*0.0007*	0.0010	0.0008	0.0006	0.0006	0.0006
Iron	mg/L	*0.037*	*0.058*	*0.085*	*0.025*	*0.010*	*0.010*	*0.009*	0.011	0.013	0.006	0.011	< 0.005
Lead	mg/L	*0.0003*	*0.0003*	*0.0026*	*0.0004*	*0.0003*	*0.0002*	*0.0002*	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Lithium	mg/L	*0.005*	*0.031*	*0.005*	*0.005*	*0.005*	*0.005*	*0.002*	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Manganese	mg/L	*0.006*	*0.008*	*0.006*	*0.003*	*0.004*	*0.001*	*0.003*	0.007	0.003	< 0.001	0.003	< 0.001
Mercury	mg/L	*0.00004*	*0.00002*	*0.00001*	*0.00003*	*0.00001*	*0.00001*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Molybdenum	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Nickel	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	0.001	0.001	< 0.001	< 0.001	< 0.001
Selenium	mg/L	*0.0010*	*0.0010*	*0.0010*	*0.0006*	*0.0006*	*0.0010*	*0.0001*	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Silver	mg/L	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00002*	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Strontium	mg/L	*0.04*	*0.07*	*0.04*	*0.03*	*0.04*	*0.05*	*0.06*	0.06	0.06	0.06	0.07	0.06
Thallium	mg/L	*0.00500*	*0.00080*	*0.00080*	*0.00020*	*0.00020*	*0.00020*	*0.00001*	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Tin	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Titanium	mg/L	*0.010*	*0.010*	*0.010*	*0.010*	*0.010*	*0.010*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Uranium	mg/L	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0002*	0.0002	0.0002	0.0002	0.0003	0.0003
Vanadium	mg/L	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	mg/L	*0.002*	*0.001*	*0.003*	*0.001*	*0.001*	*0.001*	*0.006*	< 0.005	< 0.005	< 0.005	< 0.005	0.01

8.5.8.2 *Whale Tail Site*

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 13*: Summary of quantities and analysis of Seepage and runoff monitoring from the Landfill, Waste Rock Storage Facility and associated dikes/berms*

8.5.8.2.1 Lake water seepage through dewatering dikes

Lake water seepage was observed at Whale Tail Dike and is summarized in Section 8.5.8.2.2 below. No other lake water seepage was observed at the other dewatering dikes in 2021.

No seepage occurred from WRSF Dike in 2021. The mitigation measure implemented in 2020 were successful in ensuring the proper performance of this infrastructure.

8.5.8.2.2 Seepage through Whale Tail Dike

The Whale Tail Dike was commissioned on March 5th, 2019 with the beginning of the dewatering activity of the North Basin.

In July 2019, seepage streams were observed on the downstream toe of Whale Tail Dike. The flow was measured using v-notch weirs at approximately 300 m^3/h which is higher than what was anticipated in the water balance. A detailed investigation including additional instrumentation and geophysics was conducted for a better understanding of the seepage phenomenon at the Whale Tail Dike.

A pumping system is being installed to collect and manage the non-contact seepage water but as not yet been commissioned. The collected seepage water will be discharged to Whale Tail South Basin via a diffuser without treatment if the water quality meets the discharge criteria of the Water License 2AM-WTP1830. Until the system is commissioned and discharge criteria are met, water will overflow from the pump stations to the Whale Tail Attenuation Pond and be managed as part of this infrastructure.

An intensive grouting campaign was conducted between Q4 2019 and Q1 2020 to further reduce the seepage flow. The campaign was successful in reducing the seepage by more than 50 %. In 2021, the seepage rate was stable compared to 2020, about 100 to 150 m^3/h.

Agnico Eagle continues to closely monitor the situation.

8.5.8.2.3 Seepage and runoff from the landfill

The Whale Tail Landfill was commissioned in October 2019. No seepage from this structure is observed.

8.5.8.2.4 Subsurface seepage and surface runoff from waste rock piles

No subsurface seepage was observed from the WRSF in 2021. Surface runoff were collected and managed as per the strategy detailed in the water management plan.

8.5.8.2.5 Seepage at pit wall and pit wall freeze/thaw and permafrost aggradation

Seepage was observed in Whale Tail Pit along the south and west walls exposed bench faces. In 2021, 952,623 m^3 of water was pumped out of Whale Tail Pit. That number included seepage as well as snowmelt and runoff. The source of the seepage is groundwater flow from Whale Tail South as well as some infiltration from the Whale Tail Attenuation Pond. A dedicated sump within the pit will be implemented in 2023 to intercept that water before it reach the pit floor.

The "2021 Annual Open Pit Geomechanical Inspection" for more details regarding seepage at pit walls (Appendix 10).

8.6 BLAST MONITORING [4]

8.6.1 Meadowbank Site

As required by NIRB Project Certificate No.004, Condition 85*: develop a detailed blasting program to minimize the effects of blasting on fish and fish habitat, water quality, and wildlife and terrestrial VECs.*

In accordance with NIRB Project Certificate No.004, Condition 85, Agnico Eagle Meadowbank Complex developed a blasting program which complies with *The Guidelines for the Use of Explosives In or Near Canadian Fisheries Water* (Wright and Hopky, 1998) as modified by the DFO for use in the North and adhere to guidance provided in *Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies* (Cott and Hanna, 2005). As a result, Agnico Eagle conducts monitoring to evaluate blast related peak particle velocity and overpressure to protect nearby fish bearing waters.

No blast monitoring was conducted at the Meadowbank property in 2021 as mining operations ceased in 2019.

8.6.2 Whale Tail Site[5]

As required by DFO Authorization 16HCAA-00370 Condition 2.3.3*: The proponent shall develop a blasting mitigation plan in consultation with DFO to ensure effects on fish and fish habitat are minimized, as per Nunavut Impact Review Board Project Certificate No. 008 Condition 22. The Blasting mitigations plan shall be submitted to DFO prior to construction for approval, and shall adhere to the guidance provided in the Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies, NWT 2000-2002.*

And

As required by DFO Authorization 20HCAA-00275 Condition 2.3.8*: The proponent shall develop a blasting mitigation plan in consultation with DFO to ensure effects on fish and fish habitat are minimized, as per Nunavut Impact Review Board Project Certificate No. 008 Condition 22. The Blasting mitigations plan shall be submitted to DFO prior to construction for approval, and shall adhere to the guidance provided in the Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies, NWT 2000-2002.*

[4] TSM – Biodiversity and Conservation Management

And

As required by NIRB Project Certificate No.008 Condition 22: ***The Proponent shall engage with Fisheries and Oceans Canada to develop project specific thresholds, mitigation and monitoring for any blasting activities that would exceed the requirements of Fisheries and Oceans Canada's Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters. If project-specific thresholds, mitigation and monitoring requirements are developed, the Proponent shall identify these requirements in the annual report provided to the NIRB.***

In accordance with NIRB Project Certificate No.008, Condition 22, DFO 16HCAA-00370 Condition 2.3.3 and DFO 20HCAA-00275 Condition 2.3.8, Agnico Eagle had developed a blasting program which complies with *The Guidelines for the Use of Explosives In or Near Canadian Fisheries Water* (Wright and Hopky, 1998) as modified by the DFO for use in the North and adhere to guidance provided in *Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies* (Cott and Hanna, 2005). As a result, Agnico Eagle conducts monitoring to evaluate blast related peak particle velocity and overpressure to protect nearby fish bearing waters.

Agnico Eagle has update the Blast Monitoring Program (Version 7, January 2022 – Appendix 40) to reflect the actual blast monitoring location on site. This Version 7 is submitted as part of the 2021 Annual Report.

The results of the 2021 blast monitoring program are available in the report entitled "2021 Meadowbank and Whale Tail Blast Monitoring Report for the Protection of Nearby Fish Habitat" attached as Appendix 41.

Peak particle velocity (PPV) and overpressure monitoring data was recorded throughout 2021 during blasting activities at Whale Tail and IVR Pits (including IVR-West). The locations of the blast monitoring stations on surface in 2021 at Whale Tail are highlighted in Figure 1 of the report Blast Monitoring Report found in Appendix 41.

In 2021, 106 blasts were monitored at IVR Pit. There were no PPV readings exceeding 13 mm/s and IPC measurements were all below the DFO limit of 50 kPa.

For Whale Tail Pit, 209 blasts were monitored. There was no blast exceeding the PPV concentration DFO limit of 13 mm/s and no blast exceeded the IPC measurement DFO limit of 50 kPa.

Table 8-130 presented a summary of PPV and IPC exceedance and Table 8-131 Maximum and Average PPV and IPC from 2018 - 2021.

Table 8-130 Whale Tail Project PPV and IPC exceedance from 2018-2021

Year	PPV exceedance	IPC exceedance
2018	2	0
2019	8	0
2020	4	0
2021	0	0
Total	**14**	**0**

Table 8-131 Whale Tail Project Maximum and Average PPV from 2018 – 2021

Location	Parameters	2018	2019	2020	2021
Whale Tail Pit	Max PPV (mm/s)	26.1	20.9	14.6	12.7
	Average PPV (mm/s)	4.5	2.16	0.98	1.6
	Max IPC (kPa)	30.54	24.46	17.09	14.9
	Average IPC (kPa)	5.01	2.23	1.19	1.4
IVR Pit	Max PPV (mm/s)	N/A	N/A	6.5	8.6
	Average PPV (mm/s)	N/A	N/A	0.67	1.22
	Max IPC (kPa)	N/A	N/A	7.59	10.1
	Average IPC (kPa)	N/A	N/A	0.81	1.2

8.7 GROUNDWATER MONITORING

8.7.1 Meadowbank Site

As required by NIRB Project Certificate No.004 Condition 8: ***Continue to undertake semi-annual groundwater samples and re-evaluate the groundwater quality after each sample collection; report the results of each re-evaluation to NIRB's Monitoring Officer, INAC and EC.***

The full results of the 2021 groundwater monitoring program are available in Appendix 42. Below is a summary of the results and Agnico Eagle will refer to the report presented in the Appendix for a complete review and discussion of the results and location of the sampling locations.

The objective of the 2021 groundwater monitoring program was to document groundwater and surface water quality for effects related to mining operations associated with the deposition of tailings in the tailings storage facility (TSF) and current practices involving in-pit tailings deposition (IPD). Monitoring activities completed in August and September 2021 included water level monitoring and sampling of groundwater monitors and surface water monitoring locations. Monitoring well MW-16-01 was located to investigate potential groundwater quality impacts related to the TSF, while monitoring wells MW-IPD-01(s), MW-IPD-01(d), MW-IPD-07 and MW-IPD-09 were located to investigate potential groundwater impacts related to IPD. Wall seepage samples were also collected from the west wall of Portage Pit-E and east wall of Portage Pit-A in August 2021 to assess potential groundwater quality impacts related to the TSF and IPD practices.

The report (Appendix 42) includes a description of the surface water and groundwater sampling and a presentation of the water quality results.

Groundwater quality results were compared to the Portage effluent quality discharge limits stipulated in the Meadowbank water license, for comparative purposes only as there are no groundwater quality criteria applicable to the site. All groundwater samples collected in 2021 met these screening criteria, with the exception of TSS at MW-IPD-09 (July and September) and the and Pit-E wall seepage samples (August).

In 2021, the chemical signature of the groundwater at MW-16-01 continues to trend towards that of the reclaim water based on elevated concentrations of arsenic, chloride, copper, iron, cyanide and sulphate. The groundwater quality at monitoring well MW-16-01 is interpreted to be affected by reclaim water from the South Cell TSF based on similar chemical signatures to reclaim water monitoring stations ST-21-North, ST-21-South (South Cell TSF surface water) and ST-S-5 (Central Dike seepage). These monitoring locations are located hydraulically downgradient of the South Cell TSF and Central Dike.

The chemical signature of the 2021 Pit-A and Pit-E wall seepage samples are dominated by major ions sulphate, magnesium and calcium and are interpreted to be representative of intermediate water signature. The elevated concentrations of sulphate may also be related to the dissolution of sulfate salt from the oxidation of sulphide minerals in the rock forming the pit walls, while calcium and magnesium may correspond from alkalinity consumption. The seepage from the west wall of Pit-E has a similar chemical signature to the reclaim water and higher concentrations of total arsenic, chloride, sulphate, calcium, magnesium, sodium than background groundwater, while concentrations of other key reclaim water parameters such as total copper, total cyanide, and total iron remain low but are detected. Concentrations of arsenic and chloride were elevated at the Pit-E seepage monitoring location, where concentrations of chloride have generally declined since 2017. The west wall of Pit-E is located hydraulically downgradient from the TSF. Given the presence of total cyanide in the Pit-E wall seepage, there is a component of tailings from the TSF, though it's unclear how important it is versus the waste rock contact water. The 2021 Pit-E seepage water quality is interpreted to be affected by mining activities including the TSF; however the level of effect or mixing with TSF water is unclear. The source of the elevated concentration of copper in the 2021 Pit-A east wall seepage is unknown, where the value and trend will be validated during subsequent monitoring programs, if possible. Due to rising water levels in Pit-A and Pit-E and safety concerns, it may not be feasible to collect future pit wall seepage samples.

The groundwater quality in monitoring wells MW-IPD-01(d), MW-IPD-01(s), MW-IPD-07, MW-IPD-09 continues to display a natural water signature and can be used as background values against which to monitor groundwater quality in the future.

Based on the results of the 2021 groundwater monitoring program, the monitored groundwater quality locations do not appear to be affected by in-pit deposition operations in the Goose Pit from July 2019 to August 2020 or Portage Pit-E since operations commenced in August 2020. The four IPD monitoring wells are situated hydraulically downgradient from the Second Portage Lake (MW-IPD-01(s) and MW-IPD-01(d)) and Third Portage Lake (MWIPD- 07 and MW-IPD-09), therefore water quality at these monitors is likely to be influenced by surface water flowing (seeping) east towards the monitoring wells and into the IPD pits and not the TSF or IPD operations, at this time.

The groundwater monitoring program was initiated in 2003. A total of 14 groundwater monitoring wells were installed between 2003 to 2018 to characterize the groundwater within the five site areas: South and Central Dike, East Flat (East Dike area), Goose Pit, Portage Pit-A and Portage Pit-E. The available historical groundwater monitoring program analytical results from 2003 to 2021 are discussed in Section 4.3 of the 2021 Groundwater Monitoring Report (Appendix 42).

8.7.2 Whale Tail Site

As required by NIRB Project Certificate No.008 Condition 15: ***The required Groundwater Monitoring Plan should be submitted to the NIRB at least 30 days prior to the start of construction, with subsequent plan revisions***

or updates submitted annually thereafter. Subject to the additional direction and requirements of the Nunavut Water Board, the Proponent shall prepare and implement a Groundwater Monitoring Plan that, at a minimum includes:

- ***The collection of additional site-specific hydraulic data (e.g., from new monitoring wells) in key areas during the pre-development, construction and operation phases;***
- ***Definition of vertical and horizontal groundwater flows in the project development areas;***
- ***Delineates monitoring plans for both vertical and horizontal ground water; and***
- ***Thresholds that will trigger the implementation of adaptive management strategies that reflect site specific conditions encountered at the project site.***

And

As required by NIRB Project Certificate No.008 Condition 16: ***An updated Groundwater Monitoring Plan that outlines the Proponent's plans to fulfill this term and condition should be submitted to the NIRB at least 30 days prior to the start of construction, with subsequent plan revisions or updates submitted annually thereafter. Within two years of commencing operations, the Proponent shall:***

a) Conduct additional analyses to determine the approximate fill time for the Whale Tail Pit at closure;

b) Undertake a hydrogeological characterization study to assess the potential for arsenic and phosphorous diffusion from submerged Whale Tail pit walls;

c) If the results of the characterization study indicate a moderate to high potential for arsenic and/or phosphorous diffusion, perform detailed hydrodynamic modelling of the flooded pit lake prior to closure to evaluate meromictic conditions and flooded pit water quality; and

d) Add these required activities to the site Groundwater Monitoring Plan.

In Appendix 43, the 2021 Groundwater Management Monitoring Report presented a compilation of the site-specific data collection in 2021 and the review of 2021 monitoring data undertaken by Agnico Eagle to meet the requirements established in the Groundwater Monitoring Plan (Version 3_NWB, May 2019). The following is a summary of the report and Agnico Eagle will refer the reader to the whole report in Appendix 43 for an exhaustive comprehension of the program and results for 2021.

In 2021, only Whale Tail Pit intercepted groundwater. IVR Pit and Whale Tail Underground are both located in permafrost and no interception of groundwater occurred.

Westbay Well Sampling

Hydrostatic pressures were measured in November 2021 at Westbay Well AMQ16-626 to monitor hydraulic heads and changes in groundwater flow conditions. Port 1 was planned for sampling however the program was ended prematurely due to a large-scale power outage at Whale Tail camp on November 13th, 2021. Following the pressure measurements, groundwater samples were collected to monitor the

TDS and groundwater quality. A technical memorandum documenting this work, sampling results and historical monitoring from AMQ16-626 is included in Attachment A of the complete report (Appendix 43).

Water samples were collected from Ports 2, 3, 4 and 6 of AMQ16-626 in November 2021 to assess groundwater quality.

The 2021 program estimated that groundwater quality at Ports 3 and 4 is similar to or slightly lower than the TDS estimated in 2016 (Golder 2016). The slightly lower TDS (within 1,417 to 2,328 mg/L) reported in Ports 3 and 4 in 2021 relative to 2016 (3,483 to 3,966 mg/L) may be related to the evolution of purging and natural flushing, which reduces the amount of residual drill fluid that may be affecting sample analysis (i.e., increases data reliability), and/or it may be related to migration of fresher (lower TDS) water induced by pit dewatering activities.

Port 6 pressure monitoring during purging and/or sampling indicate the formation pressure was reduced excessively because of multiple sampling events. This may have caused a small amount of Westbay casing fluid (dilute propylene glycol mixture) to mix with the Port 6 formation groundwater, resulting in a blend of both fluids being collected. Therefore, there is a degree of uncertainty in the quality of water recovered during the 2021 Port 6 monitoring program. Parameter concentrations in the Port 6 corrected formation groundwater are generally in the same order of magnitude but slightly higher than those concentrations previously reported at the port, with the exception of a few parameters.

At Port 2 continues to have a high proportion of residual drill fluid in the collected water, preventing an accurate estimation of formation groundwater quality. As discussed, the aquifer near this port is being natural flushed of the drilling water.

The assumptions for the conceptual model for the site are considered unchanged by 2021 groundwater quality monitoring at AMQ16-626.

Thermal Monitoring

Nine thermistors (PSW-DH2 TH, PSW-DH3 TH, PSW-DH6 TH, PSW-DH7 and PSW-DH-10 through PSW-DH14 TH) were installed in 2020 to monitor the talik zone near the south wall of the Whale Tail Pit. In August 2021 these thermistors were dismantled due to mining activity in the sector. While active, these thermistors were used to evaluate if during open pit mining and with the dewatering of the North Basin, the closed talik zone progressively freezes back. Through the year 2021 until their dismantling in August, it was possible to observe some freezeback of the upper bedrock in thermistors PSW-DH2 TH, PSW-DH3 TH, PSW-DH7 TH and PSW-DH10 TH, resulting in minor changes to the talik zone.

As part of the Whale Tail Dike Operation Maintenance and Surveillance manual, performance of the Whale Tail Dike (WTD) was monitored with thermistors located downstream and/or upstream (U/S) of the WTD. Collected data indicate that limited freeze back is happening in deep bedrock.

Hydraulic Head Monitoring

Hydraulic heads measured in piezometers near the south wall of Whale Tail Pit decreased in response to mining of the Whale Tail Pit. Temporal variations are observed in the data in response to multiple influences, including precipitation, blasting and variations in surface water levels in the Whale Tail

Attenuation Pond. The correlation of hydraulic heads measurements to surface water levels in the pond is strongest near the pond and diminish closer to the pit as expected.

Seepage Surveys

Agnico Eagle notes that seepage has consistently been observed in the southeast wall in 2021, and the seepage forms ice in the pit walls during the winter. The seepage is attributed to a highly weathered zone near surface as opposed to faults, which is consistent with the original conceptual model for the Whale Tail Project and the prediction of a seepage face in the south wall.

Comparison of Model Predicted Values to Measured Values

Flow measurements recorded in the winter months (January, February, March, April, October, November and December) ranged from 1,434 m^3/day to 2,528 m^3/day, with an average inflow of 1,997 m^3/day. Flow measurements during the winter months are the best estimate of groundwater inflow rates to the Whale Tail Pit since surface water inflows should be minimal. The inflow in the winter will reflect saline groundwater inflow and seepage from the Whale Tail Attenuation Pond and South Basin of Whale Tail Lake. Overall, inflow measurements are trending 50% higher than predicted for 2021. In consideration of this observation, the groundwater model should be reviewed and recalibrated to support future assessments of the site wide water balance model. It is suspected that the higher flow is originating from the near surface weathered zone.

The TDS measured in the south wall seepage samples ranged from approximately 135 to 265 mg/L, with an average concentration of 211 mg/L. The TDS measured in the pit sump samples ranged from 160 to 335 mg/L in the winter months, with an average concentration of 248 mg/L. In consideration that the groundwater model needs to be recalibrated, the previously predicted proportions of saline groundwater and seepage from the Whale Tail Attenuation Pond and South Basin are uncertain. This uncertainty makes it difficult to know if the TDS in the saline groundwater component (which is predicted by the groundwater model) is trending higher. Groundwater model recalibration efforts in 2022 should consider the observed TDS in each of these sources as part of the analysis, and this analysis may require integration with the surface water balance model as a feedback loop may exists between the Whale Tail Attenuation Pond and the Whale Tail Pit (water is lost from the pond to the pit, which is then pumped back to the Whale Tail Attenuation Pond).

8.8 HABITAT COMPENSATION MONITORING PROGRAM

8.8.1 Meadowbank Site

As required by DFO Authorizations NU-03-0191.3 Condition 3 and 6 (Second and Third Portage Lakes), NU-03-0191.4 (Vault Lake) Condition 3 and 6; NU-03-0190 Condition 5 (AWPAR), NU-14-1046 (Phaser Lake) Condition 3 and 5; ***Submit written report summarizing monitoring results and photographic record of works and undertakings.***

And

As required by NIRB Project Certificate No 004 Condition 53: ***Agnico Eagle Mines Ltd. shall, in consultation with the HTOs and DFO, develop a Fish Habitat Monitoring Plan, including augmenting baseline fisheries data in the period prior to operation, with the clear objective of demonstrating the success of the No Net Loss Plan***

approved by the DFO. The Fish Habitat Monitoring Plan should include Phaser Lake. The updated plan should be provided to the NIRB for review at least 30 days prior to commencement of construction activities. Results from the fisheries baseline data to be provided in the annual report to the NIRB

According to Fisheries and Oceans Canada (DFO) Fisheries Act Authorizations (FAAs) NU-0190, NU-03-0191.3, NU-03-0191.4 and 14-HCAA-01046, Agnico Eagle maintains a Habitat Compensation Monitoring Plan (HCMP; February, 2017) to demonstrate whether fish habitat compensation features at the Meadowbank site are constructed and functioning as intended.

In 2021, monitoring according to the HCMP was conducted for the constructed spawning pads feature, located at stream crossing R02 along the all-weather access road (AWAR) to Baker Lake (FAA NU-0190), as well as for the onsite habitat compensation features constructed to date (East Dike exterior, Bay-Goose Dike exterior, Dogleg Ponds – FAA NU-03-0191.3). The program and results for each feature are summarize below. Agnico Eagle will refer the reader to the Meadowbank 2021 Habitat Compensation Monitoring Report (Appendix 45) for a complete discussion of the 2021 monitoring and results.

AWAR Spawning Pads - NU-0190

Habitat compensation monitoring methods for the spawning pads constructed in 2009 at AWAR crossing R02 include a visual assessment of spawning pad stability, as well biological monitoring to confirm adult fish presence and reproduction in this watercourse using hoopnets and drift traps. In 2021, the constructed spawning pads were visually confirmed to be stable as designed. For the adult fish population, condition factors, population size distributions and timing of migration were within the range of values seen in previous years, confirming continued use of this area by Arctic Grayling (*Thymallus arcticus*) without significant changes in population structure. Rates of collection of fish larvae in drift traps continue to exceed those observed prior to construction of the spawning pads. While these traps are useful to assess spawning rates upstream of the R02 AWAR crossing generally, Agnico Eagle anticipates reviewing HCMP methods prior to the next (2023) monitoring event to better assess successful utilization of the constructed spawning pads specifically. Any updated plans will be provided to DFO for review prior to implementation. Monitoring of the spawning pads is currently scheduled to occur biennially until decommissioning of the AWAR, according to Condition 5.2 of the FAA (NU-03-0190). Since the timeline for road decommissioning (est. 2031) is now significantly extended compared to NNLP assumptions (est. 2018-2020), Agnico Eagle anticipates working with DFO to revise this monitoring schedule moving forward.

Dewatering Dike Faces (Exterior) - NU-03-0191.3

Habitat compensation monitoring for the exterior of dewatering dike faces (East Dike and Bay-Goose Dike) in 2021 included assessments of interstitial water quality, periphyton growth and fish use. These features were constructed in 2009 and 2011, and monitoring was prescribed in the HCMP for a minimum period of 10 years. A historical review was performed to facilitate a weight-of-evidence evaluation and confirm criteria for success for these compensation features have been met.

Overall, while periphyton growth has been slow and average biomass has not yet reached reference levels, diverse communities are present. Dewatering dike faces were constructed as designed in the NNLP and are stable as fish habitat, with suitable water quality for aquatic life, and have recorded fish presence at rates no lower than reference areas. Since periphyton communities are considered healthy

and there is no reason to believe that biomass will not eventually reach reference levels, the weight of evidence indicates that dike faces are functioning as fish habitat, as assumed in the NNLP. As a result, criteria for success are considered to have been met, and no further compensation-related monitoring for these features is planned but this will be confirmed in consultation with DFO prior to the next potential monitoring season (2023).

Dogleg Ponds - NU-03-0191.3

In 2021, monitoring for the Dogleg Ponds included structural assessments (surface area and connectivity), and evaluation of fish presence through angling and underwater camera.

Complete bathymetric surveys indicated that changes in surface area have occurred as assumed in the NNLP (+5 – 15%). Visual assessments of connectivity indicated channels are passable to fish during freshet, with potential access upstream to Dogleg Pond and NP-1 for small-bodied species throughout the season. Fish were identified by underwater camera within both Dogleg Pond and NP-1, which supports NNLP assumptions of access enhancements in this area. Final follow-up monitoring will be conducted along with historical review in 2025 according to the HCMP, prior to determining success of this compensation feature.

Vault Area - NU-03-0191.4, 14-HCAA-01046

Mining operations have now ceased in the Vault and Phaser Pits, and initial habitat monitoring events (substrate assessments in the dry) were planned to be conducted in 2020, prior to significant reflooding of the lake basins. These assessments have been delayed to 2022. No additional flooding of the Vault and Phaser basins is planned to occur over this time period (2020 – 2023) as pits are filling with natural inflows, so this delay does not impact substrate assessment methods or results.

8.8.2 Whale Tail Site

8.8.2.1 *Fish Habitat Offsetting Plan*

As required by NIRB Project Certificate No.008 Condition 24: ***The Proponent shall engage Fisheries and Oceans Canada, and other interested parties to further assess:***

- ***Whether the increased surface area of Whale Tail Lake is a viable offset to habitat losses resulting from development of the Project; and***

- ***Whether Whale Tail end pit would support fish in the post closure scenario.***

Results of this assessment should be incorporated into the Habitat Compensation Plan and/or the Conceptual Fisheries Offsetting Plan as appropriate. The updated information should be submitted to the NIRB at within 60 days of the issuance of the Project Certificate

And

As required by DFO Authorization 20HCAA-00275 Condition 5.3.2: ***The Proponent shall monitor to validate Agnico Eagle Mines Ltd.'s Habitat Suitability Index (HSI). The monitoring shall be conducted to the satisfaction of DFO. Where appropriate, the HSI will incorporate additional knowledge generated by the monitoring plans***

and complementary measures research projects of the Approved Project (PATH No.: 16-HCAA-00370) and adjust the Habitat Evaluation Procedure (HEP) model according to the results generated. The HSI will be used to refine, as necessary, the performance end-points in habitat units for offsetting

And

As required by DFO Authorization 16HCAA-00370 Condition 5.2.1: ***The Proponent shall monitor to validate Agnico Eagle Mines Ltd.'s Habitat Suitability Index (HSI). The monitoring shall be conducted to the satisfaction of DFO. Where appropriate, the HSI will incorporate additional knowledge generated by the complementary measures research projects under section 4.2.2, in particular research project 4.2.2.1c, and adjust the Habitat Evaluation Procedure (HEP) model according to the results generated. The HSI will be use to refine, as necessary, the performance end-points in habitat units for offsetting***

As required by NIRB Project Certificate No.008 Condition 24, Agnico Eagle has submitted the Fish Habitat Offsetting Plan (Appendix 51 of the 2018 Annual Report) in March 2018 (accepted by DFO through Fisheries Act Authorization 16-HCAA-00370 on July 23rd, 2018). This document incorporates the requested analysis of fish habitat gains from increased surface area in Whale Tail Lake and water quality modelling for Whale Tail Pit.

As described in 16HCAA-00370 Condition 5.2.1 and 20HCAA-00275 Condition 5.3.2, Agnico Eagle will work with DFO to develop a plan for monitoring to validate HSIs used in offsetting plans for the Whale Tail Pit and Expansion Projects. This plan will incorporate (where appropriate) additional knowledge from the complementary measures research projects.

8.8.2.2 *Fish Habitat Offset Monitoring Plan*

As required by DFO Authorization 16HCAA-00370 Condition 5.1.1.2: ***The proponent shall provided an updated Whale Tail Pit Fish Habitat Offset Monitoring Plan, prepared by Agnico Eagle Mines Ltd. To DFO for review and approval on or before December 31, 2018. This update shall include, but is not limited to, details on the monitoring methods, frequency of monitoring, sampling location and criteria for success.***

And

As required by DFO Authorization 20HCAA-00275 Condition 5.2.1: ***The Proponent shall provide a Whale Tail Expansion Fish Habitat Offset Monitoring Report to DFO including geotechnical and biological and ecological monitoring as per section 5.1.1. The Proponent is required to provide the Report by March 31 of 2027 and update annually for 10 years or until DFO indicates requirements of this Authorization have been met.***

And

As required by DFO Authorization 16HCAA-00370 Condition 5.1.1.3: ***The proponent shall develop a schedule for the implementation of the offsetting measures, and shall provide this schedule to DFO no later than December 31, 2019***

And

As required by DFO Authorization 16HCAA-00370 Condition 5.1.1.4: ***The Proponent shall provide an annual Whale Tail Pit Fish Habitat Offset monitoring Report to DFO (and interested parties) following the construction***

of the offsetting habitat by March 31. The Proponent is required to provide the Whale Tail Pit Fish Habitat Monitoring Report until DFO indicates this requirement has been met

And

As required by DFO Authorization 20HCAA-00275 Condition 5.2.3: ***The Proponent shall provide a summary report of all Whale Tail Expansion Fish Habitat Offset Monitoring Reports described in section 5.2.1 before March 31, 2036 to DFO (and interested parties) which shall analyse results from the offsetting measures of the Whale Tail Expansion Project following the construction of the offsetting habitat. DFO reserves the right to request additional Summary Report if annual reporting were to continue until requirement has been met.***

And

As required by DFO Authorization 16HCAA-00370 Condition 5.1.1.5 and DFO Authorization 20HCAA-00275 Condition 5.2.2: ***As part of the annual Whale Tail fish Habitat Offset Monitoring Report, the Proponent shall include, but not limited to:***

- ***a digital photographic record with GPS coordinates of pre-construction, during construction and post construction conditions shall be compiled using the same vantage points and direction to show that the approved works have been completed in accordance with the offsetting plan***
- ***a summary of field observations for each respective year as well as as-built survey***
- ***a detailed analysis report summarizing the effectiveness of the offsetting measures***

The schedule for the implementation of the offsetting measures as per DFO Authorization 16HCAA-00370 Condition 5.1.1.3 was submitted to DFO on January 7th, 2020 (Appendix 48 of the 2019 Annual Report).

According to DFO Authorization 16HCAA-00370 Condition 5.1.1.2, Agnico Eagle submitted Version 1 of the Whale Tail Fish Habitat Offset Monitoring Plan on March 2018 (Appendix 51 of the 2018 Annual Report) and having received no comment, resubmitted this plan to DFO on March 15th, 2019. This Plan was again referenced in the DFO-approved Fish Habitat Offsetting Plan for the Whale Tail Expansion Project (March 2020) and no modifications were received from DFO.

Agnico Eagle submitted Version 2 of the Whale Tail Fish Habitat Offset Monitoring Plan (developed to include requirements of both Whale Tail site FAAs 16-HCAA00370 and 20-HCAA-00275) to DFO in July, 2021, and is awaiting comment. According to Conditions 4.3.3, 5.1.1.2, and 5.3.1 of 20-HCAA-00275, this Plan includes a pre-offsetting ecological monitoring program to assess the suitability of flooded areas in Whale Tail South as fish habitat, prior to construction of the A18 sill. This program is based on the monitoring methods described in the approved Whale Tail Pit Expansion Project Fish Habitat Offsetting Plan (March, 2020), and was formally initiated in 2021. Data reports are to be provided annually to DFO and are summarized below. Agnico Eagle will refer the reader to the Whale Tail 2021 Fish Habitat Offsets Monitoring Report (Appendix 44) for a complete discussion of the 2021 monitoring and results. A final report will be provided to DFO by March 31st, 2024. In addition, according to 16HCAA-00370 Condition 5.1.1.4, 5.1.1.5, and 20HCAA-00275 Condition 5.2.1 and 5.2.3, this plan describes the schedule for

monitoring of offsetting following construction of permanent offsetting features, which includes annual reporting to DFO and a final summary report (2036).

In accordance with Fisheries Act Authorizations 16-HCAA-00370 and 20-HCAA-00275, Agnico Eagle maintains a Fish Habitat Offsets Monitoring Plan (FHOMP; Version 2, July, 2021 – in review[6]) for the Whale Tail Site. This Plan was developed to determine whether fish habitat offsetting described in the Whale Tail Pit - Fish Habitat Offsetting Plan (C. Portt and Associates, 2018) and the Whale Tail Pit Expansion Project Fish Habitat Offsetting Plan (ERM, 2020) is ultimately constructed and functioning as intended.

From 2021 to 2023, monitoring is conducted under the pre-offsetting ecological monitoring program of the FHOMP. This program is intended to demonstrate whether terrestrial flooding that was temporarily required for operational purposes will provide suitable habitat for fish long-term. Permanently raised water levels are accepted offsets under both the 2018 and 2020 offsetting plans for the Whale Tail site, and flood zone assessment prior to permanent sill construction is required under conditions of the associated Fisheries Act Authorization 20-HCAA-00275.

In 2021, FHOMP assessments included: flood zone water quality data collected through the Core Receiving Environment Monitoring Plan (CREMP), a periphyton growth pilot test using artificial substrate samplers, and small-bodied fish population assessments by shoreline electrofishing. Results of these assessments are presented here in a data report format, with final analysis to be completed following the 2023 monitoring season.

Briefly, 2021 CREMP results indicate suitable water quality for aquatic life within the Whale Tail flood zone, and electrofishing studies identified the presence of small-bodied fish populations in newly created shoreline habitat at rates no lower than reference areas. The periphyton pilot study was successful in demonstrating that seasonal periphyton biomass as represented by chlorophyll a concentration can be effectively measured using artificial substrate samplers in the Whale Tail flood zone. Several adjustments to sampler design are proposed for the 2022 season to reduce rates of substrate loss.

In addition to flooding and other constructed habitat offsetting features, a portion of offsetting for Whale Tail Pit is provided through a suite of complementary measures (research projects). No physical monitoring is conducted in relation to research projects. However, progress monitoring is conducted to document annual activities, and results are summarized here to document when criteria for success have been met.

Six research studies are underway or planned as complementary measures for Whale Tail Pit offsetting (Table 8-132). Due to delays in 2020 and 2021, largely as a result of the COVID-19 pandemic, some study periods have been extended by 1 or 2 years. In 2021, Study 4: Arctic Grayling Occupancy Modelling was completed and criteria for success were met with publication of a peer-reviewed manuscript (Ellenor et al., 2021). Agnico Eagle will refer the reader to the Whale Tail 2021 Fish Habitat Offsets Monitoring Report (Appendix 44) for more information regarding the complementary measures.

[6] Version 2 of the FHOMP was developed to include requirements of both Whale Tail site FAAs (16-HCAA-00370 and 20-HCAA-00275) and was submitted to DFO in July, 2021. No comment from DFO has yet been received but Agnico Eagle has pro-actively undertaken monitoring and reporting according to this version in 2021, since under Version 1, no monitoring was scheduled until 2026.

Table 8-132 Whale Tail Pit Complementary Measures (research projects)

Study	Lead Researcher	Study Period
Study 1: Assessment of changes in aquatic productivity and fish populations due to flooding of Whale Tail South and downstream lakes during operations	H. Swanson	2018 – 2023*
Study 2: Assessment of impacts of the Baker Lake wastewater outflow on aquatic systems including fish and fish habitat	H. Swanson	2019 – 2027*
Study 3: Literature review and field validation of northern lake fish habitat preferences	S. Doka	2018 – 2022*
Study 4: Arctic Grayling occupancy modelling (COMPLETE)	H. Swanson	2018 – 2021
Study 5: End pit lake habitat use	TBD	2027 – 2035 (est.)
Study 6: eDNA methods development	J. Stetefeld	2018 - 2023

**Extended 1 – 2 years due to COVID-19 or other delays (new dates shown).*

8.8.2.3 *Consultation*

As required by DFO Authorization 16HCAA-00370 Condition 5.1.1.6: ***Each year, following the submission of the annual Whale Tail Pit Fish Habitat Offset Monitoring Report to DFO, the Proponent shall arrange to meet with DFO and interested parties (e.g., KIA) to review the results of the previous year of the monitoring program. The results of the meetings and any mutually agreed upon modifications aimed at improving the effectiveness of the offsetting monitoring program shall be incorporated into the upcoming year of the monitoring programs. The Proponent shall update the Whale Tail Pit Fish Habitat Offset Monitoring Plan, to reflect the changes, and the plans shall be approved in writing by DFO prior to implementation***

This will be implemented following the first year of constructed habitat offset monitoring.

8.8.2.4 *Complementary Measures Research - Fish Habitat Offsetting Plan Whale Tail Pit*

As required by DFO Authorization 16HCAA-00370 Condition 4.2.1.2: ***The Proponent shall provide updated research plans with detailed methodologies for projects listed under conditions 4.2.2.1a, b, c and d. Each updated plan shall be provided to DFO for approval on or before December 31, 2018 and at least 60 days prior to commencement of research.***

And

As required by DFO Authorization 16HCAA-00370 Condition 4.2.1.6: ***The proponent shall make all effort to ensure that the results from the research projects conducted for the complementary measures are published in peer-reviewed scientific journals***

And

As required by DFO Authorization 16HCAA-00370 Condition 4.2.1.3: ***The proponent shall initiate a literature review no later than November 2018, and provide the results of this review to DDO no later that February 28, 2019. This shall include an outline of the proposed studies by February 28, 2019, and a complete detailed research plans by December 31, 2019***

In compliance with DFO Authorization 16HCAA-00370 Condition 4.2.1.2, updated research plans for these studies have been provided in the 2018, 2019 and 2020 Annual Progress Reports on Complementary Measures, which are provided to DFO by May 30 annually (in compliance with Condition 4.2.1.5 of the Authorization).

A summary of the research plans and details on the progress of each study listed under Condition 4.2.2.1a-e is provided in the 2021 Fish Habitat Offset Monitoring Report (Appendix 44), including progress towards publication in peer-reviewed scientific journals.

As per Condition 4.2.1.3, the requested literature review and preliminary study outline was provided to DFO by email on March 15th, 2019 (Appendix 42 of the 2018 Annual Report). More details regarding this study can be found in the 2021 Fish Habitat Offset Monitoring Report in Appendix 44.

8.9 MEADOWBANK FISHERIES RESEARCH ADVISORY GROUP (MFRAG)

As required by DFO Authorization 16HCAA-00370 Condition 4.2.1.4: ***To serve as an advisory group for the complementary measures that shall be undertaken as listed under condition 4.2.2.1, the Proponent shall establish a Meadowbank Fisheries research Advisory Group (MFRAG). The MFRAG membership shall include DFO and the Proponent, an independent third party research advisor, any interested Inuit organizations within the Kivalliq Region, and other agencies or interested parties s considered appropriate by MFRAG members. The proponent shall develop a draft terms or reference and participant list for this advisory group which shall be provided to DFO by September 1, 2018.***

The Meadowbank Fisheries Research Advisory Group (MFRAG) was conceptualized to provide a forum for input from key stakeholders on complementary measures (research programs) conducted under the Fish Habitat Offsetting Plan for Whale Tail Pit (C. Portt and Associates, 2018). The MFRAG meets annually to review project progress reports, propose and approve or reject new projects or project components, and assess whether criteria for success have been met.

In 2019, Agnico Eagle confirmed interest in MFRAG participation by DFO, the Kivalliq Inuit Association (KivIA), and the Baker Lake Hunters and Trappers Organization. As planned in the Fish Habitat Offsetting Plan for Whale Tail Pit, Appendix C (C. Portt and Associates, 2018), Agnico Eagle also identified a third party external advisor (Dr. Kelly Munkittrick, University of Calgary) who will participate in all MFRAG activities. A draft Memorandum of Understanding and Terms of Reference (TOR) were developed by Agnico Eagle, and reviewed by all parties. The initial meeting of the MFRAG was held on December 12th, 2019 in Montreal, Quebec. Representatives from all member groups were in attendance. The group received presentations by lead researchers involved in each study, and had the opportunity for questions, comments, and open discussion. Each MFRAG member group was requested to provide written comments, if any, by February 28th, 2020. Written comments were distributed to research study leads for consideration.

In 2020, the MFRAG TOR were finalized, and signed by all parties as of March, 2021. The second annual meeting of the MFRAG was held by video conference (due to COVID restrictions) on December 2nd, 2020, with all member groups participating (Agnico Eagle, DFO, KivIA, BLHTO). As in 2019, the group received presentations by lead researchers involved in each study, and had the opportunity for questions, comments, and open discussion. Each MFRAG member group was requested to provide written comments, if any, by January 13th, 2021. Written comments were again distributed to all member groups and the research study leads for consideration. No major concerns with research study progress were raised during the meeting or in follow-up comments.

The third annual meeting of the MFRAG was held by video conference (due to COVID restrictions) on December 14th, 2021, with all member groups participating (Agnico Eagle, DFO, KivIA, BLHTO). As in previous years, the group received presentations by lead researchers involved in each study, and had the opportunity for questions, comments, and open discussion. Each MFRAG member group was requested to provide written comments, if any, by January 25th, 2022. Written comments were received only from the designated external advisor (Dr. Kelly Munkittrick), and again distributed to all member groups and the research study leads for consideration. No major concerns with research study progress were raised during the meeting or in follow-up comments.

The participant list, agenda, and notes from the 2021 MFRAG meeting are provided in the 2021 Fish Habitat Offset Monitoring Report (Appendix 44).

8.10MAMMOTH LAKE TROPHIC CHANGES

As required by NIRB Project Certificate No.008 Condition 23:. ***The Plan for undertaking these additional studies and associated monitoring should be submitted to the NIRB at least 30 days prior to operations, with updates submitted annually thereafter or as may otherwise be required by the NIRB. A report on the results of these studies and associated monitoring should be provided at least 30 days prior to closure. The Proponent shall, reflecting any direction from Environment and Climate Change Canada and Fisheries and Oceans Canada:***

a) Conduct additional analysis to support the conclusions that a change in trophic status in Mammoth Lake would not impact fish productivity;

As part of the FEIS Addendum for the Whale Tail Expansion Project (Agnico Eagle, 2018; Section 6.5), supplemental analyses were conducted to understand impacts of Project-relate changes to water quality in Mammoth Lake (and downstream lakes). It was determined that anticipated increases in phosphorus would increase the lower trophic food base for fish, potentially resulting in numerical increases in forage fish such as Slimy Sculpin, and a minor increase in growth and reproduction rates for large-bodied fish such as Lake Trout and Arctic Char. However, any observed effects are expected to be reversible during late closure or post-closure, and the stability of the fish population is no expected to be compromised. Agnico Eagle is committed to monitoring and verify the phosphorus predictions through ongoing testing conducted as part of the Water Quality and Flow Monitoring Program and the CREMP.

b) Undertake additional site-specific studies to assess the predicted trophic change on lake ecosystem productivity to monitor potential changes to downstream environments; and

Changes in ecosystem productivity for Mammoth Lake and downstream lakes (A76) are being investigated through regular compliance monitoring programs (Water Quality and Flow Monitoring Program and the CREMP), as well as an onsite aquatic productivity study conducted by University of Waterloo (UW) researchers in partnership with Agnico Eagle. A research agreement for this project was signed in late 2018, and details of the study plan were provided in Section 8.8.2.4.1 of the 2018 Annual Report. Annual updates are provided to DFO (May 30 annually). Baseline analyses were completed in 2018, which included small-bodied fish sampling (shoreline electrofishing), and water chemistry sampling in Whale Tail Lake, Mammoth Lake and downstream lakes. Follow-up surveys continued in 2019 - 2021. Final reporting from this research study is expected in late 2022 or early 2023. A complete project update is provided in the Fish Habitat Offset Monitoring Report (Appendix 44).

c) Monitor actual loadings/concentrations in the receiving environment, identify trends in downstream chemistry and productivity, and track trophic status of Mammoth Lake

Changes in actual loadings/concentrations of parameters indicative of nutrient enrichment are monitored in the receiving environment (Mammoth Lake, A76, DS1) through the UW study described above, as well as through the CREMP. Water quality sampling is conducted monthly during April/May, June, July, August, and November/December, and results are reported annually. Trends in downstream chemistry are identified on an annual basis as part of this program – see Appendix 33 (CREMP Report).

8.11 FISH-OUT PROGRAM SUMMARY*

8.11.1 Meadowbank Site

As required by NIRB Project Certificate No.004 Condition 49: ***develop, implement and report on the fish-out programs for the dewatering of Second Portage Lake, Third Portage Lake, Vault Lake and Phaser Lake.***

No fish-out program occurred in 2021.

8.11.2 Whale Tail Site

As required by DFO Authorization 16HCAA-00370 Condition 2.4 and 20HCAA-00275 Clause 2.3.7: ***The proponent shall provided a final fish-out plan to DFO at least three weeks prior to commencing the fish-out program to allow for review and approval***

And

As required by DFO Authorization 16HCAA-00370 Condition 3.2.1: ***All fish-out results shall be provided to DFO in a fish-out monitoring report within 2 months of the completion of a fish-out program. In addition, the Proponent shall provide DFO with photocopies of all field data/notes, copies of photographs with GPS coordinates and an electronic database of data collected and result of all sample analyses. This condition shall be followed in accordance with the General Fish-out Protocol for Lakes and Impoundments in the Northwest Territories and Nunavut***

No fish-out program occurred in 2021.

8.12 AEMP

8.12.1 Introduction

The Aquatic Effects Management Program (AEMP) for the Meadowbank site was developed in 2005 as part of the project's Final Environmental Impact Statement (FEIS), and has been formally implemented since 2006. In December 2012, the AEMP was restructured to serve as an overarching "umbrella" program to integrate results of individual, but related, monitoring programs in accordance with the current NWB Type A Water License 2AM-MEA1530 (Meadowbank site) and NWB Water License 2AM-WTP1830 (Whale Tail site) requirements. The scope of the original 2005 AEMP was renamed the Core Receiving Environment Monitoring Program (CREMP, 2021 report provided in Appendix 33). The AEMP Plan was updated in 2020 (Version 4) to include eventual tailings pore water analysis, and a further update (Version 5) is provided here in Appendix 58.

According to the Plan, this 2021 AEMP synthesis report aims to fulfill the following objectives for each of the Meadowbank and Whale Tail sites:

- Identify potential sources of impact to the receiving environment and verify the conceptual site model;
- Summarize the results of each of the underlying monitoring programs, including the CREMP (the cornerstone broad-level receiving environment monitoring program);
- Review the inter-linkages among the monitoring programs;
- Integrate the results for each component program;
- Identify potential risks to the receiving aquatic ecosystem; and
- Provide conclusions and recommend additional management actions that should be considered in future monitoring.

8.12.2 Potential Sources of Impacts and the Conceptual Site Model (CSM)

The AEMP is founded on a conceptual site model, which is commonly used in ecological risk assessment to help understand potential relationships between site activities and the environment (e.g., water quality or certain ecological receptors). The conceptual site model (CSM) is presented in Table 8-133 and consists of the following elements:

- Stressor sources – the sources of chemical (e.g., metals) or physical (e.g., total suspended solids) stressors that can potentially impact the environment.
- Stressors – the actual agents that have the potential to cause adverse effects to the receiving environment.
- Transport pathways – the ways in which a stressor is released from the source to the receiving environment.
- Exposure media – the media where a stressor occurs in the receiving environment. A single stressor might actually end up in multiple exposure media, with different ones being most important at different times. For example, if an effluent contained mercury, it would initially be found in the water column, and then most likely would settle to sediments where it would then enter the food chain (i.e., biota tissue).
- Receptors of concern – ecological entities selected for a variety of reasons, usually including sensitivity to relevant stressors and perceived ecological importance (i.e. could be determined to be valued ecosystem components).

In 2021, all of the potential pathways, exposure media and receptors of concern listed in Table 8-133 were relevant to the AEMP analysis and were evaluated. The 2021 AEMP evaluation is provided for the Meadowbank site in Section 8.12.3, and for the Whale Tail site in Section 8.12.4.

Table 8-133 Primary transport pathways, exposure media, and receptors of concern for the AEMP.

Transport Pathways	Exposure Media	Receptors of Concern
g,i Effluent	a,d,f,g,h,i,k,m Water	a, g Phytoplankton
f Groundwater	a Sediments	g Zooplankton
i,k Surface water	h Tissue	d,g,h Fish
m Air		a,h Benthic community
NA Direct		d Periphyton
		a,d,k Fish habitat

Notes:

a	Core Receiving Environment Monitoring Program
b	~~Effects Assessment Studies~~ (none in 2021)
c	~~Dike Construction Monitoring~~ (none in 2021)
d	Habitat Compensation Monitoring Program
e	~~Dewatering Monitoring~~ (none in 2021)
f	Groundwater Monitoring
g	MDMER Monitoring
h	EEM Biological Monitoring Studies (conducted in 2020, reported in 2021)
i	Water Quality and Flow Monitoring
j	~~Fish-Out Studies~~ (none in 2021)
k	AWAR and Quarry Water Quality Monitoring
l	Blast Monitoring
m	Air Quality Monitoring
NA	Direct, so measured in exposure medium.

8.12.3 Meadowbank Site AEMP

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 16: ***The results of monitoring under the AEMP.***

8.12.3.1 *Summary of Results of AEMP- Related Monitoring Programs*

In 2021, AEMP-related monitoring programs for the Meadowbank site (excluding the Whale Tail site, which is assessed in Section 8.12.4) consisted of the:

- Core Receiving Environment Monitoring Program (CREMP);
- Habitat Compensation Monitoring Program (HCMP);

- Groundwater Monitoring;
- Metal and Diamond Mining Effluent Regulation (MDMER) Monitoring;
- EEM Biological Monitoring (conducted in 2020, reported in 2021);
- Minesite Water Quality and Flow Monitoring;
- Visual AWAR and Quarries Water Quality Monitoring; and
- Air Quality and Dustfall Monitoring.

The results of these monitoring programs are integrated in the AEMP, and assist in the evaluation of potential effects of mining activities on the aquatic environment.

Programs that are part of the AEMP model but were not required to be conducted in 2021 for the Meadowbank site include: lake dewatering monitoring, dike construction monitoring, blast monitoring, and fish-out studies. Air quality monitoring and the habitat compensation monitoring program were considered as part of the conceptual site model and are included in the AEMP discussion to inform the process, but these programs are not a requirement of the Type A Water License; Part I-1.

Summaries of each AEMP monitoring program are provided throughout this Annual Report, and referenced below, with additional details relevant to the AEMP, as necessary. Table 8-134 further summarizes the results of these programs in 2021 for the Meadowbank site. For detailed results of individual monitoring programs, refer to the appended reports, as referenced below. At an individual level, none of the trigger or guideline exceedances observed through these programs were assessed as having the potential to cause significant risks to the aquatic receiving environment requiring immediate changes in management actions.

Table 8-134 Summary of aquatic effect monitoring program results for the Meadowbank site in 2021

	Core Receiving Environment Monitoring Program	Effects Assessment Studies	Dike Construction Monitoring	Habitat Compensation Monitoring	Dewatering Monitoring	MDMER Monitoring[1]	2020 EEM Biological Monitoring[2]	Water Quality and Flow Monitoring	Fish-Out Studies	Visual AWAR and Quarry Water Quality Monitoring	Blast Monitoring	Groundwater Monitoring
Completed in 2021?	**Yes**	**No**	**No**	**Yes**	**No**	**Yes**	**No***	**Yes**	**No**	**Yes**	**No**	**Yes**
Stressor Variables												
suspended solids	○			○		●		●		○		○
sediment deposition	NA			NA		NA		NA		NA		NA
water-borne toxicants	●			○		○		○		NA		●
sediment toxicants	●			NA		NA		NA		NA		NA
nutrients	○			○		NA		○		NA		NA
other physical stressors	○			NA		○		○		NA		NA
Effects Variables												
Phytoplankton	●			NA		○	○	NA		NA		NA
Zooplankton	NA			NA		○	○	NA		NA		NA
Fish	NA			○		○	●	NA		NA		NA
Benthic invertebrate community	○			NA		NA	●	NA		NA		NA
Periphyton	NA			○		NA	NA	NA		NA		NA
Fish habitat	NA			○		NA	NA	NA		NA		NA

Notes:

*The field program was conducted in 2020; results were submitted to ECCC in July, 2021 and included here as relevant.

1 - Includes current-year effluent quality, acute lethality, and sub-lethal toxicity results
2 - Includes 2018 - 2020 acute lethality and sub-lethal toxicity results and 2020 benthos field surveys. 2018 - 2020 effluent quality was not reviewed in this report.

○ No observed effects

● Trigger or guideline exceedance - early warning explained in report

● Observed effects explained in report (applies to effects variables)

8.12.3.1.1 Meadowbank CREMP

The Core Receiving Environment Monitoring Program report for 2021 is provided in Appendix 33, and additionally summarized in Section 8.1. Highlights in the AEMP context are provided below.

Briefly, no new mine-related changes were recorded in 2021. Similar to previous years, the before-after-control-impact (BACI) analyses identified higher concentrations of dissolved solids and constituent major

ions such as calcium and magnesium at near-field areas compared to baseline/reference. Consistent with previous reporting cycles, there were no trigger exceedances in 2021 for any water quality parameters with CCME water quality guidelines, including metals. The mixed-effects trend analysis was developed in 2021 to complement the BACI analysis and provide a statistically supported understanding of long-term trends in key water chemistry parameters. The trend analysis showed that there is strong evidence that differences in physical/ionic parameters have been stable since 2014 at TPN, TPE and SP, relative to INUG (the reference lake) though there was more variability in year-to-year differences at SP. The spatial pattern and temporal trend of increasing concentrations of physical/ionic parameters may be attributed to activities at the mine. However, there is no evidence to suggest concentrations are increasing year-over-year in water quality, or that the observed concentrations would result in adverse ecological effects (a full literature review to complement this conclusion was presented in the 2019 CREMP Report).

While sediment chemistry sampling was conducted under the CREMP in 2021, all reference area samples were accidentally discarded by the analytical laboratory. Only Meadowbank near-field sites were analyzed, prohibiting comparison to current-year reference sites. Nevertheless, available results suggest that as in previous years, only trigger exceedances for chromium (TPE) were mine-related (likely due to Bay-Goose Dike construction), and these concentrations have stabilized and do not currently pose a risk to benthic invertebrates.

Although a statistically significant increase (relative to baseline/reference) in one near-field phytoplankton community (TPN) was observed in 2021, it was determined to be unlikely that this change was mine-related.

There were no statistically significant changes to the benthic invertebrate community relative to baseline/reference conditions.

8.12.3.1.2 Meadowbank Habitat Compensation Monitoring

The complete 2021 Habitat Compensation Monitoring (HCMP) Report is provided as Appendix 45, and an overall summary is provided in Section 8.8. For HCMP monitoring locations relevant to the Meadowbank AEMP (Meadowbank onsite habitat compensation features), methods and results were as follows.

Briefly, monitoring was conducted in 2021 for the onsite fish habitat compensation features constructed to date (East Dike exterior, Bay-Goose Dike exterior, Dogleg Ponds) as part of a multi-year program to demonstrate whether these features are constructed and functioning as intended.

Dewatering Dike Faces (Exterior)

For the East and Bay-Goose Dikes, this included a field assessment of interstitial water quality, periphyton growth and fish use in 2021, along with a historical review and weight-of-evidence evaluation to confirm criteria for success for these compensation features have been met. These features were constructed in 2009 and 2011, and monitoring was prescribed in the HCMP for a minimum period of 10 years.

Results of the 2021 program indicated:

-All interstitial water quality results were below CCME Water Quality Guidelines for the Protection of Aquatic Life, and overall, water quality measured at dike stations was similar to reference stations.

-Overall, structurally similar periphyton communities were identified at dike face and reference stations, indicating a healthy periphyton community is developing on the dike faces. For the East Dike, periphyton community diversity was comparable to reference stations, and while average biomass and density were less than reference, the range of measured values is beginning to overlap. For the Bay-Goose Dike, periphyton communities had a lower diversity than reference stations, though clear progress is being made towards a more heterogeneous structure. Periphyton biomass and density at these dikes stations remain further below reference levels than the East Dike. Historically some overlap of measured ranges of biomass has occurred, but not in 2021.

-Fish presence around the dike faces in a range of size classes was demonstrated again in 2021 through angling and underwater camera methods. Catch was higher than reference stations (where no fish were captured), though seasonal differences need to be considered, since reference station angling was completed under-ice whereas dike station angling was conducted in the summer.

Overall, dewatering dike faces were constructed as designed in the NNLP and are stable as fish habitat, with suitable water quality for aquatic life, and have recorded fish presence at rates no lower than reference areas. Since periphyton communities are considered healthy and there is no reason to believe that biomass will not eventually reach reference levels, the weight of evidence indicates that dike faces are functioning as fish habitat, as assumed in the NNLP.

Dogleg Ponds

In 2021, monitoring for the Dogleg Ponds included structural assessments (surface area and connectivity), and evaluation of fish presence through angling and underwater camera. Complete bathymetric surveys indicated that changes in surface area have occurred as assumed in the NNLP (+5 – 15%). Visual assessments of connectivity indicated that fish passage between these ponds is likely feasible during freshet only. Connectivity of Dogleg Pond to Second Portage Lake remains under investigation. Fish were identified within both Dogleg Pond and NP-1, which supports NNLP assumptions of access enhancements in this area. Final follow-up monitoring will be conducted along with historical review in 2025 according to the HCMP, prior to determining success of this compensation feature.

8.12.3.1.3 Meadowbank Dike Construction and Dewatering Monitoring

No dike construction or dewatering occurred in 2021.

8.12.3.1.4 Meadowbank Groundwater Monitoring

The complete 2021 Groundwater Monitoring Report is provided in Appendix 42. The following is a brief summary to support the AEMP analysis. A more detailed summary of the 2021 program for the Meadowbank site is provided in Section 8.7.1.

In 2021, a total of 5 wells were operable. In addition, supplementary water quality samples were collected from dike seepage pumping wells and pit wall seeps. Samples were collected by field staff in July, August and September. The 2021 monitoring results at MW-16-01, located downgradient from the Tailings Storage Facility (TSF) and Central Dike, were interpreted to be affected by reclaim water from the South Cell TSF based on similar chemical signatures. The west wall of Pit-E seepage, located hydraulically downgradient of the TSF and Central dike (65.2 Masl vs 115.4 to 132.0 Masl for the five wells), contained elevated arsenic and chloride. These groundwater monitoring results suggest a component of tailings. Concentrations of cyanide have increased in the Pit-E wall seepage since 2018. However, due to current water and operational elevations, all seepage is contained and reports to the In Pit Tailings sumps, and is not interacting with adjacent lakes.

Four In-pit Tailings Deposition (IPD) monitoring wells that are situated hydraulically between the TSF and Second Portage Lake and Third Portage Lake, displayed natural water signatures. This confirms that TSF operations are not impacting the adjacent receiving environment as these wells are situated to intercept surface water flows, or seepage, in an east direction from upgradient sources such as the TSF and IPD. Results can be used as background values for monitoring groundwater quality in the future if changes occur, which may trigger effects analysis under the AEMP.

Based on the 2021 results, groundwater quality does not appear to be affected by the tailings storage facility nor in-pit deposition operations and therefore not likely to be a potential exposure pathway into the receiving environment.

8.12.3.1.5 Meadowbank Site Non-Contact Water and Effluent Monitoring

This section includes discussion of results from water quality monitoring under MDMER (and its Schedule 5, Environmental Effects Monitoring) and Agnico Eagle's Water Quality and Flow Monitoring Plan for managed non-contact water, seepage to the receiving environment, or any water discharged to the receiving environment. Complete results are provided in Section 8.3.1 and Section 8.5, and highlights are summarized here.

8.12.3.1.5.1 Effluent Discharge

In 2021, only East Dike seepage water was discharged to the receiving environment at the Meadowbank site (Second Portage Lake; SPL) as non-contact water. Discharge from ST-8, also named ST-MMER-3, into Second Portage was sporadic from January until May and in December 2021. In April, the TSS MDMER/ Water License maximum monthly mean was exceeded (17.5 mg/L; limit is 15 mg/L) and in May 2021, the maximum monthly average was exceeded (16 mg/L).

As the only effluent discharge point at Meadowbank, Agnico Eagle was required to collect EEM effluent characterization samples for this station. Effluent characterization with lethal and sub-lethal toxicity tests was conducted on three occasions (January 18th, May 3rd and December 13th) and results were reported to Environment & Climate Change Canada (ECCC) via the MERS electronic database reporting system. For both *Daphnia magna* and Rainbow Trout, 0% mortality was reported for tests with 100% effluent. In addition, no sub-lethal effects were reported for any organism in receiving environment exposure area samples.

8.12.3.1.5.2 Mine site Water Collection System

Mine site water collection system monitoring locations with discharge to the receiving environment consisted of the East and West diversion ditches. These ditches were constructed on the north side of the mine site to intercept overland flow and direct it (as non-contact water) to NP-2 Lake and Third Portage Lake, respectively.

For these locations, single samples are collected monthly during open water (June – October) for analysis by an accredited laboratory and compared to NWB Water License criteria that is a monthly mean for TSS (15 mg/L). Daily TSS analyses are also performed by the onsite assay laboratory for management purposes. NWB limits were not exceeded in 2021.

8.12.3.1.5.3 Seepage

Waste Rock Storage Facility Seepage

In 2013, seepage from the TSF through the Meadowbank WRSF was identified at ST-16, and as a result Agnico Eagle initiated a targeted monitoring program for the potential receiving environment in that area (closest receptor being NP-2 Lake). The KivIA requested that Agnico Eagle continue monitoring NP-2 until there is a 5 year period of non-detect cyanide results. The 2014 – 2018 results confirmed no impacts to downstream lakes (NP-1, Dogleg, Second Portage Lake), however, in response to ECCC's comment on the 2018 Annual Report, Agnico Eagle will continue to monitoring water quality in NP-2 on a yearly basis.

In 2021, CN concentrations in NP-2 were below detection limits. As tailings deposition has ended in the north cell and progressive closure activities have resulted in the isolation of the historical sources of contamination from the north cell of the tailings facility, it is evident that closure, water management and mitigation control measures continue to be effective at protecting NP-2.

Mill Seepage

Monitoring in Third Portage Lake in response to the mill seepage through the Assay Lab Road (identified in 2013) continues to indicate that there has been no impacts to the near shore receiving waters of Third Portage Lake. The seepage appears to be effectively contained through construction of an interception trench (2014), a pumping system and repairs within the mill that has contained the source area (repaired in 2015). Pumping is conducted using a recovery well in the interception trench, as required, and sampling is completed for adjacent monitoring wells and a designated near-shore monitoring station in Third Portage Lake.

As in previous years, in 2021, concentrations at the designated monitoring station in TPL were all below the CCME Guideline for the Protection of Aquatic Life for CN Free, copper and iron, the parameters considered indicators of mill seepage.

Follow-up monitoring will continue in 2022.

8.12.3.1.6 Meadowbank EEM Biological Monitoring

Meadowbank's Cycle 4 EEM Interpretive Report was submitted to ECCC on July 1st, 2021. While field work associated with this report was carried out in 2020, results are summarized here and used to assist in the AEMP evaluation as appropriate.

No fish population evaluation or tissue analysis was required for this Cycle 4 program.

Benthic invertebrate community surveys were conducted for the near-field exposure area (Second Portage Lake; SP-NF), with reference-area data from Innuguguayalik Lake (INUG) and Pipedream Lake (PDL). Samples were also collected from a far-field sampling area in Second Portage Lake (SP-FF) that is outside of the 1% effluent mixing zone. This analysis identified one endpoint for which the critical effect size (>2SD difference from reference) was exceeded: benthic invertebrate density was significantly greater at the impact size compared to reference sites. However, the benthic community composition was typical for these Arctic lakes, and very similar to baseline/reference. Overall these results do not indicate degraded conditions due to effluent discharge.

Results of sub-lethal toxicity testing from 2018 - 2020 are summarized in the Cycle 4 interpretive report. However current-year results (2021) are reported under the Effluent Discharge section (Section 8.12.3.1.5.1), and used in this AEMP analysis, so historical results are not reviewed here.

8.12.3.1.7 Meadowbank Fish-Out Studies

No fish-outs were conducted at the Meadowbank site in 2021.

8.12.3.1.8 AWAR and Quarries Water Quality Monitoring

Under the Freshet Action Plan, pre-freshet and freshet inspections were conducted at crossings along the AWAR in 2021. These inspections are conducted to document the presence/absence of flow, erosional concerns and turbidity plumes. Weekly inspections are also conducted along the AWAR on a year round basis. During the freshet and open water season, any visual turbidity plumes or erosion for culverts and bridge crossings along the AWAR are documented by Environmental Technicians. No turbidity plumes or erosional concerns were observed.

Regular inspections of quarries along the AWAR were also performed during the year to ensure that runoff, if any, would be free of any visible sheen and would not impact the environment. No issues with runoff water inside the quarries were noted in 2021.

8.12.3.1.9 Meadowbank Blast Monitoring

In 2021, no blast monitoring was required for the Meadowbank site because mining operations ceased in 2019.

8.12.3.1.10 Meadowbank Air Quality Monitoring

The complete 2021 Air Quality and Dustfall Monitoring Report is provided in Appendix 50 and results are summarized in Section 8.14.1.

For all Meadowbank Site monitoring stations and parameters (suspended particulates, NO_2, dustfall), the vast majority of air quality and dustfall measurements were below relevant short-term regulatory standards or monitoring thresholds (24-h or 30-d). The observed occasional exceedances were considered to be isolated events, and not indicative of trends requiring supplemental mitigation action. All calculated annual averages were less than the relevant criteria for that averaging period.

For dustfall along the AWAR, no relevant exceedances of the established dust management threshold occurred (0.53 mg/cm^2/30 d at 500+m from the road). Total dustfall in one sample exceeded the threshold at 1000 m on the downwind side (km 78), but the analysis of fixed dustfall (inorganic material) was well below the guideline, so the elevated result for total dustfall (inorganic + organic, such as plant material) was considered unrelated to road activity.

Overall, there are no apparent trends towards increasing or unpredicted air quality concerns at the Meadowbank Site in 2021.

8.12.3.2 *Integration of Monitoring Results*

The 2021 AEMP monitoring programs were integrated using the conceptual site model which assists in the evaluation of the transport pathways, provides information on specific media (identifies stressors) and evaluates receptors of concern (effects variables).

According to the AEMP, the results of the monitoring programs were integrated in a mechanistic fashion with a thorough review of results to identify any patterns among the relevant receiving water monitoring programs. In cases where regular exceedances of triggers or guidelines occurred, along with potential for mine-related impacts to the receiving environment, the potential source, stressor, transport pathways, exposure media, and effects measures were further evaluated.

8.12.3.2.1 Identification of Trigger or Guideline Exceedances

As in previous years, two situations occurred where triggers or guidelines were regularly exceeded in the receiving environment, likely as a result of mining activities (as determined through BACI analysis or other interpretation). Both were identified through the CREMP[7]:

1. Mine-related changes in a number of water quality parameters without effects-based thresholds (e.g., CCME water quality criteria) continue to be observed for all near-field lakes (alkalinity, conductivity, hardness, major cations, and total dissolved solids).

[7] While an exceedance of the EEM critical effect size was identified for benthic invertebrate density as measured in 2020 (EEM Biological Monitoring – Cycle 4 Interpretive Report), this increase in density was not indicative of degraded conditions nor supported by annual CREMP monitoring results for benthic invertebrates, so was not investigated further in the AEMP context.

2. Elevated concentrations of chromium continue to be observed in TPE sediment.

Although most water quality and sediment impacts in near-field lakes (TPN, TPE, SP and WAL) in 2021 were similar to findings in previous years and were considered unlikely to cause any adverse effects to the aquatic community, results were reviewed in relation to those from other AEMP programs in Section 8.12.3.2.2 below.

Conceptual site models were developed to assist in linking possible incremental changes in the receiving environment that are evaluated in separate monitoring reports (Figures 17 and 18).

8.12.3.2.2 Evaluation of Potential Sources and Discussion

8.12.3.2.2.1 Changes in Conventional Parameters and Major Ions in Meadowbank Site Receiving Surface Waters

In 2021, as reported in the CREMP, statistically significant mine-related changes were detected relative to baseline/reference conditions at one or more near-field (NF) areas including TPE, TPN, SP and WAL for: conductivity, hardness, total dissolved solids, alkalinity and, major cations. In the absence of effects-based thresholds (e.g., CCME water quality criteria) for these parameters, their CREMP triggers (early warning assessment values) were set at the 95th percentile of baseline data. While these changes to water quality are mine-related, similar to previous years the observed concentrations in 2021 are still relatively low and there is no evidence to suggest concentrations are increasing year-over-year or that the observed concentrations would result in adverse ecological effects (a literature review was conducted in support of this conclusion in the 2019 CREMP Report).

Notwithstanding, consideration was given here to all potential mine-related sources (namely, effluent release, seepage, managed surface water, groundwater, and fugitive dust) that may contribute to changes in general water quality parameters. The conceptual site model presented in Figure 17 assists in understanding the possible linkages (i.e., effect to stressor from the source).

Based on the monitoring results for all potential pathways in 2021, it was determined that the most likely source of changes to conventional parameters continues to be effluent discharge and potentially, managed non-contact water discharge (likely current and historical).

The text below provides a review of results for both regulated parameters and the non-regulated parameters described above with CREMP trigger exceedances for all potential pathways, to assist in identifying sources.

Evaluation of Effluent Discharge and Seepage Results

In 2021, the only source of effluent discharge for the Meadowbank site was East Dike seepage, which was released to Second Portage Lake. As described in Section 8.12.3.1.5.1, water quality samples collected in 2021 at this final discharge point (East Dike discharge – ST-8/ST-MMER-3) exceeded NWB license limits and MDMER criteria for TSS on two occasions in the spring. No sublethal toxicity was reported in 100% effluent samples.

Since effluent may be contributing to changes in non-regulated water quality parameters in the receiving environment of SP and TPE, available results for those parameters exceeding triggers in the CREMP report were reviewed (hardness/alkalinity, conductivity, major ions, TDS) in this context. Since these parameters are largely inter-related, conductivity was used as an indicator parameter in this review. While CREMP conductivity triggers (set at the 95th centile of baseline data), do not specifically apply to effluent results from an effects assessment perspective, they are used here as a comparison to further understand the potential for a source to be contributing to observations of water quality changes in the receiving environment programs.

Conductivity results for the East Dike seepage effluent in 2021 (64.8 – 72.1 µS/cm; Table 8-3) exceeded the CREMP water quality trigger of 27.4 µS/cm. Exceedances also occurred in the EEM exposure area (35.2 – 42.0 µS/cm) and reference area, though to a lesser degree (27.9 – 28.3 µS/cm). These results suggest that effluent discharge may be contributing to the observed water quality changes in the CREMP near-field lakes, as determined in previous years and noted in the CREMP report.

In addition to effluent, the Portage Waste Rock Storage Facility seepage event in July 2013 during which water migrated through the perimeter rockfill road at sample station ST-16 and into NP-2 Lake is assessed as a potential historical source of impacts to NP-2 and ultimately Second Portage Lake. However, since 2014, a permanent pumping system has been operating at ST-16, to collect water and pump it to the TSF North Cell, so that pathway is no longer considered a release pathway, or likely source of impacts to the receiving environment. Nevertheless, water quality in NP-2 is monitored during open water, and measured concentrations of the indicator parameters of interest here were reviewed. Field-measured conductivity in 2021 were generally around the trigger value ranging from 16.7 to 38.2 µS/cm, with the exception of a pulse of 148 µS/cm in July in NP-2 (ST-6 Table 8-17). These results suggest that the NP-2 – NP-1 – Dogleg Lake pathway is an unlikely contributer to the changes in water quality observed in Second Portage Lake.

Evaluation of Managed Surface Water Results

The East and West Diversion ditches were constructed in 2012 around the North Cell TSF and the Portage RSF. The diversion ditches are designed to redirect the fresh water from the northern area watershed away from the tailings pond and RSF and direct it to Second Portage Lake via NP-2 (East diversion ditch) and Third Portage Lake (West diversion ditch). Much like results for effluent discharge, no regulatory criteria were exceeded for this managed surface water in 2021. However, monthly field-measured conductivity in both diversion ditch locations (East (ST-5): 51.7-164.3 µS/cm; West (ST-6): 16.7 – 148 µS/cm) commonly exceeded the CREMP trigger (27.4 µS/cm). Although the trigger does not apply directly to these locations, it provides a benchmark to compare to and suggests these are potential sources of elevated conductivity and related parameters observed in CREMP results in Second and Third Portage Lakes.

Evaluation of Groundwater Results

Results of groundwater monitoring have indicated that water quality in wells located immediately adjacent to the receiving environment and just inside the perimeter of the Portage area dewatering dikes is indicative of natural groundwater with TSF and IPD water reporting to the pits. Furthermore, the observed CREMP trigger exceedances do not have signatures consistent with the primary onsite source of potential groundwater contamination (reclaim water). Therefore CREMP trigger exceedances in the

receiving environment surface water do not appear to be caused by an interaction with any potential onsite source of contamination via groundwater.

Evaluation of Air Quality and Dustfall Results

Based on conceptual models, another potential contributor could be fugitive dust migration. Review of air quality monitoring results indicates that rates of dustfall and concentrations of suspended particulates rarely exceed available standards or guidelines at minesite monitoring stations. It is therefore considered unlikely that dust generation has been great enough to cause the observed changes in water quality parameters, particularly since all near-field lakes monitored under the CREMP are of relatively large surface area and volume.

Effects on Receptors of Concern

Although these results and ongoing CREMP analyses indicate that the observed changes in water chemistry are likely mine-related, a thorough literature review and analysis in the 2019 CREMP report indicates that concentrations of these parameters at Meadowbank (which were similar in 2021) remain well below concentrations associated with adverse effects reported in the literature.

This conclusion is further corroborated by results of associated monitoring programs for receptors of concern (phytoplankton, periphyton, benthic invertebrates, zooplankaton, fish & fish habitat) in 2021 or the last available year:

- Although TSS in effluent discharge periodically exceeded license and MDMER limits, there were no lethal or sublethal toxicity effects reported for EEM testing in 2021. Similarly, the complete review of sublethal toxicity data presented in the 2021 EEM Interpretive Report (tests from 2018 – 2020) indicated that 48 of 49 tests met thresholds for further analysis[8] (in one 2020 test an IC25 was less than 30% effluent concentration (growth for Fathead Minnow), but these test results were identified as anomalous based widely ranging mortality across replicates).

- As reported in the CREMP, no mine-related changes in phytoplankton or benthic invertebrate communities were observed (increases in phytoplankton were observed in 2021 in TPN, but were determined as unlikely to be mine-related).

- Similarly, while results of EEM biological monitoring in 2020 (benthic invertebrate assessment) identified higher benthic invertebrate density at the impact sampling area (SP) than far field and reference sites, samples contained an assemblage of benthic organisms that are typical for these Arctic systems, and these results did not indicate degraded conditions as a result of mine operations.

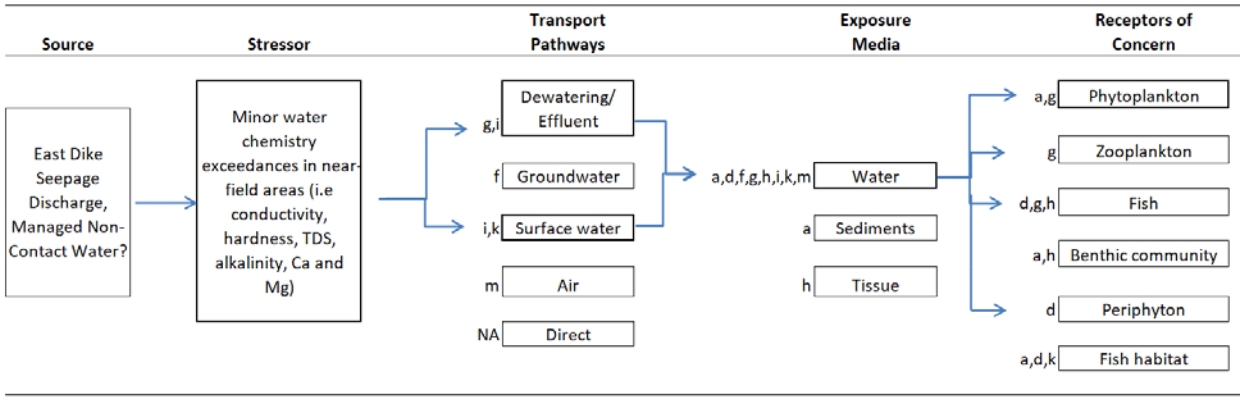
- Finally, while HCMP program results in 2021 indicate that periphyton growth on dike faces continues to be slow (as expected in Arctic ultraoligotrophic lakes), interstitial water quality meets CCME criteria, and fish presence around the dike faces has been confirmed.

[8] In one 2020 test an IC25 was less than the 30% effluent concentration threshold (growth for Fathead Minnow), but these test results were identified as anomalous based widely ranging mortality across replicates.

Management Actions

As a result of this review, any mine-related impacts to receptors of concern will continue to be assessed through the scheduled monitoring programs and no adaptive management is planned in relation to the observed changes in conventional parameters and major ions for near-field lakes.

Figure 17 Meadowbank integrated conceptual site model for 2021 AEMP assessment of changes in near-field water quality parameters



Notes:

a	Core Receiving Environment Monitoring Program
b	Effects Assessment Studies
c	Dike Construction Monitoring
d	Habitat Compensation Monitoring Program
e	Dewatering Monitoring
f	Groundwater Monitoring
g	MDMER Monitoring
h	EEM Biological Monitoring Studies
i	Water Quality and Flow Monitoring
j	Fish-Out Studies
k	AWPAR and Quarry Water Quality Montoring
l	Blasting
m	Air quality monitoring
NA	Direct, so measured in exposure medium.

8.12.3.2.2.1 Changes in Chromium in TPE Sediment

The trigger exceedance for chromium in sediment at TPE was identified in 2013 and coring samples in 2014 determined that there was a temporal trend in chromium concentration increases within a localized area of TPE. Although elevated chromium levels have also been found in reference areas of PDL and TPS, the TPE chromium exceedance is likely related to mine activities; more specifically, due to Bay-Goose dike capping and construction activity. This may be explained by the fact that ultramafic rock, which is commonly found in the region and was used to construct the Bay-Goose dike, is generally known to contain elevated concentrations of chromium (e.g., on the order of 2000 mg/kg) relative to other rock types (Motzer and Engineers, 2004).

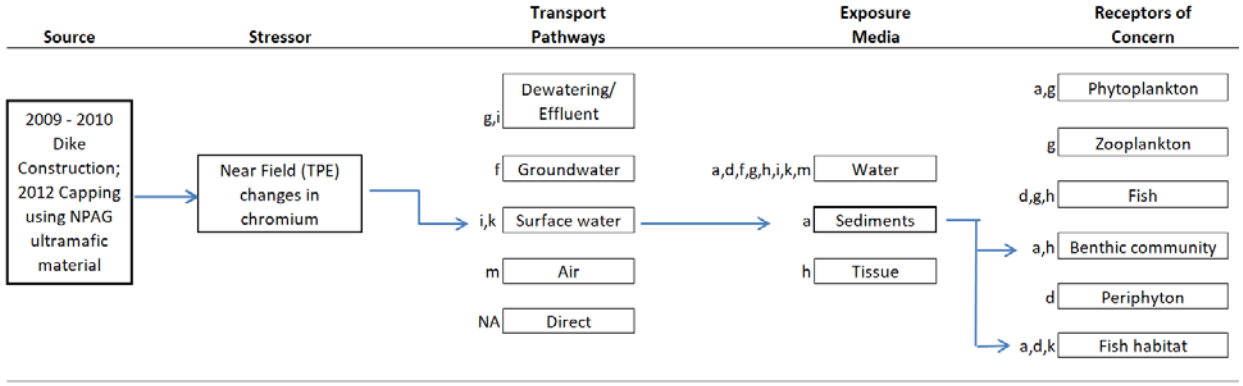
Figure 18 provides the conceptual site model of impacts due to capping and construction of the Bay-Goose dike. Previous reviews of sediment data and historical water quality data have ruled out effluent and dust as the most likely sources of change, and dike construction was identified as the contributing event. Since that time, efforts have focused on determining the extent and ecological significance of the

observed changes on receptors of concern (primarly the benthic invertebrate community, as well as fish habitat provided by dike faces).

To this end, targeted studies were conducted in 2015, 2018, and 2019. While sediment chemistry results have indicated increased concentrations of chromium at TPE that are likely related to dike construction, targeted bioavailability studies and the ongoing benthos community assessment reported in 2020 and confirmed in the 2021 CREMP clearly demonstrate that the change is not adversely affecting the benthos community. These results are supported by HCMP monitoring in 2021, which indicated healthy periphyton communities, suitable interstitial water quality, and presence of fish at rates no lower than reference areas around the Bay-Goose dike faces.

As a result of this review, no further adaptive management related to chromium in TPE sediment is planned.

Figure 18 Meadowbank integrated conceptual site model for 2021 AEMP assessment of elevated chromium in TPE sediment



Notes:

a	Core Receiving Environment Monitoring Program
b	Effects Assessment Studies
c	Dike Construction Monitoring
d	Habitat Compensation Monitoring Program
e	Dewatering Monitoring
f	Groundwater Monitoring
g	MDMER Monitoring
h	EEM Biological Monitoring Studies
i	Water Quality and Flow Monitoring
j	Fish-Out Studies
k	AWPAR and Quarry Water Quality Montoring
l	Blasting
m	Air quality monitoring
NA	Direct, so measured in exposure medium.

8.12.3.3 *Recommended Management Actions*

Based on the integration of results from these monitoring programs, the AEMP evaluation did not find an apparent excess risk to the receiving aquatic environment due to mine-related activities. No supplemental management actions are therefore planned for 2022 in relation to results of this AEMP analysis.

The following routine monitoring programs are planned:

- CREMP
    - Routine CREMP monitoring (limnology, water quality, phytoplankton, sediment grab samples, benthic community assessment) in 2022.
- MDMER & Water Quality and Flow Monitoring
    - Monitoring will continue as per the monitoring plan, NWB Water License and MDMER requirements in 2022.
- EEM Biological Monitoring Studies
    - EEM biological monitoring was conducted in 2020 and was reported in July, 2021, according to legislated timelines.
- Habitat Compensation Monitoring
    - The regularly scheduled HCMP monitoring will be conducted in 2023.
- Dewatering Monitoring
    - No lake dewatering is planned for the Meadowbank site in 2022.
- Fish-out Monitoring
    - No fish outs for the Meadowbank site are planned for 2022.
- Blast Monitoring
    - No blasting is planned to occur for the Meadowbank site in 2022.
- Groundwater Monitoring
    - Groundwater Monitoring Report recommendations for the Meadowbank site (Appendix 42) will continue to be followed in 2022.
- Air Quality Monitoring
    - No specific recommendations for additional management or monitoring actions related to air quality concerns are made for 2022.

8.12.4 Whale Tail Site AEMP

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 19: ***The results of monitoring under the AEMP.***

8.12.4.1 *Summary of Results of AEMP- Related Monitoring Programs*

In 2021, AEMP-related monitoring programs for the Whale Tail site included:

- Core Receiving Environment Monitoring Program (CREMP);
- Fish Habitat Offsets Monitoring;
- Groundwater Monitoring;
- Metal and Diamond Mining Effluent Regulation (MDMER) Monitoring;
- EEM Biological Studies (conducted in 2020, reported in July 2021);
- Minesite Water Quality and Flow Monitoring;
- Visual WTHR and Quarries Water Quality Monitoring;
- Blast Monitoring; and
- Air Quality Monitoring.

The results of these monitoring programs are integrated in the AEMP, and assist in the evaluation of potential effects of mining activities on the aquatic environment. Air quality, the EEM biological studies and the Fish Habitat Offsets Monitoring Program are considered as part of the conceptual site model and are included in the AEMP discussion to inform the process, but these programs are not a requirement of the AEMP under the Type A Water License; Part I-1.

Summaries of each AEMP monitoring program are provided throughout this Annual Report, and referenced below, with additional details relevant to the AEMP, as necessary. Table 8-135 further summarizes the results of these programs in 2021 for the Whale Tail site. For detailed results of individual monitoring programs, refer to the appended reports, as referenced below. At the individual level, none of the effects-based triggers or guideline exceedances observed through these programs were assessed as having the potential to cause significant risks to the aquatic receiving environment requiring immediate changes in management actions. However based on measured concentrations of phosphorus in near-field lakes, a move to a Level 1 management strategy will be implemented in 2022 (2021 CREMP Report Section 5.3.4 and Table 2-4, and further described below in Section 10.4).

Table 8-135 Summary of aquatic effect monitoring program results for the Whale Tail site in 2021

	Core Receiving Environment Monitoring Program	Effects Assessment Studies	Dike Construction Monitoring	Fish Habitat Offsets Monitoring	Dewatering Monitoring	MDMER Monitoring[1]	2020 EEM Biological Monitoring[2]	Water Quality and Flow Monitoring	Fish-Out Studies	Visual AWAR and Quarry Water Quality Monitoring	Blast Monitoring	Groundwater Monitoring
Completed in 2021?	**Yes**	**No**	**No**	**Yes**	**No**	**Yes**	**No***	**Yes**	**No**	**Yes**	**Yes**	**Yes**
Stressor Variables												
suspended solids	○			○		○	NA	○		○	NA	○
sediment deposition	NA			NA		NA	NA	NA		NA	NA	NA
water-borne toxicants	●			●		○	○	○		NA	NA	○
sediment toxicants	○			NA		NA	NA	NA		NA	NA	NA
nutrients	●			●		NA	○	○		NA	NA	NA
other physical stressors	○			NA		○	○	○		NA	NA	NA
Effects Variables												
Phytoplankton	●			NA		○	○	NA		NA	NA	NA
Zooplankton	NA			NA		○	○	NA		NA	NA	NA
Fish	NA			○		○	○	NA		NA	NA	NA
Benthic invertebrate community	○			NA		NA	●	NA		NA	NA	NA
Periphyton	NA			NA**		NA	NA	NA		NA	NA	NA
Fish habitat	NA			○		NA	NA	NA		NA	○	NA

Notes:

*The field program was conducted in 2020 at Whale Tail Pit; results were submitted to ECCC in July, 2021.

**Methods pilot study only in 2021.

1 - Includes current-year acute lethality and sub-lethal toxicity results

2 - Includes 2018 - 2020 effluent quality, acute lethality and sub-lethal toxicity results and 2020 EEM field surveys (benthos, fish).

○ No observed effects

● Trigger or guideline exceedance - early warning explained in report

● Observed effects explained in report (applies to effects variables)

8.12.4.1.1 Whale Tail CREMP

The Core Receiving Environment Monitoring Program report for 2021 is provided in Appendix 33, and additionally summarized in Section 8.1. Highlights in the AEMP context are provided below.

Briefly, some water quality trigger exceedances and significant differences from baseline/reference conditions were observed in some near field and midfield areas for: conventional parameters, ionic compounds (e.g. calcium, magnesium), nutrients, lithium and silicon. Similar to results seen over the years at the Meadowbank study lakes, these trends represent increases above baseline/reference conditions only; except for total phosphorus, none of the analytes with concentration increases above

trigger values that were statistically significant in 2021 have CCME effects-based guidelines for the protection of aquatic life and concentrations of these parameters remain low in absolute terms.

Phytoplankton biomass was highly variable in 2021, with some observed increases in total biomass, density and community composition (taxa richness) relative to control or baseline conditions. However, only the increase in total biomass for A20 (part of the flooded and expanded Whale Tail Lake) was statistically significant (222% increase). However, as discussed in the CREMP, changes in primary productivity were predicted in the FEIS and some portion of the observed increase in 2021 may be a result of natural variation.

In 2021, sediment chemistry results were only available for grab samples collected in near and mid-field areas WTS, MAM, and A76 due to an error at the analytical laboratory. Concentrations were similar to results from the baseline period and early operations. Formal statistical comparison is only performed for sediment cores, scheduled to be collected next in 2023.

Results of benthic invertebrate community sampling found no statistically significant changes in abundance. While some apparent (not statistically significant) changes were reported, none were attributed to mine activity. Taxa richness was also examined. While a slight increase in richness was observed in NEM and a slight decline was observed in WTS, only the observed decline at far-field lake DS1 was greater than the 20% effect size and statistically significant in the BACI analysis. However this was considered unlikely to be mine related since these changes were not observed at near or mid-field areas.

8.12.4.1.2 Dike Construction and Dewatering Monitoring

No in water dike construction or lake dewatering was conducted in 2021.

8.12.4.1.3 Whale Tail Site Non-Contact Water and Effluent Monitoring

This section includes discussion of results from water quality monitoring under MDMER or the Water Quality and Flow Monitoring Plan for managed non-contact water or water discharged to the receiving environment.

8.12.4.1.3.1 Effluent Discharge

Effluent discharge results in relation to guideline values are summarized here and full results (Section 8.5) are used as necessary to inform the evaluation of causality for any observed guideline exceedances in the receiving environment (Section 8.12.4.2).

ST-MDMER-5/ST-WT-24a (Whale Tail South Temporary Diffuser)

The dewatering of Whale Tail North was completed on May 20th, 2020. This station was used as a temporary diffuser to discharge effluent from the Whale Tail Attenuation Pond periodically through the submerged diffuser into Whale Tail Lake South from March until June, 2021.

Water quality samples were taken from the discharge location (ST-MDMER-5), the receiving environment exposure area (ST-MDMER-5-EEM-WTSE) and reference area (TPS or ST-MMER-1-EEM-TPS) for MDMER water chemistry and EEM toxicity testing.

No exceedances of relevant MDMER or NWB Water License criteria for water chemistry occurred.

Whole-water effluent acute lethality tests (Rainbow trout and *Daphnia magna*) were conducted monthly during discharge (five occasions in 2021). For one test, 10% mortality for Rainbow Trout was observed and on all other occasions mortality in 100% effluent was 0%. Results were reported to ECCC via the MERS electronic database reporting system, and will be further assessed in the next EEM Biological Monitoring Interpretive Report (to be submitted in 2024).

ST-MDMER-7/ST-WT-2 (Mammoth Lake East Diffuser)

In 2021, discharge from the Whale Tail Attenuation Pond to Mammoth Lake via ST-MDMER-7 submerged diffuser occurred through most of the open water season (June until September).

Water quality samples were taken from the discharge location (ST-MDMER-7), the receiving environment exposure area (EEM-7-MAME-2) and reference area (TPS or ST-MMER-1-EEM-TPS) for MDMER water chemistry and EEM toxicity analysis.

No exceedances of relevant MDMER or NWB Water License criteria for water chemistry occurred.

Acute lethality tests with 100% effluent for Rainbow Trout and *Daphnia magna* were conducted on four occasions and 0% mortality was reported in all tests. EEM sublethal toxicity testing was also conducted for effluent at ST-MDMER-7 on two occasions (July and August); no sublethal effects were reported for *Ceriodaphnia dubia*, *Lemna minor,* Fathead minnow *and Pseudokirchneriella subcapitata*. This data was previously reported to ECCC via the MERS electronic database reporting system, and the complete interpretive report will be submitted in 2024.

ST-MDMER-8/ST-WT-2a (Mammoth Lake East Diffuser)

This discharge point with release to Mammoth Lake via a submerged diffuser was used for Whale Tail Attenuation Pond discharge occurring in January, February, October and November, 2021.

Water quality samples were taken from the discharge location (ST-MDMER-8), the receiving environment exposure area (EEM-7-MAME-2) and reference area (TPS or ST-MMER-1-EEM-TPS) for MDMER water chemistry and EEM toxicity analysis.

All water chemistry results complied with MDMER and NWB Water License water quality criteria.

Acute lethality tests for Rainbow Trout and *Daphnia magna* were conducted on three occasions, and no mortality was reported. This data was previously reported to ECCC via the MERS electronic database reporting system, and the complete interpretive report will be submitted in 2024.

ST-MDMER-11/ST-WT-24b (Whale Tail South Permanent Diffuser)

This discharge point with release to Whale Tail South was used to discharge Whale Tail Attenuation Pond water in January, February, June, October and November, 2021.

Water quality samples were taken from the discharge location (ST-MDMER-11), the receiving environment exposure area (WTSE-1) and reference area (TPS or ST-MMER-1-EEM-TPS) for MDMER water chemistry and EEM toxicity analysis.

No exceedances of relevant MDMER or NWB Water License criteria for water chemistry occurred.

Acute lethality tests for Rainbow Trout and *Daphnia magna* were conducted on three occasions, and no mortality was reported. This data was previously reported to Environment Canada via the MERS electronic database reporting system, and the complete interpretive report will be submitted in 2024.

8.12.4.1.3.2 Mine site Water Collection System

Water quality sampling was conducted for various locations involved in onsite water management under the Project's NWB Water License. Those locations with actual or potential direct interaction with the receiving environment include:

-Lake A47 (ST-WT-6)

- This lake as dewatered in 2020 as per the Water License and FAA.

-Whale Tail South Channel (ST-WT-13)

- Water from the Whale Tail South Channel was sampled on a monthly basis during open water season. Water License TSS limits was not exceeded in 2021.

-Lake A16 (Mammoth Lake) outlet (ST-WT-14)

- In 2021, water from Lake A16 outlet (ST-WT-14) was sampled in July, August, and September during open water. There are no license limits.

-Lake A15 (ST-WT-15)

- In 2021, water from Lake A15 outlet (ST-WT-15) was sampled in July, August, and September during open water. There are no license limits.

-Whale Tail Dike seepage (ST-WT-17)

- Seepage was pumped to the Whale Tail Attenuation Pond and managed accordingly (no license limits on seepage itself).

-IVR Diversion Channel (ST-WT-37) (new in 2021)

- Commissioned during freshet 2021, the purpose is to direct non-contact water from the North-East watershed to Nemo Lake. Water License TSS limits was not exceeded in 2021.

Complete water quality monitoring results for these locations in 2021 are provided in Section 8.5.3.2 and used as necessary below (Section 8.12.4.2) to inform causality of any observed guideline exceedances in the receiving environment.

8.12.4.1.3.3 Seepage

In addition to monitoring for specified locations or events, seepage and runoff from the landfill, waste rock storage facilities, and associated dikes/berms are monitored according to NWB Water License Schedule B, Item 13. Briefly, in 2021, monitoring and mitigation related to seepage and runoff included:

-*Seepage through dewatering dikes*

- None observed other than Whale Tail (discussed in previous section).

-*Seepage and runoff from the landfill*

- None observed.

-*Subsurface seepage and surface runoff from Whale Tail and IVR WRSF*

- No subsurface seepage was observed from the WRSF in 2021. Surface runoff were collected and managed as per the strategy detailed in the water management plan

-WRSF Dike

- Results of the 2021 environmental monitoring of the toe of the WRSF dike indicates that there were negligible effects from the WRSF pond seepage on the water quality and sediments in Mammoth Lake. This corresponds with the conclusions from the 2019 Mammoth Lake Sediment Sampling Report completed by the KivIA in November 2019.

- No flow was observed at the toe of the WRSF Dike in 2021.

8.12.4.1.4 EEM Biological Monitoring

On July 26th, 2019, Agnico Eagle provided to ECCC the first EEM Biological Study Design for the Whale Tail site (Appendix 39 of the 2019 Annual Report). Comments on the study design were received on February 10th, 2020 and Agnico Eagle's response was submitted on June 19th, 2020. ECCC approval for this EEM Cycle 1 Study Design was received on July 3rd, 2020, and the field program proceeded in 2020. The Cycle 1 Interpretative Report was submitted on July 26th, 2021. The full data of the study has been processed and results are presented in Appendix 35.

Consistent with previous EEM studies conducted at Meadowbank, Lake Trout and Slimy Sculpin were the sentinel fish species for this study. Due to lake specific differences between the two selected reference lakes, analyses for Lake Trout were conducted using only the data from Mammoth Lake (exposure area) and reference Lake 8. In summary, for Lake Trout and Slimy Sculpin, Mammoth Lake does not differ significantly from one or both reference lakes for key effects indicators and therefore there are no measurable effluent-related effects to fish.

The 2020 EEM benthic invertebrates assessment compared an exposure area in Mammoth Lake (MAM), with reference-area data from Lake D1 and Lake 8. Benthos have been sampled from MAM since 2015 as part of the CREMP, while MAM has been exposed to effluent since 2019. Benthos have been collected from Lake D1 and Lake 8 since 2018. Benthic invertebrates were collected in August 2020 for this study. Effects assessment involved use of baseline period data dating back to 2015, and testing of before-after-control-impact (BACI) hypotheses. The differences in benthos reflected natural differences in sediment character and some of the observed variations in core indices of composition were related to variations in sampling depth and substrate total organic carbon (TOC). Testing for spatio-temporal variations, therefore, were carried out on residuals of the core indices, after taking into account the variations related to underlying physical variables such as TOC. Across all comparisons for the four core indices of composition (abundance, evenness, and NMDS axis 1 and 2 scores, which are measures of community composition), some potential effluent-related differences were found but only the effect size for abundance (2.3 standard deviations; SD) exceeded the critical effect size of +/-2SD (abundance was significantly higher in the exposure area compared to reference). However despite the generally higher numbers of benthic organisms in the Mammoth Lake sampling area, the composition of the benthic community was very similar to what has been observed in the reference lakes. NMDS axis scores in 2020 for Mammoth Lake were within the range of values from reference lakes. Further, the benthic taxa do not indicate degraded conditions and contained an assemblage of organisms that are typical for these Arctic systems. Overall, based on the analyses, it was determined that the observed effluent-related effects, if real, were subtle.

As required under the Metal and Diamond Mining Effluent Regulations, the next interpretive report and biological monitoring data are due on July 27th, 2024.

8.12.4.1.5 Fish Habitat Offset Monitoring

The complete 2021 Fish Habitat Offsets Monitoring Report for the Whale Tail site is provided as Appendix 44, and summarized in Section 8.8.2.

Briefly, monitoring of constructed offsets (flood zone habitat) was conducted in 2021 under the pre-offsetting ecological monitoring program of the Fish Habitat Offsets Monitoring Plan (FHOMP; June, 2021). The intent of this program is to determine whether flooded terrestrial zones of Whale Tail Lake and Lake A18 will provide suitable fish habitat as assumed in the Project's fish habitat offsetting plans, prior to construction of the permanent water retentions sills (est. 2026). Pre-offsetting monitoring includes assessments of open-lake water quality, periphyton growth, and fish use of the flood zone habitat. In 2021, water quality was assessed through the CREMP, a periphyton pilot study was conducted to assess feasibility of methods, and shoreline populations of small-bodied fish were assessed through electrofishing surveys. Results are presented in a data report format and final analyses will be completed following the final (2023) field season for this program.

Overall, results to date indicate suitable water quality, measurable periphyton growth, and fish presence in flooded shoreline habitat at rates no lower than reference areas.

In addition to this pre-offsetting ecological monitoring, six research studies form complementary measures for Whale Tail Pit offsetting. Due to delays in 2020 and 2021, largely as a result of the COVID-19 pandemic, some study periods have been extended by 1 or 2 years, but overall study objectives are on track for completion as designed. In 2021, Study 4: Arctic Grayling Occupancy Modelling (Lead Researcher: H. Swanson, University of Waterloo) was completed and criteria for success were met with publication of a peer-reviewed manuscript (Reference: Ellenor, J.R., P.A. Cott and H.K. Swanson (2021). Occupancy of young-of-year Artic grayling (*Thymallus arcticus*) in Barrenland streams. *Hydrobiologia* (published online 15 November 2021). Available at: https://link.springer.com/article/10.1007%2Fs10750-021-04742-3).

8.12.4.1.6 Whale Tail Fish-Out Studies

No fish-outs were conducted in 2021.

8.12.4.1.7 Whale Tail Haul Road and Quarries Water Quality Monitoring

Visual inspections for freshet monitoring under the Freshet Action Plan occur daily or weekly during freshet for onsite and Whale Tail Haul road water management infrastructure including culverts, ditches, bridges, Whale Tail South channel and IVR diversion ditch. Weekly inspections are also conducted on a year-round basis. An inspection log is maintained, documenting general conditions at each location, observations on flow rates and clarity, turbidity sample collection (as required), and any mitigation measures that are implemented. Details are provided in Section 8.5.3.2.17.

Briefly, in 2021, no major erosion concerns that required mitigation actions were identified during visual inspections for Whale Tail Haul Road water management infrastructure (e.g. scour, bed erosion, etc.). Based on visual assessments for turbidity, no water quality samples were required to be collected for measurement of TSS. As precautionary measures, straw booms or woodchip booms were installed for some culverts and bridges to reduce potential for turbidity.

For onsite inspections, no major erosional concerns were observed during visual inspections (e.g. scour, bed erosion, gullying, etc.). Based on visual assessments for turbidity, no water quality samples were required to be collected for measurement of TSS. As precautionary measures, straw booms were installed for some culverts to reduce potential for turbidity.

8.12.4.1.8 Whale Tail Blast Monitoring

A Blast Monitoring Report is produced annually, and complete results are provided in that document (Appendix 41).

Briefly, every blast is monitored with an Instantel Minimate Blaster to ensure that vibrations generated by blasting (peak particle velocity; PPV) are less than 13 mm/sec and the overpressure (instantaneous pressure change; IPC) is under 50 KPa at the nearest fish-bearing waterbody (on recommendation of DFO). The results of blast monitoring are systematically analyzed by the Engineering Department within 24 hours following the blasting operation. The blast monitoring results are interpreted and a blast mitigation plan is implemented immediately if the vibrations or the overpressure exceed the guidelines.

For the purposes of fish and fish habitat protection, PPV and IPC was recorded throughout 2021 during blasting activities at Whale Tail and IVR Pits as well as during the construction of the Whale Tail South Channel.

No IPC exceedances occurred in 2021, and no PPV exceedances were recorded.

8.12.4.1.9 Whale Tail Groundwater Monitoring

A complete summary of groundwater monitoring is provided in Section 8.7.2, and the Whale Tail Pit Project - 2021 Groundwater Management Monitoring Report provided in Appendix 43.

For the Whale Tail site, groundwater monitoring was conducted in 2021 according to the Groundwater Monitoring Plan (2019) to update site water quality and water balance models, primarily in relation to Whale Tail Pit groundwater inflows. This data will support water management activities and water quality planning for pit reflooding.

Through the Groundwater Monitoring Plan, both groundwater inflow quantity and quality (TDS) are compared to FEIS Addendum model predictions. In 2021, Westbay System Port 2 and 6 groundwater data were not considered reliable. However, the 2021 program estimated “formation water quality” in Ports 3 and 4 were considered reliable, consistent with 2016 models and therefore deemed appropriate for analysis against current models. Groundwater quality results found lower TDS in Ports 3 and 4 in 2021, which may reflect a shift in groundwater conditions resulting from dewatering and pit operations. TDS concentrations should be reviewed in 2022. Furthermore, concentrations of metals and arsenic in groundwater were low in 2021. In 2021, hydraulic heads measured in the Westbay System decreased

from the pre-development phase which is attributed to the dewatering of the north basin and open pit operations. Overall, inflow quality and quality results show that, groundwater quality is not likely to have a significant effect on mine surface water quality and overall, the 2021 results do not deviate significantly from the FEIS assumptions.

There are no license limits or trigger values for groundwater quality and sampling is performed primarily to inform pit and underground inflow water quality.

8.12.4.1.10 Whale Tail Air Quality Monitoring

The complete 2021 Air Quality and Dustfall Monitoring Report is provided in Appendix 50, and summarized in Section 8.14.2. The objective of this program is to measure ambient outdoor concentrations of dustfall, NO_2, and suspended particulates (TSP, PM_{10}, $PM_{2.5}$) at various monitoring locations around the Meadowbank and Whale Tail sites, Meadowbank All-Weather Access Road (AWAR), and Whale Tail Haul Road (WTHR).

Similar to results for the Meadowbank Site, the vast majority of air quality and dustfall measurements collected at the Whale Tail Site in 2021 were below relevant short-term regulatory standards or monitoring thresholds (24-h or 30-d). Among 176 suspended particulate results for the 24-h averaging time, three exceeded regulatory criteria (two TSP, one PM_{10}), but exceedances at this location were predicted in the Project FEIS. All $PM_{2.5}$ results for the 24-h averaging time were less than regulatory criteria and FEIS predictions, as were calculated annual averages for all size fractions. Annual average NO_2 as measured using passive samplers met the GN guideline and CAAQS for both Whale Tail Site stations. All reportable results for continuous NO_2 monitoring were less than the relevant 1-h and 24-h standards (GN and/or CAAQS). Measured dustfall at onsite stations and Whale Tail Haul Road transects met monitoring thresholds in all cases.

Overall, there are no apparent trends towards increasing or unpredicted air quality concerns at the Whale Tail Site in 2021.

8.12.4.2 *Integration of Monitoring Results*

The 2021 AEMP monitoring programs were integrated using the conceptual site model which assists in the evaluation of the transport pathways, provides information on specific media (identifies stressors) and evaluates receptors of concern (effects variables).

The results of the monitoring programs were integrated in a mechanistic fashion based on a thorough review to identify any patterns among the relevant receiving water monitoring programs. In cases where exceedances of triggers or guidelines occurred, along with potential for mine-related impacts to the receiving environment, the potential source, stressor, transport pathways, exposure media, and effects measures were evaluated.

8.12.4.2.1 Identification of Trigger or Guideline Exceedances

Outside of the CREMP, no consistent exceedances of relevant guideline values occurred for Whale Tail AEMP monitoring programs in 2021. A review of CREMP results exceeding trigger values and for which

BACI trends were statistically significant was conducted in that report (Appendix 33), and results are examined here in relation to other 2021 AEMP programs.

Similar to previous years, the three situations evaluated further are:

1. **Nutrients**:

    a. N and P: Total Kjeldahl Nitrogen (TKN) showed a statistically significant increase above trigger values in near field lakes (WTS, MAM, and A20). Total phosphorous (TP) showed a statistically significant increase above trigger values at WTS, Lake A20 and Lake A76.

    b. TOC and DOC: Total organic carbon (TOC) and/or dissolved organic carbon (DOC) showed a statistically significant increase above trigger values at WTS, A20, MAM, and NEM.

    c. Phytoplankton biomass: Statistically significant increases above baseline/reference were reported for phytoplankton biomass in A20, corresponding to trigger exceedances for nutrients (similar but non-significant changes were observed throughout the near-field and mid-field lakes).

2. **Conventional parameters, major ions, and TDS**: Statistically significant increases above trigger values were observed at near and mid-field areas WTS, A20, MAM, A76 and NEM for conventional parameters (total alkalinity, conductivity, hardness), major ions (calcium, potassium, magnesium, sodium) and TDS.

3. **Metals**: Statistically significant increases above trigger values were observed at NF areas WTS and MAM for lithium, and silicon at MAM.

8.12.4.2.2 Evaluation of Potential Source and Discussion

Overall, five onsite water management activities were identified primarily as having the potential to impact water quality in the receiving environment. These consisted of:

- Ongoing inputs from Whale Tail South terrestrial flooding (flooding was mainly complete in 2019), to WTS and lakes downstream via the South Whale Tail Channel
- Whale Tail or IVR Attenuation Pond discharge to Whale Tail South
- Whale Tail or IVR Attenuation Pond effluent discharge to Mammoth Lake
- Waste Rock Storage Facility toe seepage contact water control with potential inputs to Mammoth Lake (no flow observed in 2021 so not evaluated further)
- IVR Diversion Ditch construction for non-contact water flow to Nemo Lake watershed

As described in the 2021 CREMP report, since this was the second complete year of monitoring for the “impact” period, the limited amount of “after” data in the BACI analysis means that assigning causality and

identifying the specific source of impacts is difficult. Nevertheless, for each of the situations identified in Section 8.12.4.2.1, results are reviewed and discussed in the context of these potential sources, using results of other relevant AEMP monitoring programs to inform the assessment (primarily, water quality monitoring results effluent discharge, seepage, and managed surface).

While air emissions (dust) were identified as a potential source of impacts in the conceptual model, results in 2021 indicated that rates of dustfall and concentrations of suspended particulates rarely exceed available standards or guidelines at minesite monitoring stations, and did not exceed FEIS predictions. It is therefore considered unlikely that dust generation has been great enough to observable changes in water quality parameters, particularly since all near-field lakes monitored under the CREMP are of relatively large surface area and volume, so this source is not considered further.

Similarly, groundwater monitoring in 2021 indicated that groundwater quality is not likely to have a significant effect on receiving environment surface water quality, and groundwater chemistry results did not deviate significantly from the FEIS assumptions. As a result, this potential source of impacts to surface water is not considered further.

8.12.4.2.2.1 Changes in Nutrients (N, TP, TOC, DOC)

As evaluated in the past, increases in nutrients observed in the 2021 CREMP correspond closely to flooding and dewatering activities. In 2021, statistically significant increases compared to baseline/reference were observed for TKN at CREMP monitoring stations WTS, MAM and A20, and for total phosphorus (TP) at CREMP monitoring stations WTS, A20 and A76. Statistically significant increases above baseline/reference for TOC and/or DOC occurred in WTS, A20, and MAM in 2021. Related increases in phytoplankton biomass were observed for these same lakes, and were statistically significant for A20.

These trends are generally consistent with findings in previous impact years and FEIS Addendum predictions for increased nutrient concentrations in WTS and MAM. Comparison to FEIS predictions is further explored in the PEAMP – Section 12.5.1. Briefly, as in previous years some individual measurements of TP and N exceeded monthly FEIS predictions in WTS and MAM, but annual averages were less than predictions, and all concentrations were below or within predicted trophic levels.

As suggested in the 2021 and previous CREMP reports, the observed changes in nutrients are considered to be a result primarily of terrestrial inundation and to a lesser extent, effluent discharge. For WTS and Mammoth Lake these activities may be summarized as:

- WTS - Dewatering discharge from Whale Tail Lake - North Basin to Whale Tail South (WTS), and flooding of WTS.
    - This activity occurred mainly in 2019. Water levels have been maintained in WTS until the present.
- MAM - Dewatering and effluent discharge directly to Mammoth Lake, and WTS inputs through the South Whale Tail Channel.

- Dewatering of Whale Tail North to Mammoth Lake occurred in primarily in 2019, and effluent discharge through the approved Mammoth Lake diffuser has been ongoing as required since 2019 as well.

- WTS flooded waters, with allochthonous inputs due to inundation flow through the South Whale Tail Channel into MAM since 2020 (though pumping occurred in fall 2019). Water quality changes further downstream in A76 and DS1 correspond with this change into MAM in 2020 and 2021.

Changes in TOC and DOC are considered related to increased primary productivity and/or allochthonous carbon inputs (these parameters are often largely affected by flooding regimes[9]) and causality is not explored further here. However, review of results from other AEMP monitoring programs was conducted to help confirm causality for changes in N and P in 2021.

Evaluation of Managed Surface Water and Seepage

No sources of managed surface water or seepage report directly to the receiving environment of the WTS or Mammoth Lake watershed, so these sources of inputs were not considered further.

Evaluation of Effluent Discharge Results

Trends in total phosphorus (refer to 2021 CREMP Figure 5-30) and Nitrate-N (refer to 2021 CREMP Figure 5-27) across AEMP programs in 2021 were reviewed as the key nutrient indicator parameters. MDMER discharge and EEM water quality results for TP into MAM were less than the CREMP trigger of 0.0045 mg/L (in the range of 0.0017 to 0.041 mg/L) and for WTS there were very few exceedances of laboratory detection limits for total phosphorus (0.001 mg/L; Section 8.3.2). MDMER discharge and EEM results for nitrate levels in MAM and WTS were also generally less than the CREMP trigger value (1.5 mg/L), in the range of 0.62 to 1.59 mg/L (MAM) and 0.53 to 1.45 mg/L (WTS). These results suggest that effluent discharge would have had at most a minor impact on increasing concentrations of nutrients beyond trigger values in 2021, so changes are still considered to be primarily due to inputs from terrestrial flooding.

Effects on Receptors of Concern

Primary Production

The potential for increased nutrient concentrations in downstream lakes to further impact primary productivity (and higher trophic levels) was predicted in the FEIS Addendum, though predicted changes were not quantified. Observed changes are summarized briefly here. In 2019, statistically significant increases in phytoplankton biomass were observed in WTS and MAM and associated with elevated nutrient concentrations, likely as a result of flooding (Figure 2021 CREMP 5-74, 5-76 and Table 5-9). Similar trends were observed in 2020, but they were not statistically significant. In 2021, elevated

[9] Youngil Kim, Sami Ullah, Tim R. Moore, Nigel T Roulet. 2014. Dissolved organic carbon and total dissolved nitrogen production by boreal soils and litter; the role of flooding, oxygen concentration and temperature. Biogeochemistry 118 no 1-3 pp 35-48.

nutrients and corresponding changes in phytoplankton biomass were evident in a larger suite of lakes extending further downstream from the flood zone and discharge location than previous years - WTS, A20 (which is joined to WTS through flooding) and downstream lakes MAM and A76, though changes in biomass were only statistically significant for A20. As described in the 2021 CREMP report, overall, the plankton communities appear to be healthy and changes are consistent with FEIS Addendum predictions of a low effect on the plankton community. The ecological significance of increased primary productivity in flooded lakes WTS, A63 and A20, and lakes downstream of flooding in MAM and A76, will depend on how long these trends continue.

While periphyton growth in WTS is included in the Fish Habitat Offsets Monitoring Plan (Section 8.12.4.1.5), only a pilot study was conducted in 2021, and data was insufficient for use in this assessment so results are not explored further. A full evaluation of periphyton growth in WTS will be conducted in 2022.

Benthic Invertebrates and Fish

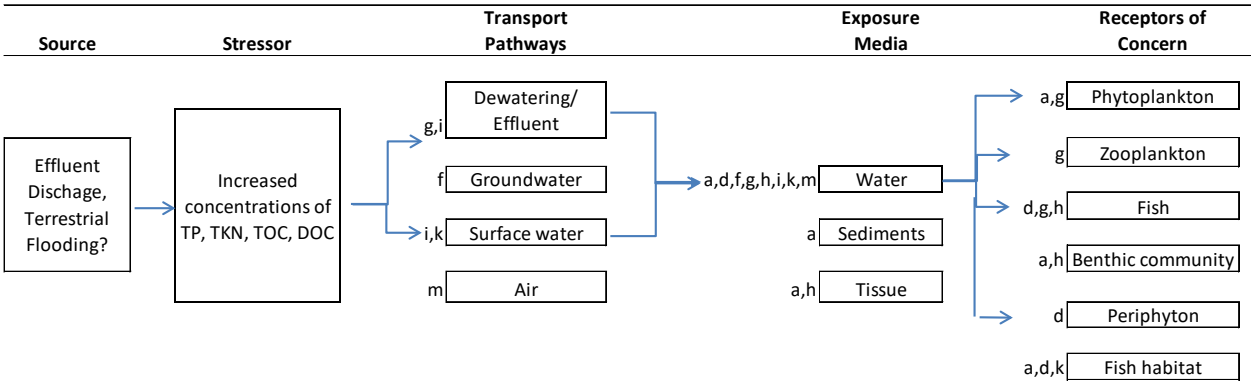
As discussed in the Whale Tail Pit Fish Habitat Offsetting Plan – Appendix C (Complementary Measures), it was expected that due to a release of terrestrial nutrients during flooding and the creation of additional littoral habitat in WTS (including connected and inundated portions of A20, A63, etc.), there would be increases in the lower trophic food base for fish, potentially resulting in numerical increases in forage fish such as Slimy Sculpin (through increases in growth and reproduction rates). Study results to date confirm the presence of small bodied fishes are greater in newly flooded habitat in WTS and A63 lakes as compared to reference lakes and Mammoth Lake (reported under the 2021 FHOMP Report – Section 8.12.4.1.5), though causality of changes has not yet been explored (e.g. increased physical habitat availability or more suitable habitat, or increased food availability due to nutrient inputs). This study is expected to be completed in 2023, at which time full results will be available.

The MDMER effluent toxicity results in 2021, and the results of the 2021 EEM Interpretive report (biological studies) indicate that mine effluent does not negatively impact phytoplankton, zooplankton, aquatic plants and fish (lethal and sub-lethal toxicity studies with *Pseudokirchneriella subcapitata*, *Ceriodaphnia dubia*, *Lemna minor,* Fathead Minnow and Rainbow Trout), nor the Mammoth Lake benthic community, nor resident large and small bodied fish endpoints, as compared to reference lakes. These results are consistent with the benthic invertebrate results reported in the CREMP in 2020 and 2021, and fish habitat offsets monitoring results to date.

Management Actions

Although negative impacts to ecological function are not anticipated in the near term as a result of nutrient enrichment at the reported concentrations, adaptive management is prescribed for 2022. As part of existing management actions, a Level 1 management strategy will be implemented, as per Adaptive Management Plan (Version 1.5, 2021), based on measured concentrations of phosphorus in 2021. As a result, a site wide water balance analysis was performed. Agnico Eagle’s understanding of the deviation from FEIS projection originates from a change in water movement sequencing. Water was discharged in Whale Tail South earlier than planned. As part of adaptive management actions, nutrients will continue to be tracked closely in 2022, and additional measures outlined in the adaptive management plan may be implemented if warranted. No additional changes to adaptive management actions are planned at this time and trends in nutrients will continue to be tracked closely in 2022.

Figure 19. Whale Tail site integrated conceptual site model for 2021 AEMP assessment of increased nutrients in Whale Tail South, Mammoth Lake, and A76.



Notes:

a	Core Receiving Environment Monitoring Program
b	Effects Assessment Studies
c	Dike Construction Monitoring
d	Fish Habitat Offsets Monitoring Program
e	Dewatering Monitoring
f	Groundwater Monitoring
g	MDMER Monitoring
h	EEM Biological Monitoring Studies
i	Water Quality and Flow Monitoring
j	Fish-Out Studies
k	AWPAR and Quarry Water Quality Montoring
l	Blasting
m	Air quality monitoring

8.12.4.2.2.2 Changes in Conventional Parameters, Major Ions, and TDS

Similar to the Meadowbank lakes, statistically significant increases above CREMP trigger values were observed at near field (NF) areas WTS, MAM and NEM for total alkalinity, conductivity, hardness, calcium, potassium, magnesium, sodium, and TDS in 2021. The statistically significant increases extended to mid-field (MF) area Lake A76 and A20 for all of these parameters. In all cases, the increases from reference/baseline conditions were substantial (3.2 – 4.2x in 2021 CREMP Table 5-6). To a lesser degree, the observed changes extended downstream as far as A76 (proportional change of 2.7), but not beyond. While some exceedances of specific monthly FEIS Addendum water quality model predictions occurred for these parameters, none exceeded the order-of-magnitude level of uncertainty associated with those predictions.

Conductivity is a composite variable that responds positively when concentrations of ionic compounds increase (e.g., chlorides, sulphates, carbonates, sodium, magnesium, calcium, potassium and metallic ions), so conductivity is used here to broadly assess potential causation of changes in those parameters. In 2019, the increase in conductivity appeared to be limited spatially to NF areas, but as mining activities expanded in 2020, these results extended into some MF areas in 2020 and 2021. Similar to previous monitoring results, the CREMP trigger for conductivity (48.6 µS/cm) was exceeded in all 2021 samples for WTS and MAM, along with NEM and A76. Mean conductivity for WTS was 101 µS/cm, for MAM was 189

µS/cm, for Lake A76 was 96.9 µS/cm, A20 was 55.9 µS/cm and for NEM was 100 µS/cm. The CREMP BACI analysis indicated that these changes were statistically significant.

As described in the 2021 CREMP report, it is likely that the observed changes in WTS, MAM, A20, and NEM (proportional change) are related to a combination of physical-chemical changes due to direct impacts of construction activities and inputs from dewatering and effluent discharge activities. These conclusions are supported by results of the other AEMP monitoring programs as summarized below.

Evaluation of Effluent Results, Managed Surface Water and Seepage

Results for EEM effluent discharged to WTS and MAM indicated that conductivity in all effluent exceeded CREMP results for the receiving environment, with a range of 45.7 – 383.0 µS/cm (Section 8.3.2). Overall, the EEM receiving environment samples (with a range of 119.3 – 124.3 µS/cm and 75.7 to 117.5 µS/cm for MAM and WTS, respectively), were similar to CREMP results (75 – 135 µS/cm). Reference lake concentrations were all less than 32.5 µS/cm for EEM receiving monitoring, with the exception of an anomalous November result at EEM TPS of 105.5 µS/cm. No sources of managed surface water or seepage report directly to the receiving environment of the WTS or Mammoth Lake watershed, so these sources of inputs were not considered further for those lakes.

While some of these parameters were also significantly elevated in Nemo Lake in 2021, no additional water quality monitoring is conducted for Nemo Lake outside of the CREMP, except the analysis of Northeast Diversion pond discharge in 2019 and 2020 (this area was dewatered for mine activity in 2020) and IVR Diversion Ditch flow (non-contact water flow; 2021+). Conductivity in the Northeast Diversion pond discharge was elevated in in 2019 (1832 µS/cm) and in 2020 (321 µS/cm). Since this water is discharged to tundra and not directly to Nemo Lake, it is difficult to assign causation, however it likely that residual impacts of dewatering discharge activities in 2019 and 2020 are still being observed in 2021, because IVR Diversion Ditch flow did not indicate elevated conductivity in 2021 (42 µS/cm).

Effects on Receptors of Concern

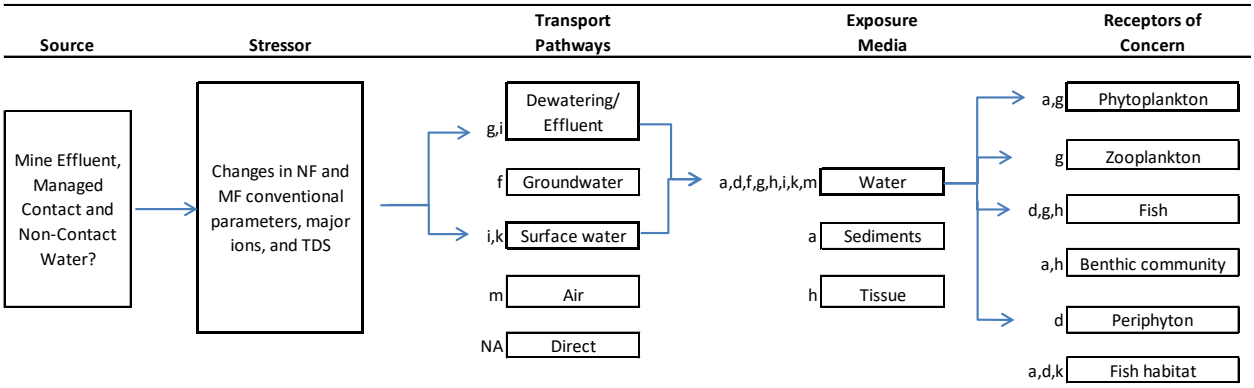
MDMER effluent toxicity results in 2021, and the results of the 2021 EEM Interpretive Report (biological studies) indicate that mine effluent does not negatively impact phytoplankton, zooplankton, aquatic plants and fish (lethal and sub-lethal toxicity studies with *Pseudokirchneriella subcapitata*, *Ceriodaphnia dubia*, *Lemna minor,* Fathead Minnow and Rainbow Trout), nor the Mammoth Lake benthic invertebrate community, nor resident large and small bodied fish endpoints, as compared to reference lakes. These results are consistent with the benthic invertebrate results reported in the CREMP, which include Nemo Lake.

Management Actions

These results continue to suggest that for WTS, MAM and to a lesser degree, A76, effluent discharge and lake dewatering activities, coupled with inputs due to flooding and inundated shorelines, are the route of increased conventional parameters, major ions, and TDS. Overall, these trends are similar to those observed in the Meadowbank near-field CREMP lakes. Based on results of a CREMP review in 2019 (Appendix J of the 2019 CREMP Report) and this AEMP review, here is no evidence to suggest that measured concentrations of these parameters are resulting in adverse ecological effects in the Whale Tail Lake study area.

No changes in management actions are therefore planned as a result of this evaluation.

Figure 20 Whale Tail site integrated conceptual site model for 2021 AEMP assessment of changes in near-field conventional parameters, major ions, and TDS (Whale Tail South, Mammoth Lake, Nemo Lake)



Notes:

a	Core Receiving Environment Monitoring Program
b	Effects Assessment Studies
c	Dike Construction Monitoring
d	Habitat Compensation Monitoring Program
e	Dewatering Monitoring
f	Groundwater Monitoring
g	MDMER Monitoring
h	EEM Biological Monitoring Studies
i	Water Quality and Flow Monitoring
j	Fish-Out Studies
k	AWPAR and Quarry Water Quality Montoring
l	Blasting
m	Air quality monitoring
NA	Direct, so measured in exposure medium.

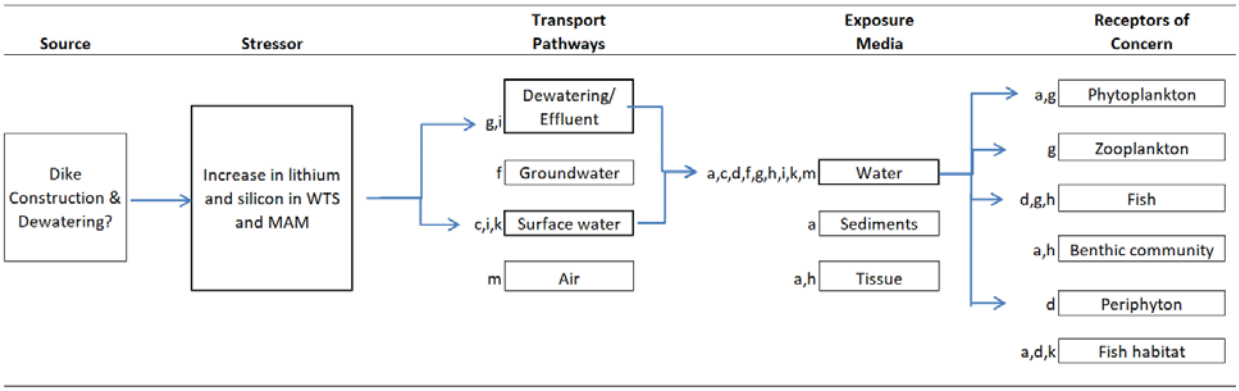
8.12.4.2.2.3 Changes in Lithium and Silicon

Silicon concentrations have historically been close to the trigger value for most Whale Tail study area lakes. Total silicon concentrations exceeded the trigger (0.61 mg/L) in one or more samples collected in 2021 in MAM. Silicon is not required to be measured outside of the CREMP, so potential sources of impacts cannot be specifically evaluated through the review of the other AEMP program results. There are no FEIS Addendum water quality model predictions for this parameter, and no effects-based thresholds (CCME guidelines). There are no apparent concerns for negative impacts to lower trophic levels reported in the CREMP and therefore this item is not further evaluated. Trends will continue to be monitored through the CREMP.

In 2019, concentrations of total lithium were measured approximately weekly during Mammoth Dike construction and results suggested that slightly elevated concentrations of lithium in WTS and/or MAM early in the 2019 season may have been caused by dike construction and WTN dewatering activities. This parameter trended lower in 2020. The apparent downward trend in concentrations continued in 2021, suggesting that the systems are stabilizing. The yearly mean concentrations of both total and dissolved lithium marginally exceeded the trigger concentration in both WTS and MAM (total and dissolved lithium trigger = 0.0020 mg/L). Since lithium does not have an effects-based threshold (CCME guideline), and since the scope of FEIS Addendum water quality predictions was not exceeded, and since

no apparent concerns for negative impacts to lower trophic levels were reported in the CREMP , this trigger exceedance was not investigated further. Trends will continue to be monitored through the CREMP but no adaptive management actions are planned at this time beyond routine monitoring.

Figure 21. Whale Tail site integrated conceptual site model for 2021 AEMP assessment of changes in lithium and silicon concentrations.



Notes:

a	Core Receiving Environment Monitoring Program
b	Effects Assessment Studies
c	Dike Construction Monitoring
d	Habitat Compensation Monitoring Program
e	Dewatering Monitoring
f	Groundwater Monitoring
g	MDMER Monitoring
h	EEM Biological Monitoring Studies
i	Water Quality and Flow Monitoring
j	Fish-Out Studies
k	AWPAR and Quarry Water Quality Montoring
l	Blasting
m	Air quality monitoring

8.12.4.3 *Recommended Management Actions*

Based on measured concentrations of total phosphorus in 2021, a Level 1 management strategy is implemented based on measured concentrations of phosphorus in 2021 as described below in Section 10.4. Otherwise no additional supplemental management actions are planned in 2022 for the Whale Tail site as a result of this assessment.

The following routine AEMP monitoring programs will occur.

- CREMP
    - Water quality – The full CREMP program (through-ice and open water) is planned at the NF, MF, and FF areas 2022. Through-ice limnological profiles are planned at MAM, WTS, and Nemo in the months when water sampling is not completed. In addition, contingency water samples may need to be collected during the limnology-only, through-ice sampling event(s), if anomalous in-situ limnology results are observed.
    - Phytoplankton – Routine sampling with the full water quality sampling program.

- Sediment chemistry – Routine sediment grab chemistry sampling with the replicate benthos sampling stations in each area

- Benthos – Sampling at NF areas (WTS and MAM) to monitor for changes in the community due to construction and discharge. Sampling at NEM and sampling at areas A20, A76 and DS1 to provide more information on the range of normal conditions to support future BACI-style analysis

- Adaptive Management Plan

  - As part of existing management actions, a Level 1 management strategy is implemented based on measured concentrations of phosphorus in 2021. As a result, a site wide water balance analysis was performed. Agnico Eagle's understanding of the deviation from FEIS projection originates from a change in water movement sequencing. Water was discharged in Whale Tail South earlier than planned. As part of adaptive management actions, nutrients will continue to be tracked closely in 2022, and additional measures outlined in the adaptive management plan may be implemented if warranted. It is important to note that the 2021 water quality data were compared to thresholds that are based on the 2019 FEIS predictions. The 2019 FEIS model predictions do not consider management activities that occurred on site in 2020 and 2021.

- Dike Construction and Dewatering Monitoring

  - Any required monitoring for dike construction or dewatering will follow the approved Plan.

- MDMER & Water Quality and Flow Monitoring

  - Monitoring will continue as per the monitoring plan, NWB Water License criteria, and MDMER requirements in 2022.

- EEM Biological Monitoring Studies

  - Cycle 2 EEM Biological Monitoring study will be completed in 2023 with a report due in 2024.

- Fish Habitat Offset Monitoring

  - No requirements for constructed habitat offset monitoring are anticipated for the Whale Tail site in 2022.

  - Pre-offsetting ecological monitoring to determine suitability of the flood zone as fish habitat is planned to occur in 2022 as described in Section 8.8.2.2.

- Fish-out Monitoring

    - No fish-outs are planned for 2022 based on current mine plans.

- Blast Monitoring

- Blast monitoring will continue in accordance with the Blast Monitoring Program (March, 2022).

- Groundwater Monitoring

  - Groundwater monitoring will continue in accordance with the Groundwater Monitoring Plan (2020).

- Air Quality Monitoring

  - Monitoring will continue in accordance with the Air Quality and Dustfall Monitoring Plan (April, 2022).

8.13 NOISE MONITORING

8.13.1 Meadowbank Site

As required by NIRB Project Certificate No.004 Condition 62: ***Develop and implement a noise abatement plan to protect wildlife from significant mine activity noise, including blasting, drilling, equipment, vehicles and aircraft; sound meters are to be set up immediately upon issuance of the Project Certificate for the purpose of obtaining baseline data, and monitoring during and after operations.***

The 2021 noise monitoring program at the Meadowbank Site was conducted according to the Noise Monitoring and Abatement Plan (Version 4, December 2018). Complete results of the program are provided in Appendix 49 (2021 Noise Monitoring Report), and summarized below.

The objective of this program is to measure noise levels at five previously determined monitoring locations around the Meadowbank Site (R1 – R5), over at least two 24 h periods. Since high winds in the area tend to substantially reduce the quantity of available valid data, Agnico Eagle aims to conduct a minimum of two monitoring events of two to four days per station to fulfill monitoring objectives.

After data processing in accordance with standard methods (Alberta Energy Resource Conservation Board Directive 038), monitoring results were compared to the site's daytime target sound level (55 dBA), nighttime target sound level (45 dBA), and measured 24-h L_{eq} values are compared to FEIS (Cumberland, 2005) predictions for the monitoring locations.

Final daytime, night-time, and 24 h L_{eq} values calculated from recorded 1-min L_{eq} values for each monitoring event and station are shown in Table 8-136. One marginal exceedance of the nighttime design target (45 dBA) occurred for one monitoring event at R2 (45.5 dBA) as a result of intermittent helicopter flyovers during the early morning hours (6 – 7 am). Since elevated noise levels only occurred during one hour of one monitoring event, and FEIS predictions were not exceeded, this event was not investigated further. Nighttime design targets were not exceeded for any monitoring event at any other monitoring station (R1, R3, R4).

Historical comparisons indicate no clear trends towards increasing sound levels at this time. Overall, target sound levels and FEIS impact predictions are rarely exceeded site-wide.

No human receptors (e.g. cabins) are located in the vicinity of noise monitoring stations, and no noise-related complaints have been received to date. Impacts of sensory disturbance on wildlife are determined separately through the Terrestrial Ecosystem Monitoring Plan (TEMP), and reported annually in the Wildlife Monitoring Summary Report.

Noise monitoring occurs annually, and will continue in 2022 according to the Noise Monitoring and Abatement Plan (Version 4, December 2018), or most recent version at the time.

Table 8-136 Daytime, night-time, and 24-h L_{eq} values for Meadowbank Site monitoring locations R1 – R5. Day- and nighttime periods with fewer than 3 hours of valid data due to unacceptable weather conditions are excluded (-), as are surveys where operational difficulties (e.g. fallen noise meter) voided the survey (NS). Measured values exceeding the relevant target or prediction are in bold and explained in the text.

Monitoring Station and Start Date		$L_{eq, day}$ (dBA)		$L_{eq, night}$ (dBA)		$L_{eq, 24h}$ (dBA)	
		Design Target	**Measured Value**	***Design Target***	**Measured Value**	***FEIS Prediction***	**Measured Value**
R1	7/04	*55*	36.2	*45*	35.4	*58 - 63*	35.8
	8/23		37.6		35.7		36.7
R2	7/08	*55*	50.3	*45*	29.3	*58 - 63*	48.5
	8/14		43.3		**45.5**		44.2
R3	8/26	*55*	36.7	*45*	35.0	*49 - 53*	36.1
	9/03		37.8		36.4		37.4
R4	7/29	*55*	34.4	*45*	-	*58 - 63*	-
	8/31		33.9		34.2		34.0
R5	7/22	*55*	-	*45*	-	*1 h L_{eqs} < 57*	-
	8/08		NS		NS		NS
	8/18		NS		NS		NS

8.13.2 Whale Tail Site

As required by NIRB Project Certificate No.008 Condition 5: ***Result of all noise monitoring undertaken by the Proponent shall be provided to the Nunavut Impact Review Board on an annual basis. The Proponent shall:***

> ***a) Conduct noise monitoring at least once during each phase of the Project at four (4) locations in the vicinity of the Whale Tail Pit Project and at two (2) locations along the haul road to demonstrate that noise levels remain within predicted levels for all Project areas; and***
>
> ***b) If monitoring identifies an exceedance, the Proponent shall provide an explanation for the exceedance, a description of planned mitigation, and shall conduct additional monitoring to evaluate the effectiveness of mitigative measures.***

The 2021 noise monitoring program at the Whale Tail Site was conducted according to the Noise Monitoring and Abatement Plan (Version 3 & 4, June & December 2018). Complete results of the program are provided in Appendix 49 (2021 Noise Monitoring Report), and summarized below.

The objective of this program is to measure noise levels at six previously determined monitoring locations around the Whale Tail Site and Haul Road (R6 – R11), over at least two 24 h periods. Since high winds in the area tend to substantially reduce the quantity of available valid data, Agnico Eagle aims to conduct a minimum of two monitoring events of two to four days per station to fulfill monitoring objectives.

After data processing in accordance with standard methods (Alberta Energy Resource Conservation Board Directive 038), monitoring results were compared to the site's daytime target sound level (55 dBA), nighttime target sound level (45 dBA), and measured 24-h L_{eq} values are compared to FEIS Addendum (Agnico Eagle, 2018) predictions for the monitoring locations.

Final daytime, night-time, and 24 h L_{eq} values calculated from recorded 1-min L_{eq} values for each monitoring event and station are shown in Table 137. No exceedances of the site's daytime design target (55 dBA), night-time design target (45 dBA) or FEIS predictions occurred for any station.

Historical comparisons indicate no clear trends towards increasing sound levels, and FEIS impact predictions have not been exceeded to date.

No human receptors (e.g. cabins) are located in the vicinity of noise monitoring stations, and no noise-related complaints have been received to date. Impacts of sensory disturbance on wildlife are determined separately through the Terrestrial Ecosystem Monitoring Plan (TEMP), and reported annually in the Wildlife Monitoring Summary Report.

Noise monitoring occurs annually, and will continue in 2022 according to the Noise Monitoring and Abatement Plan (Version 4, December 2018), or most recent version at the time.

Table 8-137. Daytime, night-time, and 24-h L_{eq} values for monitoring locations R6 – R11a. Day- and nighttime periods with fewer than 3 hours of valid data due to unacceptable weather conditions are excluded (-), as are surveys where operational difficulties (e.g. fallen noise meter) voided the survey (NS). Measured values exceeding the relevant target or prediction are in bold.

Monitoring Station and Start Date		$L_{eq, day}$ (dBA)		$L_{eq, night}$ (dBA)		$L_{eq, 24h}$ (dBA)	
		Design Target	**Measured Value**	***Design Target***	**Measured Value**	***FEIS Prediction***	**Measured Value**
R6	7/26	*55*	-	*45*	-	*40.5 - 42.5*	-
	8/27		33.6		35.1		34.2
R7	7/26	*55*	NS	*45*	NS	*36.2 - 40.4*	NS
	8/23		39.7		34.3		37.9
R8	7/04	*55*	40.4	*45*	37.8	*40.4 - 45.1*	39.3
	7/30		40.5		40.7		40.6
	9/11		39.9		43.7		41.4
R9	7/21	*55*	39.3	*45*	40.3	*40.4 - 45.1*	39.8
	8/18		34.5		37.0		35.5
R10	7/08	*55*	39.5	*45*	43.5	*45.1 – 50.0*	41.3
	8/05		44.2		-		-
R11a	7/16	*55*	39.5	*45*	27.3	*45.1 – 50.0*	37.4
	8/14		34.8		35.3		35.0

8.14 AIR QUALITY MONITORING

8.14.1 Meadowbank Site

As required by NIRB Project Certificate No.004 Condition 71*: In consultation with EC, install and fund an atmospheric monitoring station to focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported annually to NIRB.*

And

As required by NIRB Project Certificate No.004 Condition 74*: shall employ environmentally protective method to suppress any surface road dust.*

The 2021 air quality and dustfall monitoring program at the Meadowbank site was conducted according to the Air Quality and Dustfall Monitoring Plan, Version 5 (March, 2020). The objective of this program is to measure dustfall, NO2, and/or suspended particulates (TSP, PM10, PM2.5) at various monitoring locations around the Meadowbank site and All-Weather Access Road (AWAR).

Results obtained for the measured parameters in 2021 were primarily compared to Government of Nunavut (GN) Environmental Guidelines for Ambient Air Quality (October, 2011) and/or Canadian Ambient Air Quality Standards (CAAQS) for TSP, PM2.5 and NO2; BC Air Quality Objectives (August, 2013) for PM10; Alberta Ambient Air Quality Guidelines (August, 2013) for passive dustfall, and to model predictions from the Project's Final Environmental Impact Statement (Cumberland, 2005). Results for

AWAR dustfall monitoring are also compared to thresholds for supplemental mitigation established in the Air Quality and Dustfall Monitoring Plan, Version 6 (March, 2022) (Appendix 51).

The complete report is provided as Appendix 50, and results are summarized below for the Meadowbank site and AWAR. Agnico Eagle will refer to the Appendix for a complete review of the results.

8.14.1.1 *On-Site Air Quality and Dustfall Monitoring*

Dust mitigation for the Meadowbank site was carried out in 2021 according to the Air Quality and Dustfall Monitoring Plan (Version 5, March 2020). Mine site roads and airstrip watering was conducted regularly, as required during frost-free season (May to October).

As described in the Air Quality and Dustfall Monitoring Plan (Version 5, March 2020), Agnico Eagle records community concerns that are raised with regards to dust generated by traffic on the AWAR and Whale Tail Haul Road. In 2021, no specific comments or complaints were received on this topic by the Meadowbank Environment Department. In response to the NIRB's 2019-2020 Recommendations, Agnico Eagle has begun the development of a community based dustfall monitoring program. Agnico Eagle met with Hamlet Council on February 16th, 2022 and the Baker Lake HTO on February 17th, 2022 to discuss the development of the Baker Lake Dust Advisory Group (BLDAG). The role of this Dust Advisory Group will mainly be to articulate concerns and identify areas that need special attention and involve the community of Baker Lake in a dust sampling information session with the Environmental Department in 2022. The exact roles and responsibility and sampling program will be defined in the first inaugural meeting scheduled to be held in Q2 2022.

For the Meadowbank site, the vast majority of suspended particulate measurements in 2021 were well below regulatory guidelines for both monitoring stations (DF-1 and DF-2). A single exceedance of the GN 24-h standard of 120 µg/m^3 for TSP occurred (DF-2) (Figure 22). For 24-h average $PM_{2.5}$ and PM_{10}, all results were less than regulatory guidelines (the BC Air Quality Objective of 50 µg/m^3 for PM_{10}, the GN guideline of 30 µg/m^3 for $PM_{2.5}$, and the CAAQS of 27 µg/m^3 for $PM_{2.5}$). No exceedances of GN guidelines or CAAQS for the annual average (TSP, $PM_{2.5}$) occurred. In addition, all relevant results met available FEIS predictions for both the 24-h and annual averaging time.

All annual average concentrations of NO_2 measured by passive sampler (DF-1, DF-2) met the GN annual average guideline of 32 ppb, the CAAQS of 17 ppb, and the FEIS prediction of 4.97 ppb.

For onsite dustfall monitoring locations (DF-1 – DF-4), the total dustfall monitoring threshold of 1.58 mg/cm^2/30d (which is equivalent to the Alberta guideline for industrial/commercial areas) was exceeded in one sample (at DF-1) (Figure 23). Since all other results for this location were well below guidelines, this is considered an isolated incident, potentially due to a localized event or sample contamination, and no change in mitigation is planned based on this result.

Incinerator stack testing in 2021 indicated the average result for mercury in 2021 was less than the GN limit, but the dioxin and furan result showed an exceedance of the regulatory limit of 80 pg/m^3. An investigation into this exceedance is underway and will be reported in future annual report. The next stack test will be conducted in 2022 according to the approved Incinerator Waste Management Plan.

Overall, there are no apparent trends towards increasing air quality concerns at the Meadowbank site.

Figure 22 24-h average concentrations of total suspended particulates (TSP) at Meadowbank stations DF-1 and DF-2. Dashed line indicates the 24-hr average GN guideline for ambient air quality.

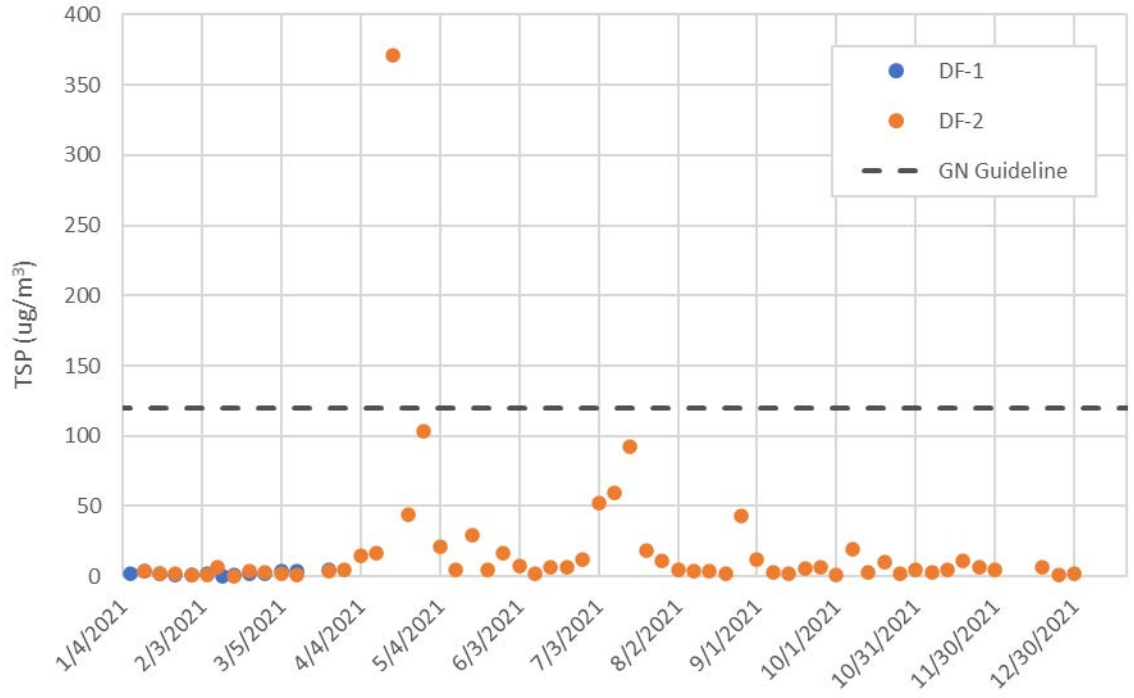
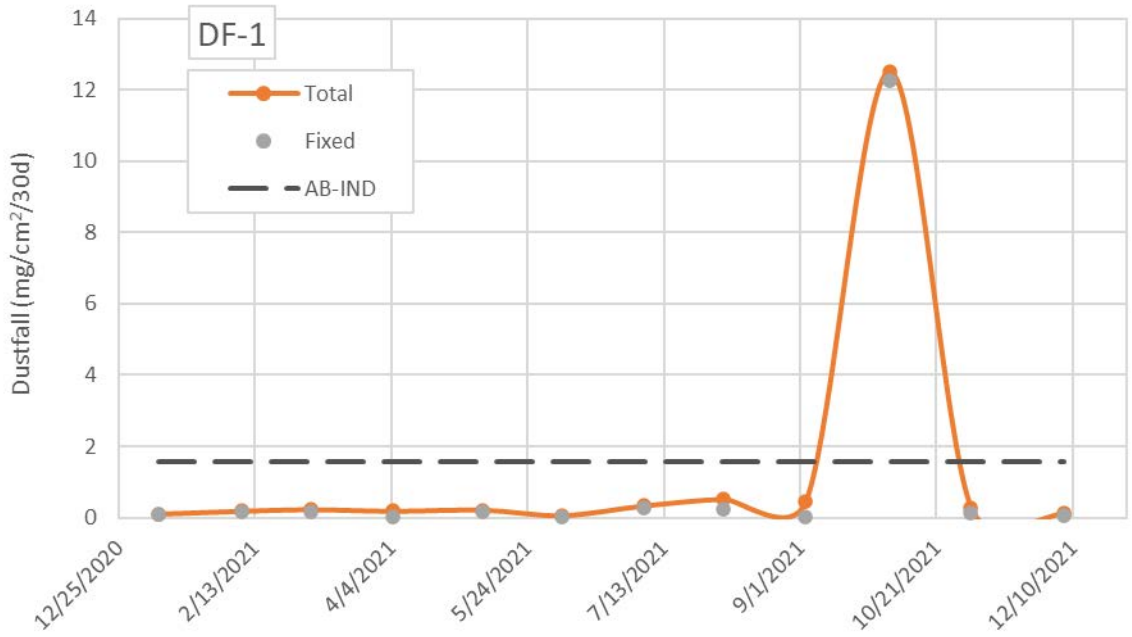


Figure 23. 30-day-normalized rates of total and fixed dustfall at DF-1 at the Meadowbank site. Points represent start date of sample collection. AB-IND indicates the Alberta guideline for industrial/commercial areas, which is equivalent to the management threshold for this station. The elevated result in October is considered an isolated incident, potentially due to a localized event or sample contamination.



8.14.1.2 *AWAR Dustfall Monitoring*

Between July 9th – 16th, 2021, dust suppressant in the form of calcium chloride (dry flake product) was applied to ten sections of the AWAR, as well as two locations on the edge of the hamlet of Baker Lake, and one area on the Meadowbank site. Locations are described in Table 8-138, and have been generally consistent since this program began in 2017. Changes to dust suppression locations in 2021 compared to the Air Quality and Dustfall Monitoring Plan are indicated in Table 8-138. Some changes occurred due to restrictions related to COVID-19, and some based on field observations. No additional applications of dust suppressant were conducted along the AWAR, because the first application continued to be effective throughout the season, based on visual observations.

Table 8-138 Dust suppressant locations along the Meadowbank AWAR in 2021. Strikethrough indicates location where dust suppressant application was identified in the Air Quality Monitoring Plan (Version 5), but no application was completed in 2021. Italics indicate supplemental dust suppression locations.

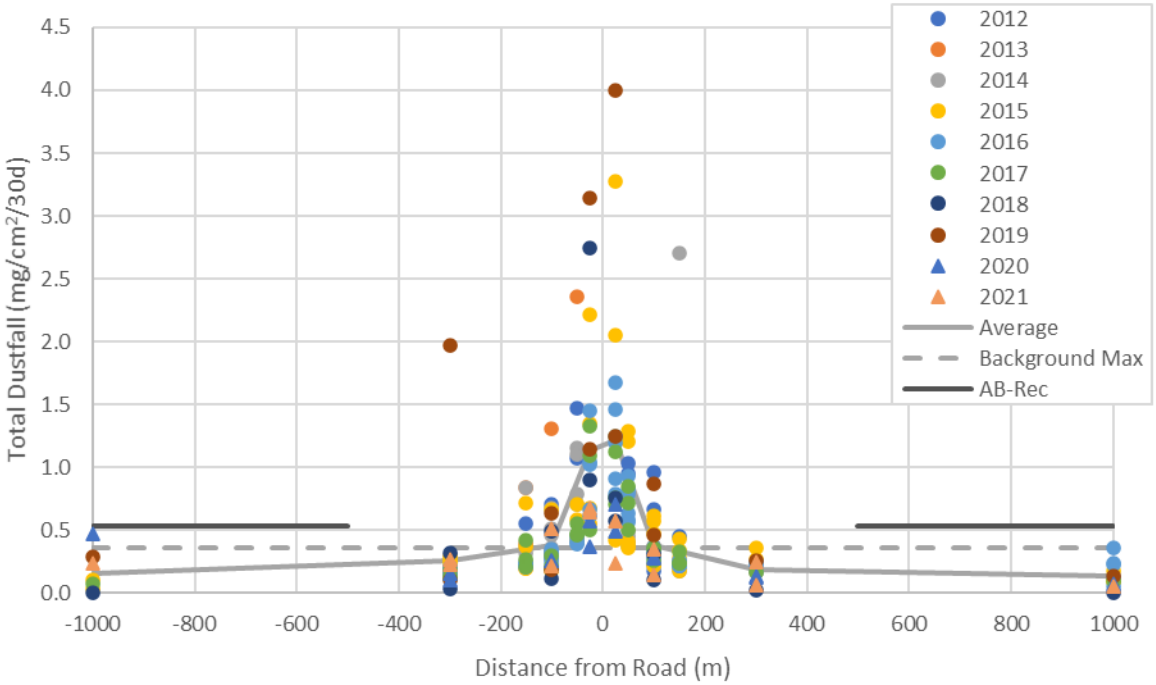
Location Type	Dust Suppression Location	Rationale
Hamlet	Agnico Eagle spud barge area	High traffic area near hamlet
~~Hamlet~~	~~Agnico Eagle tank farm to Arctic Fuel site~~	~~High traffic area near hamlet~~ (not applied in 2021 due to COVID restrictions)
AWAR	*km 6 – Baker Lake*	*High traffic area near hamlet*
AWAR	km 10 – 12	High traffic area near hamlet & area of concern to HTO – proximity to lake
AWAR	km 24 – 26	Area of concern to HTO – proximity to lake
AWAR	*km 39 – 40*	*New 2021 (road design and surface stability; safety)*
AWAR	km 48 – 50	Area of concern to HTO – water crossing
AWAR	km 68 – 70	Location identified by Agnico Eagle – water crossing
AWAR	*km 72.5 – 73.5*	*New since 2020 (safety considerations)*
AWAR	km 80 – 84	Location identified by Agnico Eagle – proximity to water & crossing
AWAR	*km 85 – 86*	*New since 2020 (safety considerations)*
AWAR	*km 91 – 94*	*New since 2020 (safety considerations)*
AWAR	*km 97 – 98*	High traffic area near site
Onsite	Emulsion plant turn off to Meadowbank site (km 103 – 110)	High traffic area onsite

In 2021, dustfall monitoring was conducted along the AWAR in July and August for 2-km transects centered on the road in locations without dust suppression (km 18, km 78), according to the Air Quality and Dustfall Monitoring Plan (Version 5, March 2020). Results are compared to the monitoring threshold of 0.53 mg/cm^2/30d (AB-Rec) at 500 m, established in the Plan to assess the effectiveness of dust suppression efforts and determine the need for supplemental mitigation.

For all four transects, trends indicated the AB-Rec threshold was met or would be met for total dustfall at 500 m. One sample for total dustfall marginally exceeded the guideline at 1000 m, but the result for fixed dustfall (non-organic matter) which is more representative of road material was well below the guideline for this sample. Based on these results, dust mitigation is considered to have been effective in maintaining particulate emissions below the established threshold values.

Historical dustfall results for these locations along with the management threshold are shown in Figure 24.

Figure 24. Total dustfall rates (mg/cm²/30d) for all samples collected since 2012 (August sampling events) along the Meadowbank AWAR in areas without dust suppression. Negative distances represent the downwind (east) side of the road, and positive distances represent the upwind (west) side. AB-Rec represented the management threshold of 0.53 mg/cm²/30d at 500 m from the road.



8.14.2 Whale Tail Site

As required by NIRB Project Certificate No.008 Condition 1*: The Proponent shall:*

- ***a)*** ***Develop and implement an Air Quality Monitoring and Management Plan that includes clear objectives and that specifies air quality monitoring thresholds that will trigger adaptive management responses and actions;***
- ***b)*** ***In the implementation of the Plan, the Proponent shall demonstrate through active and passive monitoring of dustfall, for criteria air contaminant concentrations, incinerator stack testing, and vegetation, soil and snow chemistry sampling that dustfall and emissions of carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), sulphur dioxide (SO2), suspended particulate matter, mercury, dioxins and furans, and other chemicals remain within predicted levels and, where applicable, within levels or limits established by all applicable guidelines and regulations;***
- ***c)*** ***The Proponent shall ensure continuous NO2 monitoring is undertaken downwind of mining activities to allow for comparison to relevant standards including the Canadian Ambient Air Quality Standards;***
- ***d)*** ***If exceedances occur, the Proponent shall provide an explanation for the exceedance, a description of planned mitigation, and shall conduct additional monitoring to evaluate the effectiveness of mitigative measures; and***
- ***e)*** ***The Proponent shall also develop, implement, and report on the quality assurance and quality control protocols used to ensure data reliability and proper functioning of equipment.***

And

As required by NIRB Project Certificate No.008 Condition 2*: Prior to commencing construction activities the Proponent shall update the existing Dust Management and Monitoring Plan for the Meadowbank Mine site to address and/or include the following additional items:*

- ***Align plan requirements with commitments made in the Final Environmental Impact Statement and during the Final Hearing to monitor dust along the existing all-weather access road, the Amaruq haul road and any other roads and trails associated with the Project.***
- ***Verify commitments to the utilization of dust suppressants along the all-weather access road, the Amaruq haul road and any other roads and trails associated with the Project, including a description of the type of suppressant to be utilized and the frequency and timing of applications to be made throughout the various seasons of road use.***
- ***Outline the specific triggers, thresholds, and adaptive management measures that will apply if monitoring indicates that dust deposition is higher than predicted.***

The Proponent shall report annually to the Nunavut Impact Review Board with a summary of its dust management activities.

The 2021 air quality and dustfall monitoring program at the Whale Tail site was conducted according to the Air Quality and Dustfall Monitoring Plan, Version 5 (March, 2020). The objective of this program is to measure dustfall, NO_2, and/or suspended particulates (TSP, PM_{10}, $PM_{2.5}$) at various monitoring locations around the Whale Tail site and Whale Tail Haul Road (WTHR).

Results obtained for the measured parameters in 2021 were primarily compared to Government of Nunavut (GN) Environmental Guidelines for Ambient Air Quality (October, 2011) and/or Canadian Ambient Air Quality Standards (CAAQS) for TSP, $PM_{2.5}$ and NO_2; BC Air Quality Objectives (August, 2013) for PM_{10}; Alberta Ambient Air Quality Guidelines (August, 2013) for passive dustfall, and to model predictions from the Project's Final Environmental Impact Statement (Agnico Eagle, 2018). Results for WTHR dustfall monitoring are also compared to thresholds for supplemental mitigation established in the Air Quality and Dustfall Monitoring Plan, Version 6 (March, 2022) (Appendix 51).

The complete report is provided as Appendix 50, and results are summarized below for the Whale Tail site and Whale Tail Haul Road, along with a summary of road dust mitigation for each area.

8.14.2.1 *Onsite Air Quality and Dustfall Monitoring*

Dust mitigation for the Whale Tail site was carried out in 2021 according to the Air Quality and Dustfall Monitoring Plan (Version 5, March 2020). Watering was conducted regularly for roads on the Whale Tail site to control dust.

For suspended particulates, FEIS Addendum predictions indicated that maximum 24-h TSP concentrations at DF-6b would exceed the GN 24-h standard of 120 µg/m^3, which occurred on just two occasions in 2021 (Figure 25). Similarly, predictions indicated that maximum PM_{10} concentrations at DF-6b would exceed the BC 24-h standard of 50 µg/m^3 at DF-6b, which occurred on just one occasion in 2021 (Figure 26). All 24-h results for $PM_{2.5}$ were less than the GN guideline of 30 µg/m^3, the CAAQS of 27 µg/m^3, and the FEIS Addendum maximum model prediction of 21 - 28 µg/m^3. In addition, all calculated annual averages were less than regulatory guidelines and FEIS Addendum predictions.

Dustfall at DF-6a was monitored throughout the year using 30-days passive canisters, and the established threshold of 1.58 mg/cm^2/30d for total dustfall was met in all cases.

For NO_2 measured using the new continuous monitor sited along the WTHR at DF-7, all hourly and 24-h averages were well below the GN guidelines and CAAQS. Similarly, all annual average concentrations of NO_2 measured by passive sampler (DF-6a, DF-8, DF-9) met the GN annual average guideline of 32 ppb, the CAAQS of 17 ppb, and the FEIS prediction as applicable.

Estimated greenhouse gas emissions for the Meadowbank Complex (including the Whale Tail Site) in 2021 for reporting to Environment Canada's Greenhouse Gas Emissions Reporting Program were 243,752 tonnes CO_2 equivalent, which is slightly higher than values reported in recent years but still within FEIS (Agnico Eagle, 2018) predictions.

Overall, there are no apparent trends towards increasing or unpredicted air quality concerns at the Whale Tail site.

Figure 25. 24-h average concentrations of total suspended particulates (TSP) at Whale Tail station DF-6b. Dashed line indicates the 24-hr average GN guideline for ambient air quality.

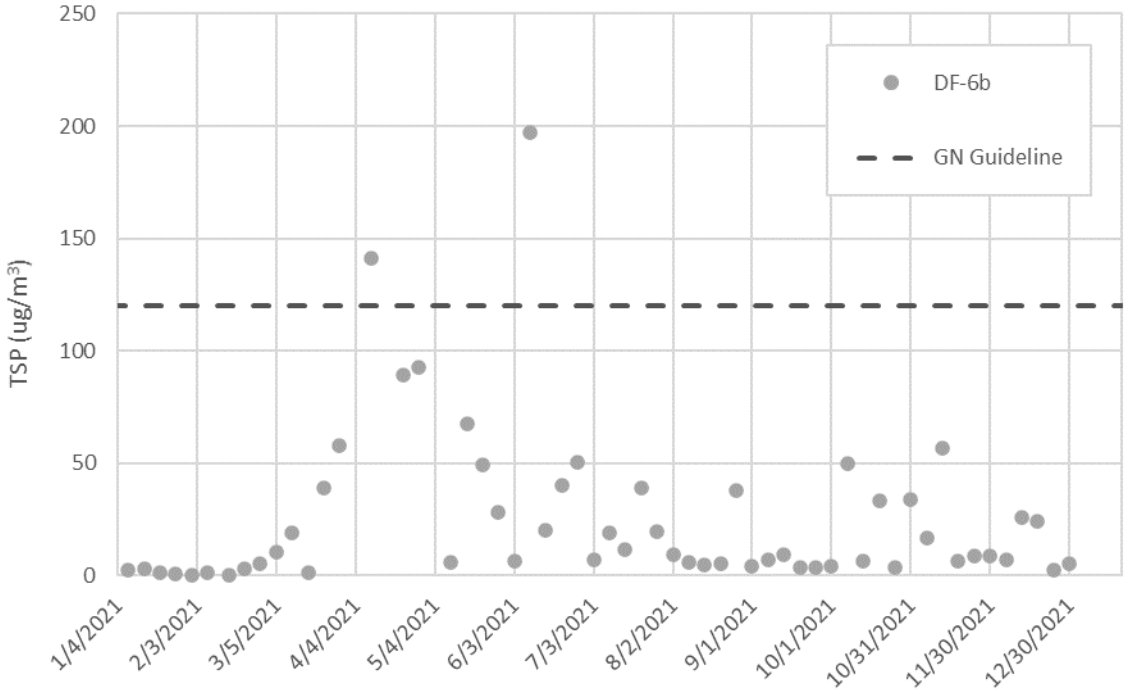
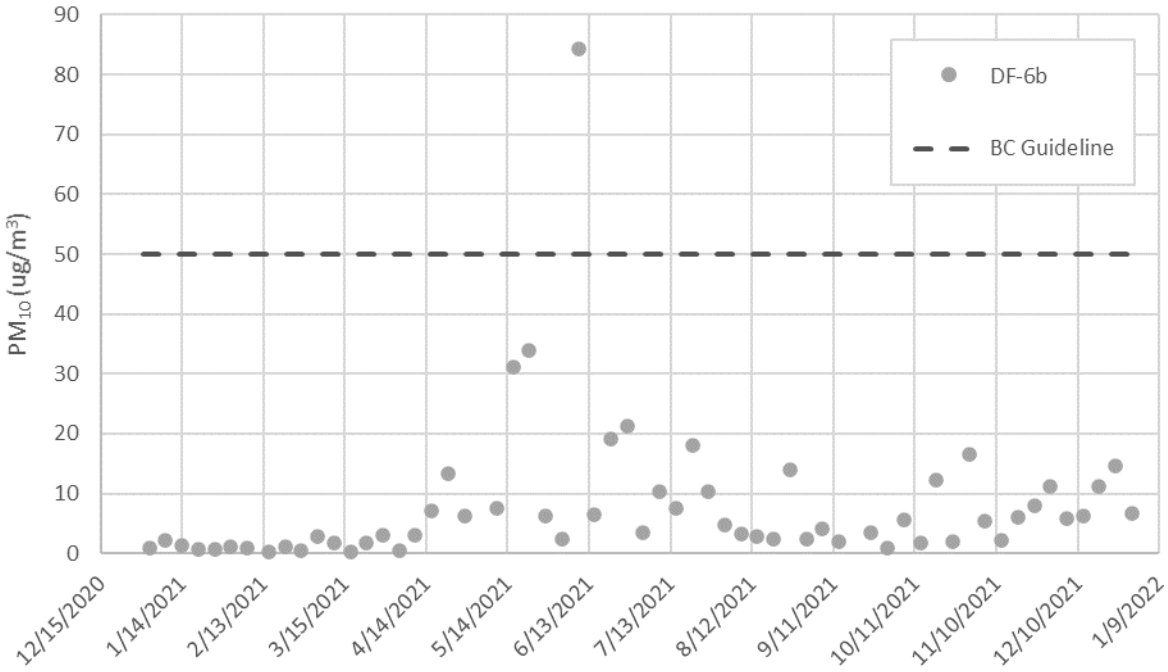


Figure 26 24-h average concentration of airborne particulate matter less than 10 microns (PM_{10}) at Whale Tail station DF-6b. Dashed line indicates the BC Air Quality Objective for this parameter.



8.14.2.2 *WTHR Dustfall Monitoring and Mitigation*

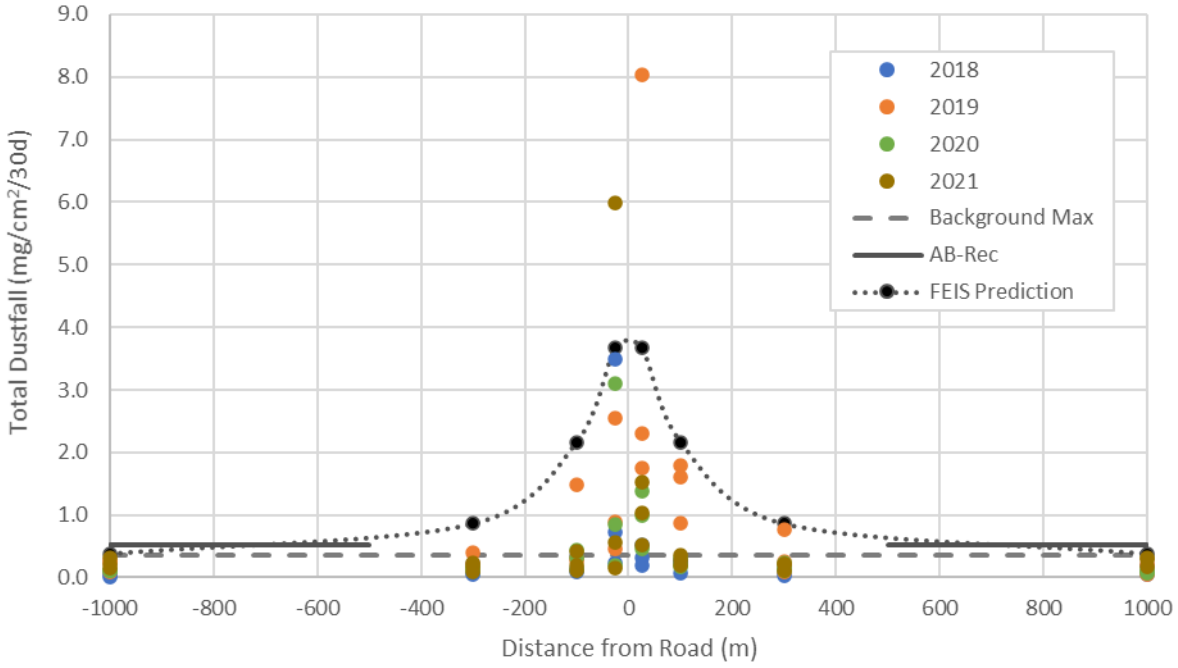
In 2021, dust suppressant in the form of calcium chloride (dry flake product) was applied to the entire length of the WTHR between May 30 and September 2 (generally, two applications along the whole road). In addition, road watering was conducted along the entire WTHR throughout the summer season, as needed.

Dustfall monitoring in 2021 consisted of passive sampling over two 30-d periods during July and August for 2-km transects centered on the road at km 134, km 151, and km 169. Results are compared to the threshold of 0.53 mg/cm^2/30d at 500 m, established in the Air Quality and Dustfall Monitoring Plan (Version 5, March 2020) to assess the effectiveness of dust suppression efforts and determine the need for supplemental mitigation. This threshold is equivalent to the general FEIS Addendum prediction for dust deposition along the WTHR.

In 2021, some specific FEIS Addendum model predictions were exceeded, but only for the 25 m downwind location at km 151. The overarching FEIS prediction that maximum deposition rates along the AWAR would decline below the AB-Rec guideline within 500 m of the road was met in all cases, so mitigation is considered to have been effective.

Historical dustfall results for WTHR locations along with the management threshold are shown in Figure 27.

Figure 27. Total dustfall rates (mg/cm²/30d) for all samples collected in August along the Whale Tail Haul Road to date. 2018 and 2019 data was collected at ground level, while 2020+ samples were collected on stands. Negative distances represent the east (downwind) side of the road, and positive distances represent the west (upwind) side. FEIS Prediction values are from the FEIS Addendum Appendix 4C, Table 4-C-24 (Agnico Eagle, 2018b). AB-Rec represented the management threshold of 0.53 mg/cm²/30d at 500 m from the road.



8.15 GREENHOUSE GASES

8.15.1 Meadowbank Site

As required by NIRB Project Certificate No.004 Condition 73*: Cumberland shall undertake to conserve the Project's use of energy, monitor the Project's greenhouse gas emissions, and continuously review and, if possible, consider for adoption new technologies to ensure greenhouse gases meet the latest Canadian standards or criteria.*

Agnico Eagle has an Energy and Greenhouse Gas Management Strategy developed to create value for the shareholders by operating in a safe, social and environmentally responsible manner.

Different projects over the years were held by Agnico Eagle over the duration of the project to reduce the energy consumption and increase or evaluate the use of new technologies at the Meadowbank Complex:

- Use of summer fuel
- Use of solar panels in northern condition operation - test completed and successful
- Identification of energy-saving opportunities in regards to the carbon tax
- TSM flow chart implemented with Strategic Optimization team for energy-saving opportunities
- Energy dashboard improvement for better energy consumption monitoring

- Energy dashboard internal audit to ensure energy consumption data accuracy
- Time study of the service equipment to increase capacity with the same consumption
- Optimization of the incinerator to increase capacity with the same consumption
- Use of a composter at Meadowbank
- Genset Synchro R&D test on Gen 47 for future installation at the Whale Tail Power Plant. Expected fuel consumption decrease
- Whale Tail Camp Power Plant and Whale Tail underground Power Plant heat recovery study
- Insulation of remote buildings at Meadowbank
- Audit and initiate projects to improve the heat recovery from generators boiler and the distribution
- Shutting off the regrind circuit at the process plant when not required
- Implementation of a three phase energy saving campaign
- Winterizing windows at Meadowbank and Whale Tail

Section 4 of the Greenhouse Gas Reduction Plan (Version 3, April 2020) details some of the reduction initiative above. The initiatives described are for both Meadowbank and Whale Tail Sites.

8.15.2 Whale Tail Site

As required by NIRB Project Certificate No.008 Condition 3*: The Proponent shall maintain a Greenhouse Gas Emissions (GHG) Reduction Plan which includes:*

- ***An estimate of the Project's GHG baseline emissions;***
- ***A description of monitoring measures to be undertaken, including the methods, frequency, parameters, and a description the analysis that will be carried out on the monitoring data generated; and***
- ***A description of mitigative and adaptive strategies planned, and taken, to reduce project-related greenhouse gas emissions over the Project lifecycle.***

The Plan should be submitted to the Nunavut Impact Review Board (NIRB) within 60 days of the issuance of the Project Certificate, with results submitted annually thereafter or as may otherwise be required by the NIRB.

The Greenhouse Gas Reduction Plan (GHGRP) was submitted as Version 3 in April, 2020, and results of GHG emissions calculations are reported here according to Section 3.2 of the Plan, with comparisons to FEIS predictions.

As part of the FEIS Addendum for the Whale Tail Pit Expansion Project (Agnico Eagle, 2018), Project-related emissions of GHGs were calculated using methods consistent with the GHGRP. Table 8-139 summarizes predictions of GHG emissions for the Meadowbank and Whale Tail Project for the peak year of production in 2022. Emissions associated with the Meadowbank Mill were calculated in the FEIS for Whale Tail Pit (Agnico Eagle, 2016), and are shown as a separate line item in Table 8-139. These values are consistent with Table 2.1 in the GHG Reduction Plan (April, 2020).

Table 8-139 Predicted Greenhouse Gas Emissions summary for the Whale Tail Expansion Project in the peak production year of 2022 (from Agnico Eagle, 2018) and the Meadowbank Mill (from Agnico Eagle, 2016)

Emissions Source	Greenhouse Gas Emissions (kt CO_2)
Non-road Exhaust	142.0
Generators	18.0
Heaters	1.9
Incinerator	2.3
Whale Tail Expansion Project Total	**164.2**
Meadowbank Mill	180.0
Meadowbank Complex Total	**344.2**

Calculated annual GHG emissions for the Meadowbank and Whale Tail sites beginning in 2018 (first year of Whale Tail reporting) are provided in Table 8-140, with comparisons to FEIS predictions. Calculated emissions beginning in 2019 include both Whale Tail and Meadowbank sources combined, so only the total values are compared to FEIS predictions in Table 8-140. As described in the GHG Reduction Plan (April, 2020) and Table 8-139 above, FEIS Addendum predictions were developed for the maximum emission scenario (i.e. peak production; estimated to occur in 2022).

Overall, total emissions from the Meadowbank Complex (Meadowbank and Whale Tail sites) were 243,752 tCO_2e in 2021, which is less than the FEIS-predicted maximum value of 344,200 tCO_2e.

Table 8-140 Predicted and calculated GHG emissions (t CO_2e) for all sources required under the Greenhouse Gas Pollution Pricing Act (S.C. 2018, c.12,s.186, Schedule 3) for the Meadowbank Complex. FEIS Predictions are further described in Table 8-139 above.

Emission Type	FEIS Prediction	2018	2019	2020	2021
Electricity Generation - stationary fuel combustion emissions (Generators)	-	91,082	106,499	106,251	107,495
Electricity Generation - Stationary fuel combustion emissions (Other than generators)	-	-	577	266	604
Industrial process emissions	-	987	560	1,138	1,181
Industrial product use emissions	-	-	527	986	683
Venting emissions	-	-	-	-	-
Flaring emissions	-	-	-	-	-
Leakage emissions	-	-	-	-	-
On-site transportation emissions	-	90,650	82,951	113,609	130,597
Waste emissions	-	2,809	4,450	3,186	3,193
Wastewater emissions	-	-	-	-	-
TOTAL	**344,200**	**185,528^**	**195,564***	**225,435**	**243,752**
^In 2020, calculation methods were revised for 2019+. **Re-calculated in 2020. Previously reported in 2019 as 194,500.*					

Calculated total monthly emissions for all sources required under the Greenhouse Gas Pollution Pricing Act (S.C. 2018, c.12,s.186, Schedule 3), for both the Whale Tail and Meadowbank sites are shown in Figures 28 and 29, grouped by major and minor sources. Relatively little variation in sources of emissions occurred month over month (Figure 29), though emissions overall do appear to increase in the winter months (Figure 28), likely due to heating requirements.

Figure 28. Calculated monthly GHG emissions for the Meadowbank Complex. Minor sources include emissions related to stationary combustion, industrial processes, industrial product use, and waste emissions.

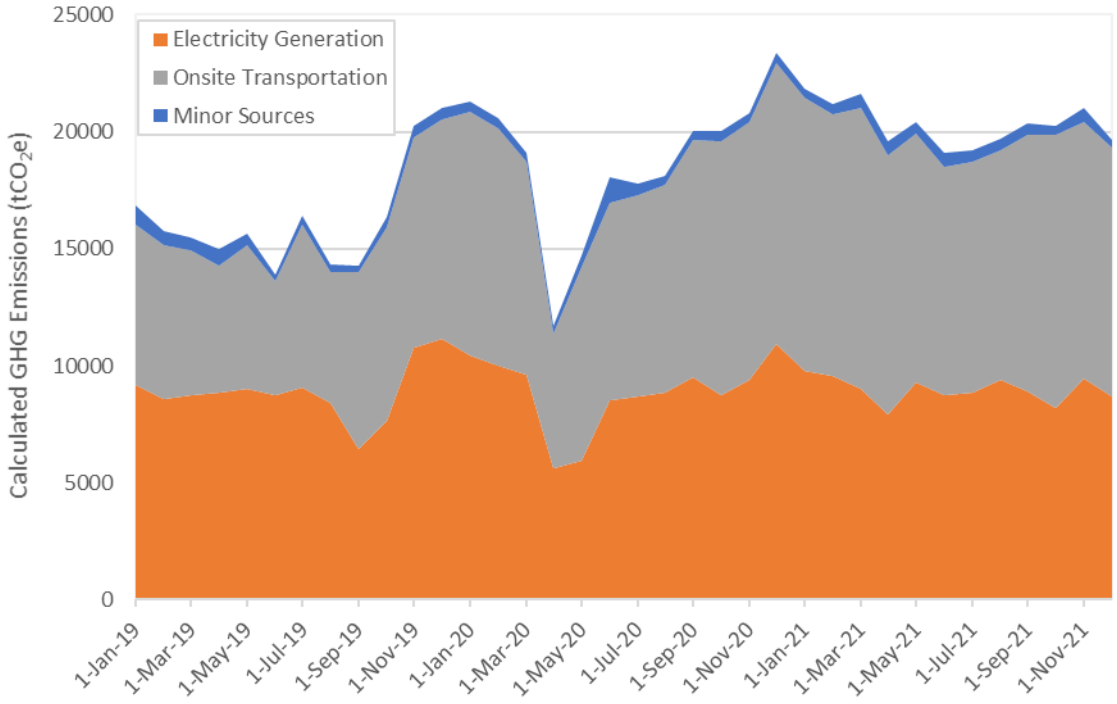
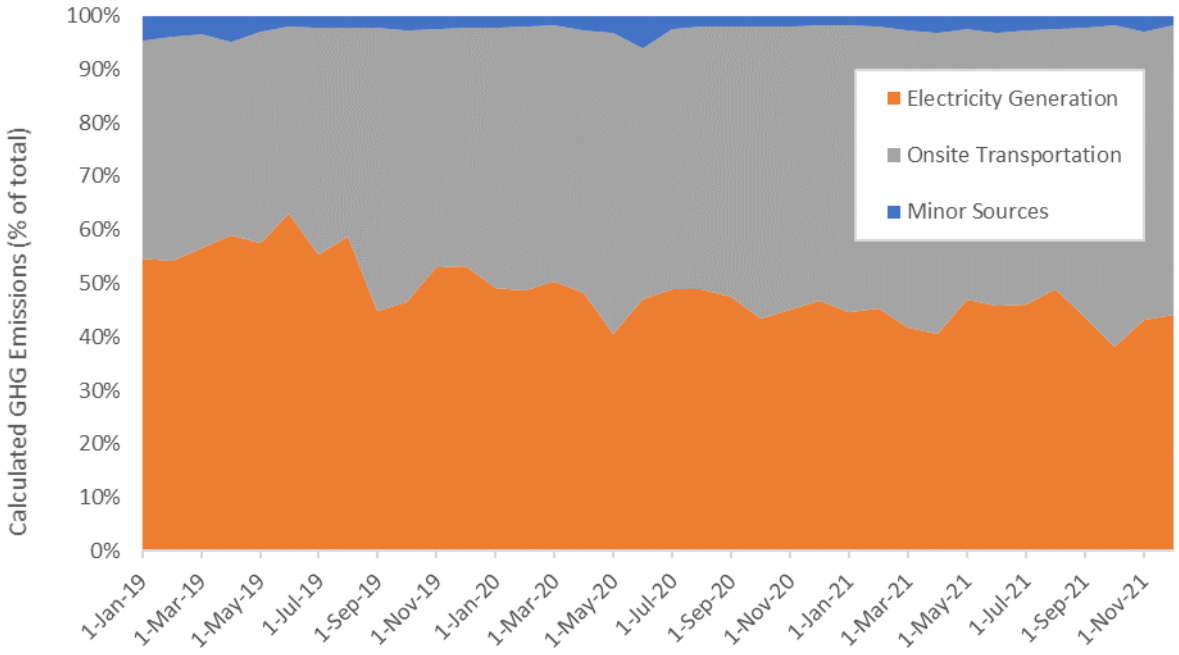
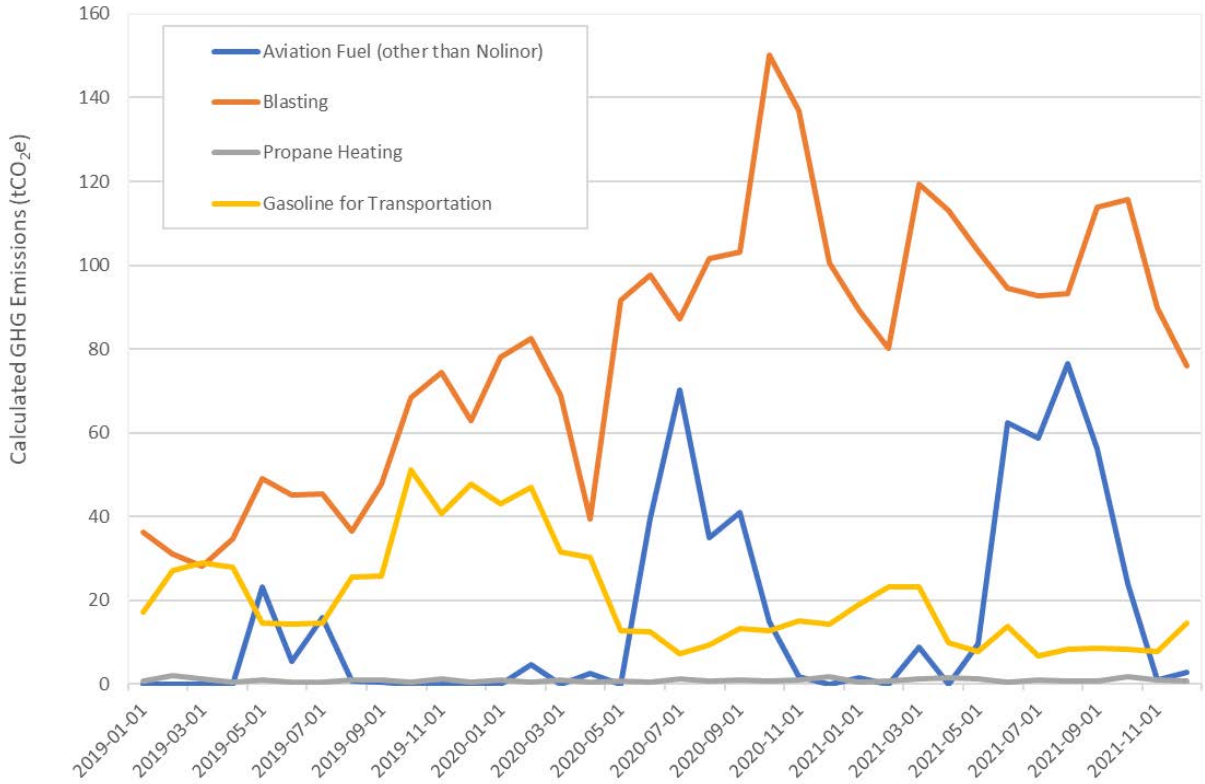


Figure 29. Calculated monthly GHG emissions (% of total) for the Meadowbank Complex. Minor sources include emissions related to stationary combustion, industrial processes, industrial product use, and waste emissions.



According to the GHGRP (Section 3.2), an analysis of specific sources is provided in Figure 30. These sources include aviation, blasting, propane heating, and light truck transportation using gasoline. It is noted that aviation emissions exclude aviation fuel for flights to Nunavut, which are not subject to carbon pollution pricing (https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/putting-price-on-carbon-pollution.html). Reported aviation fuel use is therefore primarily associated with helicopter use for exploration activities and personnel transport during the summer months. Use in 2020 increased compared to 2019 as a result of the COVID-19 pandemic and the use of helicopters for daily personnel transport to Baker Lake in lieu of in-town accommodation. In 2021, emissions mainly related to explorations work and the application of the dust suppressant at the MBK TSF. Emissions related to blasting steadily increased over the course of 2019 and 2020 as Whale Tail operations ramped up. Blast-related emissions have plateaued in 2021. Propane heaters form a very minor component of overall emissions and have been relatively constant (0.4 – 2.0 tons CO_2e/month). Similarly, use of gasoline for transportation (primarily associated with light trucks, but also potentially smaller vehicles such as ATVs and snowmobiles) has remained relatively constant, though a slight increase during the winter season of 2019-2020 was observed.

Figure 30. Calculated emissions related to specific sources at the Meadowbank Complex from 2019 -2021. Sources indicated in the GHGRP (April, 2020; Section 3.2).



Agnico Eagle is continually seeking to reduce GHG emissions. Greenhouse gas emission reduction programs are identified in Section 8.15.1, and further described in the GHG Reduction Plan (April, 2020). Some have already been implemented, while others are currently being assessed.

As the Meadowbank Complex emits more than 50Kt of $CO2_e$/yr, a report will be submitted to Environment and Climate Change Canada's Greenhouse Gas Emission Reporting Program by June 1st, 2022. Mining operations in Nunavut are also subject to the Federal Output Based Pricing System Regulations, which came into effect July 1st, 2019. An Annual Report and supporting Verification Reports, required as part of the OBPS, will be submitted on June 1st, 2022. These reports are in addition to GHGRP reporting. It should be noted that due to differences in calculation methods, total emissions reported under ECCC's Greenhouse Gas Reporting Program (or other regulatory programs) may differ slightly from those provided here for the purposes of comparison with FEIS predictions.

8.16 CREEL SURVEY RESULTS

As required by DFO Authorization NU-03-0190 (AWPAR) Condition 5.2.4: ***Engage the local Hunter Trapper Organization(s) in the development, implementation and reporting of annual creel surveys within the water bodies affected by the Plan.***

And

NIRB Project Certificate No.004 Condition 51: ***engage the HTOs in the development, implementation and reporting of creel surveys within waterbodies affected by the Project to the GN, DFO and local HTO.***

In March 2007, a harvest study was initiated by Agnico Eagle in association with the Baker Lake Hunters and Trappers Organization (HTO) in order to monitor and document the spatial distribution, seasonal patterns and harvest rates of hunter kills before and after construction of the Meadowbank All-Weather Access Road (AWAR). The harvest study was conducted annually and is open to Inuit and non-Inuit residents of Baker Lake who are at least 16 years of age. The harvest study focuses primarily on terrestrial wildlife harvests; however, fishing results are also recorded by the harvest study administrator in support of on-going creel surveys.

After low participation during the first year of the study, methods were strategically adapted, participation increased steadily, and valuable information on harvest patterns in the Baker Lake area was collected. The HHS, through regular visits, contributed to developing a strong relationship with local harvesters, the HTO, and GN DoE. Data were provided annually in monitoring reports from 2007 to 2015. The HHS was suspended for three years (2016 and 2018) to develop new approaches and direction.

Following consultation with the HTO, KivIA, GN, and other agencies in November 2016 (Winnipeg) and June 2017 (Ottawa), Agnico Eagle reinitiated the HHS in March 2019. The study approach was similar to previous years but suggestions and guidance received during the consultation period were incorporated into the study.

Completed discussion regarding creel survey and historic data is provided in Section 10 of the 2021 Wildlife Monitoring Report (Appendix 47). The below is a summary of the findings and Agnico will refer to Appendix 47 for a complete discussion of the results.

Harvest calendars are provided on a household basis rather than an individual basis in order to simplify data entry and collection. The harvest calendar is attractive and consists of local photographs of wildlife and Baker Lake residents (see Appendix A for 2020 calendar – Appendix 47 of this report). Space is provided for each calendar day where harvest details can be documented. A map is provided at the end of the calendar that delineates a 4 km^2 UTM grid within the Baker Lake and Meadowbank Complex areas. Each grid has a unique code to facilitate recording of information. When calendars are issued, participants or participating households are encouraged to write harvest details (e.g., number of animals, sex, age and location [i.e., grid code]) for the appropriate date on the calendar.

Participants were interviewed in person only three times during the year (i.e., June 2021, October 2021 and January 2022) by the harvest study coordinator. During the January 2022 interviews, remaining data from 2021 were collected. The purpose of the interviews is to ensure all harvest data are recorded on the calendars and collect incidental information to compliment calendar data, including notable Caribou

movements, aggregations, and unique observations. Between interview periods, participants were often contacted by phone or social media to encourage recording of harvest data.

Features of the 2021 Hunter Harvest Study included: 1) building long-term relationships between participants and researchers; 2) increasing engagement with participants on social media platforms such as Facebook and Instagram; and 3) increasing incentives for participating in the study (e.g., gas vouchers and prizes).

The number of fishermen reporting successful fishing trips in 2021 was 27, which is higher than the average of 23 fisherman from 2007 to 2015 and in 2019 to 2020, and the highest number of fisherman reporting success since 2012. The highest numbers of fisherman reporting success in 2021 were in May and June period .

The most common fish species captured, Lake Trout, represented 67% of the total catch in 2021, which was the same as in 2020 but higher than the average of 55% from 2007 to 2015 and 2019 to 2020. Lake Whitefish were also captured at reasonably high numbers.

Fishing trips, regardless of success rate, did not generally occur beyond the immediate areas of Baker Lake, Whitehills Lake, and along the lower AWAR. Note that the Whale Tail study area is excluded because no fishing occurred in this area. Some fishing occurred along the Thelon River system and associated lakes during the summer when these areas can be accessed by boat. Results indicate that study participants are less willing to travel long distances to catch fish, regardless of AWAR access, likely due to the abundance of fish near the Hamlet of Baker Lake.

In 2021, fishing periods with the most active fisherman was from May to June. The periods with the most fish caught included the summer months (especially May and June), which reflects the high number of Lake Trout caught by fisherman heading out on the land after ice melt, and November. This trend can be observed in the overall trends from 2007 to 2015 and 2019 to 2020.

The 2021 HHS data were compared to the impact prediction thresholds to evaluate adherence to the impact predictions and the provision of adaptive management, as either a necessary or proactive measure. No thresholds were surpassed in 2021 (Section 8 of Appendix 47).

8.17 NO FISHING POLICY

As Required by NIRB Project Certificate No.004, Condition 52: ***Cumberland shall enforce a no-fishing policy for employees while working on the job site.***

Agnico Eagle has a no-fishing policy for its Meadowbank and Whale Tail Mine Sites. The policy is enforced all through the year within environmental inspections. There were no incident to report in 2021.

8.18 TERRESTRIAL ECOSYSTEM MANAGEMENT PLAN

As Required by NIRB Project Certificate No.008, Condition 28: ***The Proponent shall submit a revised TEMP to the Nunavut Impact Review Board (NIRB) within one (1) year of issuance of the Project Certificate, with subsequent versions provided as appropriate. Results of the TEMP shall be reported to the NIRB annually including details of how Inuit Qaujimajatuqangit contributed by knowledge holders has been considered and utilized in associated activities and updates.***

Agnico Eagle submitted the TEMP Version 7 in June 2019 (Appendix 58 of the 2019 Annual Report). This version includes revision per additional comments from TAG members, and Whale Tail Expansion Project environmental assessment information requests, technical comments, and technical meetings. This section include both Meadowbank and Whale Tail site, as condition from Project Certificate no. 004 and 008. TEMP Version 8 was submitted in 2020 within 60 days of issuance of the amended Project Certificate No.008 to comply with commitments made during the Expansion Project NIRB Review Process. This version was not yet approved and an updated Version 8 will be provided to TAG for approval in 2022. For 2021, Version 7 of the TEMP continued as the basis for 2021 monitoring and mitigation.

8.18.1 Wildlife Monitoring Meadowbank and Whale Tail Site*

8.18.1.1 *Annual Monitoring*

As Required by NIRB Project Certificate No.004, Condition 55: ***Provide the Annual Wildlife Summary Monitoring Report.***

As a requirement of the NIRB Project Certificate no. 004 and no. 008, the 2021 Wildlife Monitoring Summary Report represents the 16th of a series of annual reports for the Agnico Eagle Meadowbank Complex. Baseline and monitoring programs were first initiated in 1999 and will continue through the life of the Mine. Details of the wildlife monitoring program for the Project are provided in the Terrestrial Ecosystem Management Plan (Version 7, Agnico Eagle 2019). The 2021 Wildlife Monitoring Summary Report (Appendix 47) provides the monitoring objectives, methodology, historical and current year results, and management recommendations for each monitoring program. The 2021 report builds on data presented in previous reports and incorporates monitoring recommendations from these reports, as well as recommendations and requests from intervenors on past reports made during the NIRB review process. Below is a summary of the results from each component of the 2021 Wildlife Monitoring Summary Report with more details provided in the following sections.

Caribou Management Decision Tree

Decision tree process used data from the road, Mine site, viewshed surveys, and satellite collaring to determine the scale of caribou monitoring and management required.

Caribou Satellite-Collaring Program

Analysis of caribou migration patterns using collar data from 2005 to 2019 are provided in Appendix F of the 2021 Wildlife Monitoring Summary Report (Appendix 47). Agnico Eagle intends to continue collaboration with the Government of Nunavut Department of Environment (GN DoE) caribou satellite-collaring program. Collar data were not available to complete the 2021 analysis.

Road Surveys

In 2021, 177 road surveys were conducted along the All-weather Access Road (AWAR) and 141 were conducted along the Whale Tail Haul Road (WTHR). A total of 37,825 caribou were observed along the

* TSM- Biodiversity and Conservation Management

AWAR (213.7 caribou per survey) and 11,928 caribou were detected along the WTHR (82.8 caribou per survey). Road surveys helped facilitate mitigation decisions along the AWAR and WTHR.

The AWAR was fully closed on 49 days, partially closed on 9 days and had speed restrictions applied for 39 days. The WTHR was fully closed on 13 days, partially closed on 1 day, and had speed restrictions applied for 29 days.

The number of AWAR systematic road surveys completed in 2021 (n=177) is higher than the number of surveys completed the previous year (n=132) and considerably higher than the annual goal of 75 surveys. In 2021, surveys were conducted on average every 2.1 days. Survey frequency was highest in the fall and lowest in winter. By month, the highest numbers of surveys were conducted in April, May, November, and December, generally corresponding with higher numbers of caribou observed within the LSA.

In 2021, 144 WTHR surveys were conducted between January 10th and December 31st with a survey being conducted every 2.5 days on average. The number of surveys conducted in 2021 was lower than the number conducted in 2019 and 2020, but much higher than the number of surveys in 2017 and 2018. The decrease in survey effort on the WTHR from 2020 to 2021 is due to differences in the timing and location of caribou observations because survey effort is determined based on caribou observations. More surveys were conducted in spring and summer compared to fall and winter

Viewshed Surveys

The viewshed surveys implemented in 2021 are to act as an early-warning system for caribou approaching the WTHR. Of the 310 viewshed surveys completed, 37 surveys (12%) had caribou sightings, and a total of 190 caribou were reported. Survey effort was focused in the fall season during 2021.

Remote Camera Program

Data were analyzed from time-lapse images collected from remote cameras on the Whale Tail Haul Road between 2019 and 2021. Caribou were detected in the spring of each year, and road crossing events were detected in 2020 and 2021. The majority of road crossing events occurred during road closure. The average time between crossing events and previous vehicle was 23:09 hours, ranging from 2:30 to 85:10. Too few crossing events were detected to statistically compare crossing rates between different road heights, backfill materials, and backfill slopes.

Pit and Mine Site Ground Surveys

The incidental wildlife forms were used consistently throughout 2021 to document wildlife seen around the Project. Starting in October 2021, observations from weekly pit and mine site surveys were recorded separately from incidental observations. Arctic fox, Arctic hare, caribou, wolf, muskox, and wolverine were recorded in 2021. Bird sightings throughout the year included bald eagle, peregrine falcon, ptarmigan sp., rough-legged hawk, and snowy owl.

Wildlife deterrents were used on 37 occasions in 2021, and were used for caribou, muskox, wolf, and wolverine. A decoy was deployed at the Baker Lake tank farm to discourage bird nesting. Deterrents were also applied to Quarries 20 and 22 to discourage raptor nesting.

One wolverine mortality was recorded in 2021.

Blast Monitoring

Blast measurements were collected at 500, 1,500, 3,000, and 5,000 m from the Whale Tail Pit. Blast measurements were collected between December 20th, 2020 and August 6th, 2021. A total of 139 blasts were measured during this period. Surveys for caribou prior to blasts were performed on 165 days between January 3rd to December 16th, 2021. Of the 165 surveys, 132 surveys yielded no caribou observations. A total of 21 caribou behavior monitoring surveys were completed during blasts in 2021. Blasting was cancelled on a single occasion due to caribou presence in the vicinity of the Whale Tail Pit.

Wildlife Habitat Monitoring

An analysis of available wildlife habitat was conducted to compare the actual habitat losses to the permitted areas for proposed development. Wildlife habitat losses total 1,130 ha for the Meadowbank Mine Site, 775 ha for the Whale Tail Pit and Haul Road and 180 ha for the AWAR. None of the areas exceed thresholds for high suitability habitat losses.

Hunter Harvest Study

The Hunter Harvest Study (HHS) included 55 participants in 2021. The 2021 HHS data indicated that 43% of reported harvest occurred within 5 km of the AWAR, and 71% occurred within the Meadowbank RSA. In 2021, three Caribou were harvested within 5 km of the WTHR. Given the low numbers of reported harvests close to the WTHR and the prohibition of the public from the WTHR, it is unlikely that the presence of the road has resulted in increased harvest.

Predatory Mammal Den Monitoring

Potential effects due to Project-related activities were not identified to trigger monitoring of predatory mammal dens. Monitoring of predatory mammal dens were conducted informally in 2021 through observations recorded during other monitoring programs.

Raptor Nest Monitoring

Raptor nest monitoring in 2021 occurred in all quarries along the WTHR and AWAR. Raptor activity and potential nest locations were also noted on other surveys including road surveys, viewshed surveys, freshet monitoring, and on-site environmental monitoring. Eight previously established peregrine falcon nests were identified and monitored.

Raptor nest management plans were not developed at the active nest sites, as Mine-related activity was already restricted within the quarries where Falcons were observed.

Waterbird Nest Monitoring

Trent University, in collaboration with Environment and Climate Change Canada and Agnico Eagle, conducted a research study to investigate mitigation options to minimize flooding-related impacts to birds in the Whale Tail South area. Studies in 2021 indicated that the average number of nests and bird density increased from 2019 to 2021 in upland control plots, and nest density declined in flood zone plots, potentially indicating a movement of nesting sites to adjacent areas, however this was not supported by mark-re-sighting surveys.

Breeding Bird Monitoring

Agnico Eagle is finalizing a collaboration agreement with Environment and Climate Change Canada, with focus on contribution to regional bird monitoring programs. This includes commitment to 48 PRISM plots selected by CWS over 10 years (2021 to 2031), and completion of AWAR and WTHR Breeding Bird

Survey (BBS) routes opportunistically when qualified individuals are on site. At a minimum, these BBS routes will be conducted every 3 years during the operations, closure, and post-closure phases of the project. PRISM and BBS are scheduled to restart in 2022.

Non-Native Plant Surveys

Two non-native plant species were identified during surveys in 2021. Recommendations for management of non-native plants are provided.

Special Studies

A pilot snow study was implemented in 2020 and 2021 to evaluate the effectiveness of the survey techniques and to guide future monitoring activities but sampling targets have not been met to date. Year one of a three-year monitoring program is planned for 2022, which will aim to collect a full suite of data from 36 survey locations along the WTHR and AWAR.

Agnico Eagle continued a caribou behaviour study that focused on measuring different behaviour activities of caribou in relation to mine-related activities (Appendix L of the 2021 Wildlife Monitoring Summary Report).

8.18.1.2 *Harvest Study Results*

As required by NIRB Project Certificate No.004 Condition 54

a. Updated terrestrial ecosystem baseline data

See the 2021 Wildlife Monitoring Summary Report attached in Appendix 47.

e. Details of a comprehensive hunter harvest survey to determine the effect on ungulate populations resulting from increased human access caused by the all-weather private access road, including establishing preconstruction baseline harvesting data, to be developed in consultation with local HTOs, the GN-DOE and the Nunavut Wildlife Management Board.

As required in the TEMP, in March 2007, a harvest study was initiated by Agnico Eagle in association with the Baker Lake Hunters and Trappers Organization (HTO) in order to monitor and document the spatial distribution, seasonal patterns and harvest rates of hunter kills before and after construction of the Meadowbank All-Weather Access Road (AWAR). The harvest study was conducted annually and is open to Inuit and non-Inuit residents of Baker Lake who are at least 16 years of age. The harvest study focuses primarily on terrestrial wildlife harvests; however, fishing results are also recorded by the harvest study administrator in support of on-going creel surveys (Section 8.16 above).

After low participation during the first year of the study, methods were strategically adapted, participation increased steadily, and valuable information on harvest patterns in the Baker Lake area was collected. The HHS, through regular visits, contributed to developing a strong relationship with local harvesters, the HTO, and GN DoE. Data were provided annually in monitoring reports from 2007 to 2015. The HHS was suspended for three years (2016 and 2018) to develop new approaches and direction.

Following consultation with the HTO, KivIA, GN, and other agencies in November 2016 (Winnipeg) and June 2017 (Ottawa), Agnico Eagle reinitiated the HHS in March 2019, which for the first time also encompassed the Whale Tail RSA as part of the Meadowbank Complex. The study approach was similar

to previous years but suggestions and guidance received during the consultation period were incorporated into the study.

Refer to Creel Survey Section 8.16 above for the 2021 methodology employed.

The HHS included 55 participants by the end of 2021, which is lower than the 64 participating in 2020 because of several older hunters indicating that “they don’t hunt anymore”. Of the 2021 participants, Caribou harvest data had been collected from 39 participants, which is higher than the 28 participants that reported Caribou harvests in 2015, and slightly lower than the number of hunters reporting harvests in 2019 (42) and 2020 (43).

Based on the previous discussion of total numbers of hunters in the Hamlet of Baker Lake, there were 389 potential hunters within the Baker Lake community in 2008. The number is comparable to the comprehensive 5-year Nunavut Wildlife Harvest Study in which 336 Baker Lake hunters were contacted and interviewed. Discussions with Baker Lake HTO members in 2019 suggest the total number of hunters is over 300. Given the historical and current number of hunters in Baker Lake, an estimate of 300 to 350 active hunters is used in this analysis. Based on these numbers, the 39 hunters reporting Caribou harvest in 2021 conservatively represent from 11 to 13% of total hunters in the community.

Hunting is concentrated in the vicinity of the Hamlet of Baker Lake and along the AWAR to approximately KM 85. Limited harvests were reported along the Thelon River system to Aberdeen Lake, and along the northeastern shore of Baker Lake. Annual variation in harvest location and intensity is attributable to numerous factors. For instance, many hunters have stated during informal discussions that they have a ‘favorite’ hunting area that they frequent each year. Some hunters have stated that they prefer hunting in ‘convenient’ locations, whereas other hunters prefer remote locations well away from frequented areas. A percentage of hunters also enjoyed partaking in long distance hunting trips over multiple days.

Between 1996 and 2001, 18% of Caribou harvests were estimated to be within 5 km of the AWAR (prior to construction) and 67% of harvests occurred within the Meadowbank RSA (NWMB 2005). In the first year of the HHS study (2007), prior to completion of the AWAR, 34% of harvests were reported within 5 km of the AWAR alignment and 79% were recorded within the Meadowbank RSA. The HHS data (2007 to 2015 and 2019 to 2020) fluctuated between 34 and 54% of reported harvest within 5 km of the AWAR, and between 64 and 85% within the Meadowbank RSA. The 2021 HHS data indicated that 43% of reported harvest occurred within 5 km of the AWAR, and 71% occurred within the Meadowbank RSA. As was the case in other years, threshold levels of 20% set for monitoring the effects of the Meadowbank mine development on the distribution of caribou harvest were not exceeded.

In 2021, three (3) Caribou were harvested within 5 km of the WTHR, which compares to no reported harvest during the NWMB harvest study and five (5) Caribou harvested in 2019 (no harvests were reported in 2020). Overall harvest numbers were too low to determine whether harvests have increased following construction of the WTHR. Within the Whale Tail RSA (note – overlaps with the Meadowbank RSA), a total of 48 harvests were reported in 2021, which is above the average across the first 11 years of the study but lower than reported harvests in 2011 (103 Caribou), 2015 (53), and 2019 (85). Given the low numbers of reported harvests close to the WTHR and the prohibition of the public from the WTHR, it is unlikely that the presence of the road has resulted in increased harvest.

Based on the NWMB (2005) and inclusive Baker Lake HHS results (2007 to 2015; 2019 to 2021), highest Caribou harvests have occurred in September and October, with a second smaller peak in March and April. The similar pattern between the studies indicates that seasonal hunting preferences have not changed markedly in the last decade.

In spring, overall Caribou hunting was generally low with hunting occurring primarily in the Whitehills Lake area. During the summer, Caribou were harvested across a larger area but particularly along the AWAR around Km 85, near the Hamlet of Baker Lake, and along the Thelon River to Aberdeen Lake. Two Caribou were harvested near the WTHR in the summer. In the fall, hunting was much more concentrated along the AWAR north of Whitehills Lake, around the Prince River, and along the northern shore of Baker Lake. Unlike 2020, no fall Caribou harvests were reported along the Kazan River south of Baker Lake. One Caribou was harvested near the WTHR in the fall. In winter, fewer Caribou were hunted along the AWAR. Successful hunters were those that travelled further afield by snowmobile (e.g., northwest of Whitehills Lake and along the Thelon River to Aberdeen Lake).

There were only two reported harvests for Muskox in 2021, which precludes any interpretation of potential mine-related effects. Surprisingly, one Moose (*Alces alces*) was also reported as being harvested in 2021, but this was outside of the study area. Moose in the Baker Lake area are well north of their known range. Wolverines (total of 20 in 2021 – the second highest yearly tally to date) were hunted close to Baker Lake, in the Whitehills Lake area, and along the Thelon River to Aberdeen Lake. Wolves (total of 26 in 2021; significantly lower than the 88 reported in 2020) were either harvested close to Baker Lake or in the Aberdeen Lake area. In general, relatively low densities of Wolves and their general aversion to humans requires hunters to hunt well away from the AWAR. In 2021, the presence of the AWAR may have had some influence on participant hunting patterns for Muskox and Wolverine.

Arctic Fox (total of 5 in 2021; compared to 11 in 2020) was primarily trapped in the vicinity of Baker Lake, while Red Fox were harvested west of Baker Lake and west of Third Portage Lake. One Grizzly Bear was taken outside of the study area. Birds (e.g., goose, duck, ptarmigan etc.) were reported as being collected primarily on an island southeast of Baker Lake.

The 2020 HHS data were compared to the impact prediction thresholds to evaluate adherence to the impact predictions and the provision of adaptive management, as either a necessary or proactive measure. No thresholds were surpassed in 2021. (Section 10.0 of Appendix 47).

f. Details of annual aerial surveys to be conducted to assess waterfowl densities in the regional study area during the construction phase and for at least the first three (3) years of operation, with the data analyzed and compared to baseline data to determine if significant effects are occurring and require mitigation.

At Meadowbank site, given the low densities of waterbird nests identified at the mine site and along the AWAR from 2005 - 2012 (i.e., too low to determine whether changes in nest abundance or success have occurred), and the absence of data suggesting that mine or road-related effects are occurring, the waterbird nest survey program has been discontinued.

The Whale Tail Project requires the construction of two dikes within Whale Tail Lake to divert water from the proposed pit to surrounding lakes and tributaries, resulting in flooding that will elevate water levels by 4 m and inundate approximately 157 ha of tundra during the active bird nesting window. To investigate mitigation options for minimizing flooding-related impacts to birds, Trent University, in collaboration with

Environment and Climate Change Canada and Agnico Eagle, conducted active bird nest surveys and experimented with deterrent options in summer 2018, 2019 and 2021 at the Whale Tail site. Further discussion of the 2021 field program is provided in the 2021 Migratory Bird Protection Report found in Appendix E of the 2021 Wildlife Monitoring Report (Appendix 47) and Section 8.18.5 below.

g. Details of an annual breeding bird plot surveys and transects along the all-weather road to be conducted during the construction phase and for at least the first three (3) years of operation.

The breeding bird PRISM (Program for Regional and International Shorebird Monitoring) plot and bird transect monitoring programs were designed to evaluate potential Project-related changes in breeding bird species abundance, richness, and diversity over time. The program is one component of the larger monitoring strategy to evaluate the success of mitigation measures implemented to minimize the amount of vegetation (i.e., bird habitat) removed or degraded (e.g., dustfall) by the Project, and whether certain Mine activities such as the Mine site or AWAR have resulted in reduced or compromised habitat function or effectiveness (i.e., zone of influence) for breeding birds.

For the breeding bird transects, data analysis in 2011 and 2015 indicated that no road-related effects had occurred to date, and thresholds had not been exceeded; therefore, annual transect surveys were permanently suspended after 2015. In 2020, Agnico Eagle sent ECCC the comprehensive 2003-2015 analysis of all PRISM and breeding bird transect data.

Results of the comprehensive analysis determined there were no significant effects of the Project or Mine-related infrastructure on bird abundance, diversity or community composition, which supports that mitigation is effective. Agnico Eagle is finalizing a collaboration agreement with ECCC, with focus on contribution to regional bird monitoring programs. This includes commitment to 48 PRISM plots selected by CWS over 10 years (2021 to 2031), and completion of AWAR and WTHR Breeding Bird Survey (BBS) routes opportunistically when qualified individuals are on site. At a minimum, these BBS routes will be conducted every 3 years during the operations, closure and post-closure phases of the project. PRISM and BBS are scheduled to restart in 2022.

h. Details of a monitoring program, including recording the locations and frequency of observing caribou and carnivores and any actions taken to avoid contact with or disturbance, and a specific mitigation plan for Shortearred owls and any other species of special concern pursuant to Schedule 3 of the Species at Risk Act located in the local study area or along the all-weather private access road.

See 2021 Wildlife Monitoring Summary Report" attached in Appendix 47 for a completed discussion.

All Mine site personnel, including construction and support staff, are required to document and report wildlife observed within the LSA of the Project as well as ancillary areas (e.g., AWAR and WTHR). The protocol involves notifying staff in the environment department, which is intended to ensure that potential problem animals are identified. Pertinent data, and daily and weekly Mine site inspection reports are consolidated and entered into an electronic database. Monthly summary reports and wildlife observation data are submitted to the GN and KivIA. Quarterly reports are also submitted to the KivIA.

In 2021, 177 road surveys were conducted along the All-weather Access Road (AWAR) and 144 were conducted along the Whale Tail Haul Road (WTHR). Eight mammalian species and ten avian species were detected during road survey on the AWAR and WTHR in 2021. Arctic fox Arctic ground squirrel,

Arctic hare, caribou, grey wolf, muskox, and wolverine were all detected along both the AWAR and WTHR, and one red fox was detected along the AWAR. American crow, Canada goose, common raven, greater white-fronted goose, ptarmigan sp., rough-legged hawk, sandhill crane, and snow goose were detected on both the AWAR and WTHR. Additionally, bald eagle, long-tailed jaeger, and peregrine falcon were detected along the AWAR.

Mine site incidental observations were consolidated from all incidental reports at Meadowbank and Whale Tail. Five mammal species were reported as incidental sightings at Meadowbank including Arctic fox, caribou, wolves, muskox, and wolverine. One peregrine falcon and one rough-legged hawk were recorded in incidental surveys at Meadowbank. Caribou sightings were highest from January to May, with another peak in observations during July and August. Muskox sightings were highest in April, July, August, and September. Six mammal species were reported as incidental sightings at Whale Tail including Arctic fox, Artic hare, caribou, wolves, muskox, and wolverine. The highest caribou sightings took place in April, June, and August through October. Muskox sightings were highest in summer between June and August. Arctic fox and Arctic hare each had one incidental observation at Whale Tail fox detected in December. Ptarmigan sp. were observed in April, bald eagles were observed in July, and one snowy owl was observed in November.

Refer to Section 8.18.6 below for a discussion regarding species at risk.

8.18.1.3 *Caribou Migration Corridor Information Summary*

As required by NIRB Project Certificate No.004 Condition 56: ***Maps of caribou migration corridors shall be developed in consultation with Elders and local HTOs, including Chesterfield Inlet and placed in site offices and upgraded as new information on corridors becomes available. Information on caribou migration corridors shall be reported to the GN, KIA and NIRB's Monitoring Officer annually.***

Agnico Eagle intends to continue collaboration with the GN DoE caribou satellite-collaring program. Raw collar data were not available to complete the 2020 and 2021 analysis.

8.18.1.4 *Caribou Collaring Study Meadowbank*

As required by NIRB Project Certificate No.004 Condition 57*: participate in a caribou collaring program as directed by the GN-DOE*

And

As required by NIRB Project Certificate No.008 Condition 29*: The Proponent shall, in collaboration with the Government of Nunavut, collect additional caribou collar data and conduct analyses of this data to quantify the zone of influence and associated effects of project components on caribou movement for a study area that includes the Whale Tail mine site, the haul road, the Meadowbank Gold Mine and its All-Weather Access Road.*

A summary of the analyses and associated effects shall be provided annually in the Proponent's annual report to the Nunavut Impact Review Board.

Agnico Eagle intends to continue collaboration with the GN DoE caribou satellite-collaring program that includes data collected within the Meadowbank Complex RSA. The GN biologists discuss collar deployments with hunters and Elders and get approval prior to proceeding. Daily collar location maps

continued to be received in 2021 by GN DoE during the sensitive seasons to inform locations of caribou in relation to the Meadowbank Complex.

The satellite-collaring program was developed to provide information on the distribution of caribou occurring within the Meadowbank RSA and contribute data to ongoing satellite-collaring programs for the Ahiak, Qamanirjuaq, and other herds that are used by the GN for herd management. The satellite-collaring program, along with GN DoE regional data, is an important monitoring and management tool that provides a regional perspective on caribou activity near Mine operations. Another key objective of the program is to provide timely information for the caribou management and monitoring strategy at the Meadowbank and Whale Tail sites (i.e., Decision Tree approach; see 2019 TEMP).

The satellite-collaring program was initially designed to continue for five consecutive years in accordance with the original TEMP (Cumberland 2006), but collar deployments have continued beyond this period as part of a long-term caribou monitoring strategy for the region. Caribou in the Baker Lake area were first collared in May 2008, and the program has continued for more than a decade. Monitoring of collars continued in 2021 and is expected to continue through 2022.

Agnico Eagle intends to continue collaboration with the GN DoE caribou satellite-collaring program. Collar data were not available to complete the 2020 and 2021 analysis.

8.18.1.5 *Remote Cameras*

The initial remote camera study design (October 2018 to November 2019) was intended to collect general trends on caribou crossing events and traffic or road activities on the WTHR, to inform fine scale traffic mitigation. An updated study design was implemented in November 2019, to examine the permeability of the WTHR to caribou movement as those interactions relate to the physical parameters of the road. The 2020 remote camera data were previously analyzed for the 2020 Wildlife Monitoring Summary Report. Results from the 2019 to 2021 remote camera program are summarized below.

The primary objective of the remote camera program is to monitor caribou behavioural interactions with the WTHR, and adapt management practices (i.e., traffic mitigation) as required. The current remote camera program allows for comparisons to determine if caribou crossing locations along the WTHR are related to the physical parameters of the road (i.e., backfill height, slope and material grain size) and traffic rates.

Locations of remote cameras have varied across program years. Ten camera pairs were active in 2019 and 2021, and eight camera pairs were active in 2020. The locations of the paired remote cameras along the WTHR were selected based on high-frequency caribou crossing locations, and stratified across road height categories (i.e., <1.5 m, 1.5 to 3 m, and >3 m). Road heights in 2019 were determined from spatial data, and road heights in 2020 and 2021 were determined in the field. Backfill material and slope at camera locations were determined from construction surveys. Backfill slope along the WTHR is typically 2:1. In areas where backfill height exceeds 3 m, slope was recontoured to 4:1 for safety purposes, and to facilitate wildlife crossings. Camera location are showed on Figure 16 to 18 of Appendix 47.

The majority of camera positions were adjusted for 2021 to encompass both sides of the road to better document caribou crossing events and vehicle traffic. Camera timing was set to the continuous motion-triggered setting, with additional timed interval photos occurring in thirty minute or one hour intervals.

Maintenance checks were performed approximately every one to two months, and weekly during the sensitive seasons to back up photographs and remove dust, snow, or ice accumulated on cameras.

Caribou were detected on time-lapse images in the spring between April 10th and May 20th, 2019, April 2nd and May 24th, 2020, and April 15th and May 25th, 2021. Three caribou (0.08 caribou/day) were detected in fall 2019 at camera pair 8. There were 10 crossing events in 2020, and 3 in 2021. The highest caribou rates were detected in 2019, however no crossing events were observed in time-lapse images in 2019. Cameras in 2019 were deployed to face towards, and away from the road, and therefore had less opportunity to detect crossing events. Cameras facing away from roads contributed to high caribou rates. Crossing events were detected on the southern portion of the road closer to the Meadowbank Mine Site.

The drawbacks only analyzing time-lapse images is that caribou on motion triggered images were missed, and caribou counts may be subject to error due to distance of caribou groups from cameras. Caribou groups had to be detected on both sides of the road to count as crossing events, and some crossing events in the distance were likely missed due to the interval between time-lapse images. Adjustment of camera positions between 2019 and 2020 improved detection of crossing events, but decreased overall caribou detection rates. Adjustments made between 2020 and 2021 appeared to reduce detection of caribou crossing events on time-lapse images.

The number of detections across the three program years did not allow statistical analysis of the time between vehicle disturbance and caribou road crossing events, or differences in crossing rates across road attributes. Remote cameras are suitable method for determining caribou response to vehicle traffic, however, detections of caribou on remote cameras have been relatively low across years.

Crossing events from road surveys or incidental observations could also be linked to road attributes to increase understanding of how road heights, backfill materials, and backfill slopes influence road crossing locations. Information collected during caribou behaviour surveys can be used to inform caribou response to vehicle disturbance, however these surveys do not specifically target time between vehicle traffic and road crossing.

The future of the remote camera program should be discussed with the TAG. The remote camera program is unlikely to contribute to adaptive management, unless many more cameras are deployed across the WTHR, and potentially the AWAR to increase the number of caribou crossing event detections. This would require significantly more effort to deploy and maintain cameras and to review camera photos. Motion triggered images could potentially be reviewed to identify caribou detections and crossing rates that occur close to cameras.

8.18.1.6 *Blasting Measurement*

The purpose of the blast monitoring program is to measure vibration and overpressure from explosive blasts at the Whale Tail Pit and to understand how blasting vibration relates to caribou behaviour. The program aims to establish site-specific relationships between vibration and overpressure levels and blasting parameters (e.g., charge mass, charge depth), environmental conditions (e.g., seasonal variation), and propagation distances. The program includes monitoring of caribou sensory disturbance related to blasting.

Blasting is required to be delayed when caribou or other wildlife are observed within the blast danger zone (typically 600 m from the blast centre). According to the TEMP, blasting is also delayed when caribou GST is observed within 4 km during the sensitive season, or within 5 km during the calving period, or when muskox GST is observed within 1 km. Following discussion with the TAG, the distance was relaxed to 3 km for caribou during the sensitive season, and 5 km during the calving period, to better understand effects to caribou from blasting. The Environment Department performs monitoring prior to each blast to ensure no caribou groups exceeding GST are present within these setback distances.

Results from the 2021 blast monitoring are presented in Section 9 of the 2021 Wildlife Monitoring Summary Report (Appendix 47) and summarized below. Please refer to this Appendix for a complete review of the monitoring program and discussion of the results.

Vibration measurements were collected for 139 blasts between December 20th, 2020 and August 6th, 2021 within the scope of the blast monitoring program, resulting in a total of 247 individual PPV measurements and 174 individual PPL measurements suitable for analysis.

Pre-blast surveys for caribou were performed on 165 days between January 3rd to December 16th, 2021. Of the 165 surveys, 132 surveys yielded no species. Caribou were observed on 36 surveys, and Muskox were observed during one survey. No blasts had to be cancelled due to caribou GST exceedance in proximity to the Meadowbank Complex. One blast was cancelled, on September 11th, 2021, due to six caribou present within 600 m of the blast.

The number of behaviour monitoring sessions that could be linked to blast events did not allow statistical analysis of behaviour change in relation to modelled PPL and PPV levels. When sample size allows, future analysis could determine the relationship between proportion of stress behaviours (i.e., alert, walking, trotting), and PPL and PPV levels. If increased proportions of stressed behaviours are observed following blasts, the time for behaviour to return to pre-blast levels should be assessed.

8.18.1.7 *Snow Study*

Per Whale Tail Expansion Project commitment 9 from the TAG Meeting held in Baker Lake June 11-13, 2019, Agnico Eagle committed to complete a three-year snow monitoring program as part of the TEMP that measures snow conditions adjacent to the WTHR. The goal of the snow monitoring is to determine whether changes to snow resulting from snow removal along the WTHR result in conditions that potentially inhibit caribou movements.

The targeted number of plots was not met in 2020 (5 plots) or 2021 (3 plots). Challenges in meeting the targeted number of plots were related to locating fresh caribou tracks before they were filled with snow, or no longer reflected the snow conditions when caribou travelled through. Apart from caribou track depth data in unmanaged control plots, a full suite of data was collected at six plots per survey location. Information on caribou track depth in the unmanaged control plots was not collected due to errors in datasheet printing.

Across all survey plots sampled, snow depth was similar between, the upwind (west) side of the haul road (24.63 ± 7.28 cm [± 1.0 standard error]) than the downwind (east) side of the road (23.64 ± 7.31 cm). Average snow depth in use plots on the upwind side of the road (24.50 ± 10.65 cm) was similar to the average snow depth in the snow-managed control plots (i.e., plots within the berm but not used by

caribou) on the upwind side of the road (24.77 ± 10.68 cm). Downwind use plots (18.12 ± 8.13 cm) had slightly lower average snow depths compared to snow-managed control plots (29.17 ± 12.43 cm).

The snow hardness, as measured using the push-pull gauge, was higher at plots on the downwind side (13.49 ± 2.24 Newtons [N]) of the WTHR compared to plots on the upwind side of the road (8.37 ± 1.27 N). On both the upwind and downwind sides of the WTHR, average snow hardness was lower (i.e., softer snow present) in use plots compared to the two types of control plots.

For any future data collection using the current study design, the caribou track depth information should be collected in the use plot and in the unmanaged control plot to facilitate comparison between the snow conditions in the berm and beyond the berm. The 2020 and 2021 monitoring years acted as a pilot study to evaluate the effectiveness of the survey techniques and to guide future monitoring activities. The three-year monitoring program will being in 2022, and additional resources have been allocated for completion of the snow study.

Please refer to the completed discussion provided in Section 17.1 of the 2021 Wildlife Monitoring Summary Report in Appendix 47.

8.18.1.8 *Caribou Behaviour*

Please refer to the completed discussion provided in Section 17.2 and Appendix L of the 2021 Wildlife Monitoring Summary Report in Appendix 47.

Following the first year of data collection in 2020 and comments from the TAG, GN, and KivIA, the protocols were updated for the 2021 season to improve the quality of the data collected.

Based on guidance from the TEMP, the overall objective of the caribou behaviour monitoring program is to determine if caribou activity budgets change with distance from the mine, and to document caribou response to stressors.

The detailed objectives of the 2020 and 2021 combined study were:

1) To conduct a study using the Government of Northwest Territories Department of Environment and Natural Resources behaviour survey methodology at the Project site to estimate how the AWAR, WTHR, and site infrastructure contribute to the effects of the Project on caribou.

2) To collect a set of 100 samples of caribou behaviour each year.

3) To use information from the surveys to determine what factors predict caribou behaviour, specifically comparing:

    - Near vs. far;
    - Large groups of caribou vs. small groups;
    - Surveys with and without disturbances;
    - Road open vs. closed;

- Upstream vs. downstream side of the road (east or west side, as determined by dominant direction of travel in each season).

The behaviour monitoring data from 2021 were combined with data from 2020, and all results outlined in this report use both years, unless otherwise stated. The program and combined data resulted in several key findings:

- 134 surveys were conducted in 2021, compared to 116 in 2020; 114 surveys occurred during spring migration from March to May, 15 occurred during calving and summer from June to August, and five occurred during fall migration from September to December.

- Caribou mostly exhibited the non-response behaviours of standing, laying, feeding, and walking.

- Observations were well distributed across a range of caribou group sizes from 1 to 2 individuals to >1,000.

- Larger groups of caribou tended to be recorded further from the road. Only two groups larger than 100 individuals were recorded within 100 m of the road at the start of the survey, both in 2021.

- Caribou group size was not linked to response behaviour or walking behaviour in statistical analyses.

- Statistical analysis indicated that there is a trend for caribou at greater distance from the road (>1,000 m) to have a lower proportion of response behaviours (alert and running) than caribou within 100 m of the road.

- Approximately 70% of the surveys included a disturbance event; typically, haul traffic and light trucks from the mine, and occasionally all-terrain vehicles from Baker Lake on the AWAR for travel and harvesting.

- Following a disturbance event, the proportion of response behaviours in a group of caribou was significantly higher, but generally returned to baseline behaviours within one or two sampling intervals (i.e., three or six minutes).

The updates applied to the survey protocol in 2021 used feedback from the first year of data and analysis, and were helpful in improving the overall quality and accuracy of the data. Even with some changes to the protocol between 2020 and 2021, the trends in the results were highly consistent between the two years of data. This increases the confidence that trends are repeatable year to year. Overall, the results of the statistical analysis provided support for the key hypothesis that caribou tend to respond to disturbances, particularly when they are close to the road. However, the analysis also found that disturbances did not have a detectable effect on caribou behaviour after three to six minutes. Additional data collection in fall and during convoys would bolster the sample size and improve the likelihood of detecting statistically significant effects.

8.18.1.9 *Stop Work due to Wildlife*

As required by NIRB Project Certificate No.004 Condition 60*: Whenever practical, Cumberland shall implement a stop work policy when wildlife in the area may be endangered by the work being carried out.*

Numerous road closures were implemented on all project roads, to ensure safe passage to large groups of migrating Caribou herds. Section 3 of the 2021 Wildlife Monitoring Summary Report (Appendix 47) detailed and discussed the 2021 road closure. Below is a summary of the results.

Significant movements of caribou occurred along the AWAR throughout April and early May, and through much of December, resulting in multiple closures to Project-related traffic. The AWAR was fully closed on 49 days, and partially closed on 9 days (including days identified as Partial Closure and days identified as Close/Open) and had speed restrictions applied for 39 days. In total, there were 97 days with restrictions related to ungulate activity in 2021. Restrictions were generally due to presence of caribou, and all wildlife related closures were due to the presence of caribou. Mitigation measures such as reduced speeds were instituted due to the presence both muskox and caribou herds throughout the year.

Significant movements of caribou occurred along the Whale Tail Haul Road in spring during April and early-May 2021 resulting in multiple closures and speed restrictions. The WTHR was fully closed on 13 days, partially closed on 1 day, and had speed restrictions applied for 29 days for a total of 43 days with restrictions related to ungulate activity in 2021. All closures and the one partial closure were due to the presence of caribou, however reduced speeds were instituted due to the presence of both muskox and caribou herds throughout the year.

Road-related monitoring and mitigation were implemented according to Figures 7 and 8 of the TEMP version 7. Collar location maps were instrumental in assessing the need for increased road monitoring. Road-related mitigation related to caribou presence in 2021 resulted in road closures and a corresponding reduction in total vehicle movements. Road closures were implemented, or vehicle movements were restricted (e.g., light vehicles only, speed limited enforced) in response to high caribou numbers. Convoys were organized by Environment staff, who had the training to decide whether vehicles could continue along the road when caribou were sighted, and at times assisted by the BLHTO or the KivIA.

Regular wildlife warnings were dispatched based on observation and monitoring data. The road supervisors and operators also ensured protection of wildlife by assisting in surveillance and closing roads as needed. Radio notices reminding operators of the appropriate speed limit were made frequently by dispatchers. During caribou peak migration, notices were sent to all road occupants, regulatory agencies, local groups, and wildlife consultants were notified, and road survey efforts were increased.

The frequency of road surveys in 2021 demonstrate Agnico Eagle’s commitment to preventing impacts to caribou from the AWAR, WTHR (including Vault Haul Road). Mitigation measures such as reduced speeds, convoys, and multiple road closures function to minimize road-related effects including mortality, injury, and reduced caribou passage. Incidental sightings in 2021 recorded in the Wildlife Log and road surveys showed that caribou crossed roads throughout the year, with especially high numbers during spring and fall migration.

8.18.1.10 *Raptor Nest Survey*

Refer to Section 13 of the 2021 Wildlife Monitoring Summary Report (Appendix 47) for a complete discussion of the methodology and results.

The raptor nest monitoring program is designed to determine Project-related effects, and the success of mitigation strategies to prevent disturbance to nesting raptors. Within the Meadowbank LSA and AWAR LSA, peregrine falcons have previously nested in quarries along the AWAR, the Portage Pit, and Goose Pit. Monitoring of peregrine falcon nests in quarries along the AWAR has been conducted since 2009. The Portage, Goose, Vault, Whale Tail, and IVR Pits are inspected for peregrine falcon activity daily prior to and during the nesting season and managed under the Peregrine Falcon Management and Protection Plan.

Surveys from 2015, 2016, 2017, and 2019 identified 58 raptor nesting sites in the Whale Tail RSA. Peregrine falcon and rough-legged hawk nesting sites were located within 1.5 km of Project facilities in the Whale Tail LSA. Annual monitoring of these nests was recommended, however, these nests are not expected to be directly impacted by the Project due to their distance from Mine activity.

Monitoring in 2021 included surveys for nests associated with pits and quarries along the AWAR and WTHR. Raptor activity and potential nest locations were also noted on other surveys including road surveys, viewshed surveys, freshet monitoring, and on-site environmental monitoring. In addition, a research program was conducted by Arctic Raptors in 2021, to determine the relationship between nest success and Mine activity.

Fourteen peregrine falcon nesting sites have been recorded in the Meadowbank LSA and AWAR LSA since nest monitoring began in 2009. Eight peregrine falcon nests were documented in Quarries 2, 3, 5, 7, 9, 16, 18, and 22 in 2021. Nests have previously been identified in all these quarries, except Quarry 5. Quarries 19 and 21 have previously had nests, but did not in 2021. In addition to the eight active nest sites in 2021, peregrine falcon activity was observed at Quarries 4, 21, and 35 during the monitoring program. No raptor nesting evidence was observed in quarries along the WTHR in 2021, however one peregrine falcon was observed at Quarry 35 on 4 July. No other nests were identified during pit checks or incidentally during other surveys in 2021.

A summary of observations made at the peregrine falcon nests along the AWAR in 2021 is detailed in Table 58 of the 2021 Wildlife Monitoring Summary Report (Appendix 47). Raptor nest management plans were not developed at the active nest sites, as Mine-related activity was already restricted within the quarries, with the only disturbance being traffic on the nearby AWAR. Intensive monitoring, which would include approaching nests by foot, was not conducted. Nest locations are not publicized to prevent inadvertent disturbance by curious Mine employees.

Once an active nest has been identified, mine-related activity (e.g., vehicle operation, heavy equipment, aircrafts, blasting etc.) is automatically halted within the quarries with the only disturbance being traffic on the nearby AWAR. Specific raptor nest management plans were not warranted at any of the active nest sites, as mine-related activity was restricted within the quarries.

Results of the analysis did not indicate project-related effects on rough-legged hawk occupancy ($\lambda = 1.25 \pm 0.25$ [mean ± standard error]). Although the value is positive, the standard error overlaps one, indicating that the population is unlikely to be increasing or decreasing (i.e., likely stable). Marginal decrease in

peregrine falcon occupancy was observed (λ = 0.95 ± 0.02). However, results may be related to inconsistent monitoring (e.g., monitoring that ensures minimal disturbance) and lack of statistical power to determine project-related effects. Full results of the nest occupancy analysis are included in Appendix I of the 2021 Wildlife Monitoring Summary Report.

Five nest failures occurred in 2021. Results of the nest occupancy analysis indicate that there has been a marginal decrease in peregrine falcon nest occupancy. However, results may be related to inconsistent monitoring and lack of statistical power to determine project-related effects.

8.18.1.11 *Deterrence of Raptors*

As required by NIRB Project Certificate No.008 Condition 36: ***Prior to removal or deterrence of raptors, the Proponent will contact the Government of Nunavut – Department of Environment to discuss proposed mitigation options and, if required, will obtain the necessary permits. The Proponent shall include summaries of any mitigation measures implemented and permits obtained in fulfillment of this term and condition in the Proponent's annual report to the Nunavut Impact Review Board.***

There was no removal of raptor at both the Meadowbank and Whale Tail sites in 2021.

Deterrents were applied to Quarries 20 and 22 in 2021 to discourage raptor nesting.

A bird deterrent cannon was deployed on May 25th to prevent falcon activities in the quarry 22 before scarification occurred. The bird cannon was set in the interval Random 10, meaning a shot series is randomly chosen by the control-unit between 1 and 10 minutes, blasting at 120dB. The bird cannon was removed once peregrine falcon activity was observed in the quarry on June 1st. All activity within the area, including scarification, were postponed minimizing the impact of potential nesting for this species and therefore ensure proper conditions of nesting activity.

Bird deterrent cannon was deployed in May in Quarry 20 and was removed when no falcon activities were observed prior crushing construction work.

Once an active nest has been identified, mine-related activity (e.g., vehicle operation, heavy equipment, aircrafts, blasting, etc.) is automatically halted within the quarries with the only disturbance being traffic on the nearby AWAR/WTHR.

8.18.2 Terrestrial Advisory Group

As required by NIRB Project Certificate No.008 Condition 27: ***The Proponent shall participate in a Terrestrial Advisory Group with the Government of Nunavut, the Baker Lake Hunters and Trappers Organization, the Kivalliq Inuit Association, and other parties as appropriate to continually review and refine mitigation and monitoring details within the Terrestrial Ecosystem Management Plan. Additional caribou collar data, results from associated studies, Inuit Qaujimajatuqangit shared by knowledge holders and other monitoring data as available should be considered for incorporation as appropriate. Finalized Terms of Reference for the Terrestrial Advisory Group shall be provided to the NIRB within six (6) months of issuance of the Project Certificate. A summary of outcomes from Terrestrial Advisory Group meetings shall be provided to the NIRB on an annual basis in the Proponent's Annual Report.***

And

As required by NIRB Project Certificate No.008 Condition 30: ***The Proponent shall work with the Government of Nunavut, the Baker Lake Hunters and Trappers Organization and the Kivalliq Inuit Association through the Terrestrial Advisory Group to develop and update thresholds to trigger implementation of mitigation measures on both the AWAR and Whale Tail Haul road, up to and including temporary road closures. The Proponent shall consider how these thresholds and mitigation measures reflect caribou life cycle sensitivities as well as demonstrate how Inuit Qaujimajatuqangit was incorporated throughout the development of these criteria and procedures.***

The Proponent shall ensure the Terrestrial Ecosystem Management Plan is updated to reflect the thresholds agreed upon in accordance with the Terrestrial Advisory Group Terms of Reference, and that this Plan along with a summary of consultation with the Terrestrial Advisory Group are submitted on an annual basis or as thresholds are otherwise modified in the Proponent's annual report to the to the Nunavut Impact Review Board

The Term of Reference for the TAG was provided to NIRB on November 1st, 2018. Refer to Appendix 46 of the 2018 Annual Report. The TOR was officially signed by all parties in 2019.

In fulfillment of the Condition 27, a summary of outcomes from Terrestrial Advisory Group meetings are provided in the below section. Fulfillment of Condition 30 is discussed in Section 8.18.2.1.2.3.

8.18.2.1 *Terrestrial Advisory Group*

8.18.2.1.1 Meetings Held in 2021

In accordance with Nunavut Impact Review Board Project Certificate No.008 Term and Condition 27, a Terrestrial Advisory Group was established for the Meadowbank and Whale Tail project. It provides technical oversight on the Project's mitigation, monitoring and adaptive management measures related to the protection of wildlife. The following parties are actively part of the Terrestrial Advisory Group: the Baker Lake Hunter and Trapper Organization, the Government of Nunavut and the Kivalliq Inuit Association. It is also a venue for TAG members to openly raise concerns about wildlife, and to review and discuss the results of wildlife monitoring and to discuss opportunities for ongoing research.

Terms of reference were finalized and signed by all parties in 2019. Several TAG meetings were held since June 2018. Meetings held in 2021 are summarized in Table 8-141 below. Because of the COVID-19 pandemic situation, all 2021 meetings were done as a conference call.

Table 8-141 TAG meeting held in 2021

Date	TAG meeting No.	Type of meeting	Parties attending
February 9th, 2021	7	Conference call	Agnico Eagle, BLHTO, KivIA, GN
March 16th, 2021	8	Conference call	Agnico Eagle, BLHTO, KivIA, GN
September 16th, 2021	9	Conference call	Agnico Eagle, BLHTO, KivIA, GN

Discussions held in 2021 were fruitful and led to numerous resolutions on files/brainstorming sessions. To facilitate discussions during meetings or conference calls, where possible, Agnico Eagle provided agenda and reports summarizing thoughts prior to the TAG meeting. When feedback was provided prior to the

meeting, these were incorporated into the presentation made at the meeting. This ensured discussions targeted key items and facilitated resolution of issues and closing of commitments made.

8.18.2.1.2 Summary of outcomes

The next section describes the main outcomes arising from TAG meetings held in 2021 by topic.

8.18.2.1.2.1 Group Size Threshold and Caribou Protection Measures

Many discussion were held in 2020-2021 regarding the calculating method for caribou's Group Size Thresholds along with other TEMP mitigations for the WTHR and AWAR. During the March 16th, 2021 TAG meeting, an agreement was reached for the method GSTs spring and fall caribou migration.

In order to ensure that 75% of caribou crossing the Meadowbank All-Weather Access Road (AWAR) or Whale Tail Haul Road (WTHR) are subject to enhanced mitigation (see Appendix A, Item 3, GN 7 (iv)), the following GST calculation method, initially proposed by the GN, shall be applied prior to each migration season (spring & fall).

1 – The minimum annual sample size of caribou group observations required to revise the GST shall be 100 caribou groups observed at a distance of greater or equal to 250 m and less or equal to 1000 m from the roads.

2 – An average of the annual GSTs calculated for the AWAR and WTHR will be applied to both roads (i.e. the same GST will apply to the AWAR and WTHR).

3 – All existing years of caribou group size data (with sufficient sample size as point 1 above) shall be used to calculate a mean GST.

Supplemental Material: GN document entitled "Method for Calculating Caribou Group Size Thresholds (GST)"

8.18.2.1.2.2 Blast Response Monitoring

According to the TEMP, blasting is also delayed when caribou GST is observed within 4 km during the sensitive season, or within 5 km during the calving period, or when muskox GST is observed within 1 km. Following discussion with the TAG, the distance was relaxed to 3 km for caribou during the sensitive season, and 5 km during the calving period, to better understand effects to caribou from blasting, by conducting caribou behaviour monitoring. Monitoring results are provided in Appendix 47.

8.18.2.1.2.3 2020 Annual Report Comments

Discussions included 2020 Wildlife Monitoring Summary Report comments, for potential improvement to data collection and reporting in 2021. Report sections influenced by these discussions include the tolerant caribou observations, non-native plants surveys, pit and mine site ground surveys, helicopter traffic monitoring and reporting, viewshed survey and snow study sections. The 2021 Wildlife Monitoring Summary Report (Appendix 47) addressed outcomes of the TAG discussions.

8.18.2.1.2.4 Drone and Satellite Pilot Projects

Agnico Eagle has been looking at different technologies, including drones and use of satellite imagery to improve monitoring, ensure efficient mitigation and assess effects of the Project on caribou. Following a drone public demonstration held in Baker Lake in August 2019, Agnico Eagle proposed a drone and satellite pilot project to TAG members during a conference call. Feedbacks received were incorporated into the design of the program. The pilot test was initially planned for the Fall 2019 migration but could not be implemented due to timeline in receiving permits. It was then planned for Spring 2020 but postponed until COVID-19 pandemic restriction are lifted.

8.18.2.1.2.5 Incorporation of Outcomes into the TEMP

The TEMP was revised to Version 8 to incorporate these outcomes. As per revised Terms and Conditions of NIRB Project Certificate No.008, Version 8 was submitted to NIRB within 60 days following issuance of the revised Project Certificate. An updated Version 8.1 is planned to be submitted in 2022.

8.18.2.1.2.6 Caribou Behaviour

Agnico Eagle collects different types of behaviour data on caribou that are used to inform on mine-related effects to caribou and mitigation effectiveness. In 2021, Agnico Eagle initiated a pilot study of data collection that focussed on measuring different behaviour activities of caribou in relation to mine-related effects. Following the 2020 pilot program, Agnico Eagle presented methods and results of this monitoring program with the Meadowbank TAG, in February 2021. Based on this review, the program has been updated for the 2021 field season. An updated presentation was also given on September 2021 with the preliminary 2021 data. The complete methodologies and result are provided in Appendix 47.

8.18.3 Wildlife Crossing Whale Tail Site

As required by NIRB Project Certificate No.008 Condition 32: ***The Proponent shall engage with the Baker Lake Hunters and Trappers Organization and other relevant parties to ensure that safety barriers, berms, and designed crossings associated with project infrastructure, including the haul road, are constructed and operated as necessary to allow for the safe passage of caribou and other terrestrial wildlife. Summaries of engagement with the Baker Lake Hunters and Trappers Organization regarding implementation of this condition shall be provided to the Nunavut Impact Review Board along with details of the selected crossings in the Proponent's annual report to the Nunavut Impact Review Board.***

Following consultation of the Baker Lake HTO, Agnico Eagle re-slopped, in previous year, the Whale Tail Haul Road at KM 127 to facilitate the wildlife passage in this area. BLHTO came back once the re-slopping was finalized and didn't not express any other concern.

Within the TAG meetings, permeability and road design discussions are ongoing and will meet satisfaction of all parties. Different projects are also ongoing and are being discussed at the TAG, including monitoring movement of caribou with cameras and a pilot drone study. All of the above project will be highly useful into the determination of the preferred wildlife passage and behavior on the field.

As part of the Whale Tail expansion project, Agnico Eagle has committed to conduct an analysis of available scientific and IQ caribou data (including collar, road sightings, trails, oral testimony and

mapping) to determine sections of the Haul Road that are most likely to be used by migrating caribou. In July 2019, Agnico Eagle submitted to NIRB and TAG member a memo to fulfill this commitment. Following this submission, only the KivIA provided comments. Agnico Eagle submitted a revised version in August 2019 and only received comments from KivIA since submission. Agnico Eagle presented the updated report to the TAG on November 26th, 2019 for final approval. The following step will be to organize a site visit with TAG member to refine further required changes along the Whale Tail Haul Road (and based on sections identified in the report provided). The site visit was tentatively planned for Q2 2020 but was postponed till the COVID-19 pandemic restriction are lifted. Following this, a Construction Plan, will be provided to TAG members and the NIRB, if the WTHR enlargement is required.

8.18.4 Wildlife Mortality Whale Tail Site

As required by NIRB Project Certificate No.008 Condition 33: ***A summary regarding all wildlife incidents reported, including a reference to whether compensation was or will be provided by the Proponent for direct mortalities, as well as a description of any other steps taken in fulfillment of this term and condition shall be included in the Proponent's annual report to the Nunavut Impact Review Board. The Proponent shall provide wildlife incident reports to the appropriate authorities in a timely fashion. Wildlife incident reports should include the following information:***

> ***a) Locations (i.e., latitude and longitude), species, number of animals, a description of the animal activity, and a description of the gender and age of animals if possible;***
>
> ***b) Prior to conducting project activities, the Proponent should map the location of any sensitive wildlife sites such as denning sites, calving areas, caribou crossing sites, and raptor nests in the project area, and identify the timing of critical life history events (i.e., calving, mating, denning and nesting); and***
>
> ***c) Additionally, the Proponent should indicate potential impacts from the project, and ensure that operational activities are managed and modified to avoid impacts on wildlife and sensitive sites.***

Section 3.6.9 of the 2021 Wildlife Monitoring Summary Report (Appendix 47) describe road-related wildlife mortality. Table 16 of the 2021 Wildlife Summary Report present the wildlife mortalities related to the All-weather Access Road, and Whale Tail Haul Road in 2021. Common raven, arctic fox, arctic hare and arctic ground squirrel can be found within that table. As per the IIBA Schedule J, Item 6.1, a compensation was sent to KivIA for the artic fox mortalities.

Upon discovery of any unreported roadkill remains, Environment staff and/or road supervisors reminded employees of road rules and the need to enforce these rules. All employees are regularly reminded at toolbox meetings that all Project-related incidents are to be reported and that wildlife have the right-of-way at all times. Mine staff are required to stop vehicles and wait for wildlife to cross roads. No feeding wildlife and waste management practices are also regularly reviewed with employees. There were no road-related grizzly bear, caribou, wolverine, or wolf mortalities in 2021.

Section 4.5.8 of the 2021 Wildlife Monitoring Summary Report (Appendix 47) provide a summary of recorded wildlife fatalities near or within the Meadowbank and Whale Tail mine sites. Only one wildlife project-related mortality, a wolverine, was related to deterrence and attributed to Mine-related activities happen in 2021. As per the IIBA Schedule J, Item 6.1, a compensation was sent to KivIA and the

complete report regarding this incident sent to the GN Conservation officer and KivIA. No other wildlife mortalities associated with the Mine sites were reported in 2021.

All 2021 project-related mortality reports are included in of the 2021 Wildlife Monitoring Summary Report Appendix D.

8.18.5 Migratory Birds Protection Plan Whale Tail site

As required by NIRB Project Certificate No.008 Condition 34: ***The Proponent will maintain a Migratory Birds Protection Plan for the Project in consultation with Environment and Climate Change Canada and other interested parties. The plan should include and/or demonstrate that the Proponent give consideration to the following:***

- ***Information obtained from baseline characterization of migratory bird and vegetation communities within the predicted flood area;***
- ***Results of field tests and/or the thorough literature review of the effectiveness of preferred deterrence prior to actual flooding; and***
- ***Details regarding monitoring the effectiveness of mitigation measures during flooding.***

Results of implementation of the Migratory Birds Protection Plan shall be reported to the Nunavut Impact Review Board on an annual basis in the Proponent's annual report.

In July, 2018, Agnico Eagle developed the Migratory Bird Protection Plan as an appendix of the TEMP. As recommended by ECCC, Agnico Eagle updated that plan in 2020 based on results of research studies. The updated Migratory Bird Protection Plan (V3, March 2020) was provided as Appendix 64 of the 2019 Annual Report.

The 2021 Migratory Bird Protection report is provided as Appendix E of the 2021 Wildlife Summary Report (Appendix 47), and summarized below. Note: No further monitoring is scheduled under this plan since flooding and related onsite research studies are complete.

Through collaboration with Trent University and ECCC, research studies were initiated in 2018 to determine the effectiveness of planned mitigation measures for migratory birds during flooding of the Whale Tail South area. This study was conducted over three field seasons (2018, 2019, 2021) - before, during and after flooding. The three objectives of this study were to:

1. Determine the efficacy of various audio and visual deterrents in preventing flood-zone nesting.

2. Estimate the number of nests and the species composition lost due to the flooding.

3. Examine the behavioural response of birds to:

    a. deterrents (e.g., impacts to duration on the nest) and

    b. flooding (determine whether birds re-nested nearby after the flooding events).

Complete methods and results for Objectives 1, 2, and 3a are published and available online in the Trent University MSc Thesis "*Assessing and Mitigating the Impacts of Mining-Induced Flooding on Arctic-Nesting Birds*" (Holmes, 2022). Complete methods and results related to Objective 3b are provided in

Appendix A of the 2021 Migratory Bird Protection Report (Appendix 47), with additional analyses to be included in one of two study manuscripts expected to be submitted for publication in a peer-reviewed journal in 2022.

Briefly, efficacy of various audio and visual bird deterrents was assessed in a non-flooded tundra test area between the Meadowbank and Whale Tail sites in 2018, and in the Whale Tail South flood zone in 2019 during flooding. In both years, nesting density and behavioural responses of birds were surveyed in study plots with and without deterrents throughout a 6-week (approx.) period during the breeding season. Results indicated that the tested mitigation methods were ineffective in deterring nesting birds, and their continued use under similar conditions was not recommended by the Trent/ECCC research team.

Holmes (2022) found no statistically significant differences in average nest or territory density between flood zone and adjacent upland control plots prior to flooding (2018) and during flooding (2019), indicating no significant evidence of birds' territory packing into habitats adjacent to flooded areas. Follow-up studies in 2021 did indicate average number of nests and bird density increased from 2019 to 2021 in upland control plots, and nest density declined in flood zone plots, potentially indicating a movement of nesting sites to adjacent areas. However, this was not supported by results of mark-re-sighting surveys. Supplemental analyses of these data are planned as part of manuscripts to be submitted for publication in 2022, and updated results will be provided in the 2023 Wildlife Monitoring Summary Report.

With approximately 0.60 km^2 ultimately flooded during the nesting season of June 8th to July 26th, 2019, between 23 and 42 nests are estimated to have been lost due to flooding in the Whale Tail South area. Despite the loss of some nests due to inundation, there was no significant difference in overall nest survival rates between flood zone and adjacent upland plots (assessed for passerines only) suggesting that nest losses due to flooding were minor compared to other factors leading to nest failure, such as abandonment or predation.

Both the FEIS for the Whale Tail Pit Project (Agnico Eagle, 2016) and the FEIS Addendum for the Whale Tail Expansion Project (Agnico Eagle, 2018) made predictions for the number of nest sites estimated to be impacted by flooding in the vicinity of the Project site, including the Whale Tail South flood area and the Northeast Diversion flood zone. Actual nest impacts were re-calculated here using nesting densities observed by the research team in the flood year (2019), along with observed nesting dates and measured change in water levels during nesting. Based on these calculations, final measured impacts of flooding on nesting birds (31 – 50 nests impacted for both areas combined) were lower than FEIS Addendum predictions for Whale Tail South alone (89 nests).

8.18.6 Species at Risk Whale Tail Site

As required by NIRB Project Certificate No.008 Condition 35: ***The Proponent shall ensure that the mitigation and monitoring strategies developed for Species at Risk are updated as necessary to maintain consistency with any applicable status reports, recovery strategies, action plans, and management plans that may become available through the duration of the Project. Information regarding development, implementation and monitoring of the measures developed by the Proponent in fulfillment of this term and condition shall be included in the Proponent's annual report to the Nunavut Impact Review Board.***

The intent of the federal Species at Risk Act, is to protect species at risk from becoming extirpated or extinct as a result of human activity. Species with ranges that overlap with the Project, may be considered to be of concern as a result of either their national, territorial or Committee on Status of Endangered

Wildlife in Canada (COSEWIC) status. To date, no species have been listed under the Nunavut Species at Risk Act.

There are six wildlife species of concern with breeding or wintering ranges that overlap with the Project (Table 8-142). In November of 2016, caribou were designated as threatened by COSEWIC (2016).

Table 8-142 Species of Concern Meadowbank and Whale Tail Study Areas

Species	COSEWIC Assessment	Federal Species at Risk Act	Potential Impact
Caribou (Barren-ground population)	Threatened	No status	• Direct habitat loss • Indirect habitat loss from sensory disturbance
Grizzly bear (western population)	Special Concern	No status	• May be attracted to developments if food is available • -Direct habitat loss
Wolverine (western population)	Special Concern	No status	• May be attracted to developments if food or shelter is available • -Direct habitat loss
Peregrine Falcon (*anatum-tundrius* complex)	Not at risk	Schedule 1	• Direct habitat loss
Short-eared Owl	Threatened	Schedule 1	• Direct habitat loss
Red-Necked Phalarope	Special Concern	No status	• Direct habitat loss

Agnico Eagle will ensure that the mitigation and monitoring strategies developed for Species at Risk are updated as necessary to maintain consistency with any applicable status reports, recovery strategies, action plans, and management plans that may become available through the duration of the Project. Updates to the Species at Risk will be considered during annual review and with each new revision of the TEMP.

8.18.7 Invasive Vegetation Species

As required by NIRB Project Certificate No.008 Condition 25: ***At least 30 days prior to first shipment of equipment and supplies to the site, the Proponent's mitigation plans, protocols, monitoring and inspection program required in fulfillment of this term and condition shall be provided to the NIRB for review. Subsequently, information regarding inspections, monitoring results, and any reports as referenced above shall be included in the Proponent's annual report to the NIRB. The Proponent shall:***

> ***a) Ensure that equipment and supplies brought to the project sites are clean and free of soils that could contain plant seeds or organic matter not naturally occurring in the area***
>
> ***b) Ensure that vehicle tires and treads are inspected prior to initial use in project areas;***

c) Incorporate protocols for monitoring for the potential introduction of invasive vegetation species (e.g. surveys of plant populations in previously disturbed areas) into relevant monitoring and management plans for the terrestrial environment; and

d) Ensure any introductions of non-indigenous plant species must be promptly reported to the Government of Nunavut Department of Environment.

In 2019, Agnico Eagle initiated a non-native plant monitoring study to assess and monitor the potential introduction of non-native plant species, including weeds or invasive species. Subsequent monitoring events occurred in July 2020 and 2021. Surveys will continue to be completed annually as per the TEMP Version 7. Complete 2021 results are presented in Appendix J of the 2021 Wildlife Monitoring Summary Report – Appendix 47. Agnico Eagle will refer to the complete report in Appendix as the below is a summary of the results.

Surveys at the Meadowbank Complex were conducted by a Golder vegetation ecologist between July 23rd to August 2nd, 2021. The Meadowbank Complex area includes the AWAR, WTHR, Baker Lake tank farm, Whale Tail site, and Meadowbank Mine site areas.

Species were documented as they were encountered. Non-native plant surveys consisted of targeted surveys focused within high-priority or high-potential areas within the Project footprint. The high-potential areas were identified as the Project area perimeter, highly trafficked areas (e.g., fuel station), areas surrounding buildings, shipping containers, along existing roads/trails or areas of disturbance within the Project area, as well as adjacent to the AWAR and WTHR road. High potential areas also included survey locations from 2019 and 2020 where non-native plants were observed. In areas where non-native species were observed, meander surveys were conducted outside of the disturbance footprint to determine if these species had established in the native tundra. Given the length of the AWAR and WTHR, the roads were travelled via vehicle at slow speeds, while observers looked for obvious signs of weed infestations along road margins. Periodic stops were undertaken to complete meanders in areas with high potential (e.g., pull-outs, work areas, road-side quarries, and other areas with disturbed substrates). A GPS was used to collect a track file of the meander route and point locations of surveys conducted.

A total of 202 individual locations were surveyed. Locations assessed included the Whale Tail and Meadowbank Mine footprint areas, the sides of the haul roads, quarries adjacent to the haul roads, the airstrip, and the Baker Lake tank farm.

No non-native plants, as identified by the CESCC, were recorded along the haul road, AWAR, Baker Lake tank farm, Whale Tail and Meadowbank Mine footprints.

Although not listed as a non-native species by the CESCC, populations of flixweed (*Descurainia sophia*) and scentless chamomile (*Tripleurospermum inodorum*), both non-endemic to the Arctic, were observed at several of the surveyed locations. Some of the 2021 flixweed observation locations were combined in 2021 as populations merged which explains the reduction in flixweed observation locations. However, each of the 176 locations monitored in 2020 were revisited in 2021. In 2021, there were no populations of alsike clover (*Trifolium hybridum*) or lamb's quarters (*Chenopodium album*) which have been observed in the past. Refer to Section 16.1 for more information regarding the non-native plant survey findings from the 2021 surveys in Appendix J of the 2021 Wildlife Monitoring Summary Report (Appendix 47).

Trials of flixweed eradication were implemented in July 2021 at the Meadowbank Mine site. In total 19 sites underwent trails involving a combination of geotextile placement, hand pulling and mechanical removal. Results of these trials are pending a further growing season to determine efficacy. Photos taken during the 2021 trials will be used to compare to future years to determine efficacy. Refer to Section 16 for more information regarding the non-native plant 2021 eradication in Appendix J of the 2021 Wildlife Monitoring Summary Report (Appendix 47).

Furthermore to the study detailed above, Agnico Eagle continued to implement in 2021, in accordance with the TEMP, a protocol to ensure that all equipment and bulk supplies must arrive to Project site free of soil or plant debris to minimize the risk of invasive plant introduction. Invasive plant inspection surveys was completed on cargo in Becancour, prior to being loaded onto shipping vessel. Carrier had closely follow the procedure and have confirmed that each equipment/sea can was free of invasive plant.

8.19 COUNTRY FOOD

As required by NIRB Project Certificate No.004 Condition 67: ***Develop and implement a program to monitor contaminant levels in country foods in consultation with HC; a copy of the plan shall be submitted to NIRB's Monitoring Officer.***

Agnico Eagle monitors risk to both wildlife receptors and humans from consumption of country foods under the Wildlife Screening Level Risk Assessment Plan (a component of the Terrestrial Ecosystem Management Plan). The complete 2021 Wildlife and Country Foods Screening Level Risk Assessment report is provided as Appendix 46 and summarized below.

This screening level risk assessment program was carried out in 2021 according to Project Certificate No.004, Condition 67. The general approach and methodology of this 2021 assessment are based on those presented in the Wildlife Screening Level Risk Assessment Plan (August, 2021) and the pre-construction risk assessments for the Meadowbank and Whale Tail sites (Azimuth, 2006; Golder, 2019a,b).

8.19.1 Wildlife Assessment

For the wildlife assessment, risk to receptors of concern (ROCs; ungulates, small mammals, songbirds, waterfowl, and shorebirds) obtaining food and water from onsite, near-site, AWAR, Whale Tail Haul Road, Whale Tail site, and Tailings Storage Facility (TSF) locations in 2021 was evaluated. Contaminants of potential concern (COPCs) were identified by screening measured concentrations in soil, water, tailings sediment and tailings water against regulatory guideline values that are protective of wildlife health (primarily CCME's Soil Quality Guidelines for the Protection of Environmental Health, and Water Quality Guidelines the Protection of Agriculture, where available) and maximum measured baseline +10%. For onsite, near-site, AWAR, Whale Tail Haul Road, and Whale Tail Site locations, no COPCs were retained through this screening process[10], so these exposure pathways were not required to be evaluated further. Concentrations for several parameters in tailings sediment and water exceeded screening values, so the TSF pathway was carried forward to the quantitative risk characterization.

Exposure to TSF contaminants (estimated daily intake; EDI) was calculated from maximum measured concentrations in TSF media, and toxicity reference values (TRVs) were identified from lowest-observed

[10]Concentrations of barium and strontium exceeded screening values in one soil sample, but they were not retained as COPCs based on further analysis, as described in the report.

adverse effect levels (LOAELs) from the literature, as used in previous assessments. Hazard quotient (HQ) values were calculated as: HQ = EDI / TRV. Risk was characterized as negligible when HQ ≤ 1.

Risks associated with the TSF pathway were found to be negligible (HQ≤1) for all ROCs under previously used (Golder, 2019b) assumptions for exposure factors, with the exception of three COPCs for shorebirds (arsenic, chromium, cyanide). When assumptions for exposure concentration and time-in-area were refined using more site-specific but still conservative values (average instead of maximum concentration; eight days of exposure instead of 4 weeks), risk was found to be negligible for all COPCs.

8.19.2 Human Health Assessment

In addition to the wildlife assessment, an evaluation of risks to human receptors from contaminant exposure through consumption of country foods was conducted. For the established exposure pathways (consumption of animals selecting territories at onsite, near-site, AWAR, Whale Tail Haul Road, and Whale Tail Site locations), COPCs were identified by comparing measured concentrations in soil and lake water to regulatory guideline values that are protective of human health, as in the pre-construction assessment for the Whale Tail site (Golder, 2019a) (primarily CCME's Soil Quality Guidelines for the Protection of Human Health, and Health Canada's Guidelines for Canadian Drinking Water Quality, where available). All measured concentrations in soil and water met screening values so no COPCs were identified and quantitative risk characterization was not required.

Overall, this 2021 assessment supports FEIS-stage predictions (Azimuth, 2006; Wilson Scientific, 2006; Golder, 2019a,b) that operation of the Meadowbank and Whale Tail sites would not increase risks to wildlife and human consumers of country foods from ingestion of chemical contaminants.

8.20 ARCHAEOLOGY

8.20.1 Meadowbank and Whale Tail Sites

As required by NIRB Project Certificate No.004 Condition 69: ***carry out the Project to minimize the impacts on archeological sites, including conducting proper archeological surveys of the Project area (including the all-weather road and all quarry sites); [Cumberland] shall provide to the GN an updated baseline report for archeological sites in the Project area.***

And

As required by NIRB Project Certificate No.004 Condition 70: ***shall report any archeological site discovered during the course of construction, including a burial site, immediately and concurrently to the GN and KivIA. Upon discovering an archeological site, Cumberland shall take all reasonable precautions necessary to protect the site until further direction is received from the GN. In the event that it becomes necessary to disturb an archaeological site, Cumberland shall consult with Elders, GN and KivIA to establish a site specific mitigation plan, and obtain all necessary authorizations and comply with all applicable laws.***

And

As required by CIRNAC Land Lease 66H/8-1-4 Condition 66: ***If an archaeological site is discovered with the Land, the lessee shall immediately advise the Minister and the Territorial Archaeologist in writing.***

And

As required by NIRB Project Certificate No.008 Condition 55: ***The Proponent shall conduct archaeological surveys prior to land disturbance related to the Project and report survey results to applicable parties, including the Government of Nunavut – Department of Culture and Heritage. Evidence of meeting the requirements of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board.***

And

As required by NIRB Project Certificate No.008 Condition 56: ***The Proponent shall report any archaeological site discovered during the construction, operation, and closure phases to the Government of Nunavut – Department of Culture and Heritage and the Kivalliq Inuit Association. Upon discovering an archeological site, the Proponent shall:***

- ***Take all reasonable precautions necessary to protect the site until further direction is received from the Government of Nunavut – Department of Culture and Heritage; and***
- ***If it becomes necessary to disturb an archaeological site, the Proponent shall consult with the Government of Nunavut – Department of Culture and Heritage, the Kivalliq Inuit Association, and potential impacted communities to establish a site specific mitigation plan, and obtain all necessary authorizations and comply with all applicable laws.***

Evidence of meeting the requirements of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board.

In 2021, an archaeological impact assessment was conducted at six quarry expansion locations along the AWAR road between Baker Lake and Meadowbank Mine. The six locations are (north to south):

- Quarry 22
- Quarry 21
- Quarry 20
- Quarry 5
- Quarry 4
- Quarry 3

No new archaeological sites were identified during the assessment conducted.

Agnico Eagle has submitted to the GN Cultural and Heritage department the 2021 Archaeological Site Status Report. This report and the information contained in it are confidential and therefore were submitted directly to the GN Cultural and Heritage department. Requests for information should be made directly to the GN.

8.21CLIMATE MONITORING

8.21.1 Meadowbank Site

As required by NIRB Project Certificate No.004 Condition 21: ***shall fund and install a weather station at the mine site to collect atmospheric data, including air temperature and precipitation.***

During the technical meeting and pre-hearing conference held in Baker Lake on January 14 -15, 2015 regarding the NWB Water License renewal, CIRNAC mentioned that *climate data provide important input for interpreting site-specific geothermal aspects, such as the rate of mine waste freezeback and active layer thicknesses, for permafrost encapsulation of the mine wastes. In addition, the previous year's climate is useful for interpreting the hydrology and water balance for the site.*" It was recommended that the annual monitoring report summarize monthly climatic conditions at the Meadowbank site over a 12-month period. Table 8-143 includes average, minimum and maximum air temperatures, average and maximum wind speed as well as daily average, total and maximum volume of precipitation (rainfall / snowfall) on site. It should be noted that Agnico Eagle does not have a snow gauge but rather a rain gauge. For this reason, snow precipitations are reported as mm of rain.

In 2021, temperatures and winds recorded were similar to annual trends observed from 2009-2020. The coldest temperature was -41.64°C and warmest temperature was 23.70°C. The maximum wind speed recorded in 2021 was 24.81 m/s. Total precipitation in 2021 (355.48 mm) is twice as high than 2020 (168.99 mm) but similar to some of the previous year: 2019 (334.54 mm) 2018 (154.38 mm), 2017 (268.35 mm) and 2016 (299.45 mm). Figure 31, 32 and 33 below show, respectively, the temperature average, wind speed average and total precipitation data from 2009-2021.

Table 8-143 Meadowbank 2021 monthly climate data

Date	Temperature Average	Temperature Max	Temperature Min	Wind Speed Average	Wind Speed Max	Total Precipitation	Daily average Precipitation	Max Precipitation
	ºC	ºC	ºC	m/s	m/s	mm	mm	mm
January	-25.42	-9.19	-39.68			2.23	0.07	0.4
February	-30.02	-7.44	-41.64			2.8	0.1	0.8
March	-27.16	-8.34	-40.48	4.89	17.09	6.15	0.2	1.85
April	-17.86	-2.06	-38.83	5.50	21.95	10.9	0.36	3.2
May	-6.72	1.49	-19.04	5.7	18.4	9.3	0.3	3.3
June	4.20	18.03	-6.94	4.81	18.60	13.2	0.44	8.7
July	10.69	23.70	2.64	5.86	24.81	127.65	4.12	49.4
August	8.75	21.46	2.44	6.53	19.58	85.8	2.77	20.8
September	5.21	14.36	-1.87	4.68	18.89	45.05	1.5	11.5
October	0.46	10.47	-6.41	5.30	20.29	46.1	1.59	8.4
November	-13.95	-1.41	-33.36	4.13	21.66	6.15	0.2	1.4
December	-25.53	-11.91	-35.58	5.06	15.41	0.15	0.005	0.15
Total	N/A	N/A	N/A	N/A	N/A	355.48	N/A	N/A
Average	-9.78	4.10	-21.56	5.25	19.67	N/A	0.97	9.16

Figure 31 Meadowbank Site Temperature Average 2009-2021

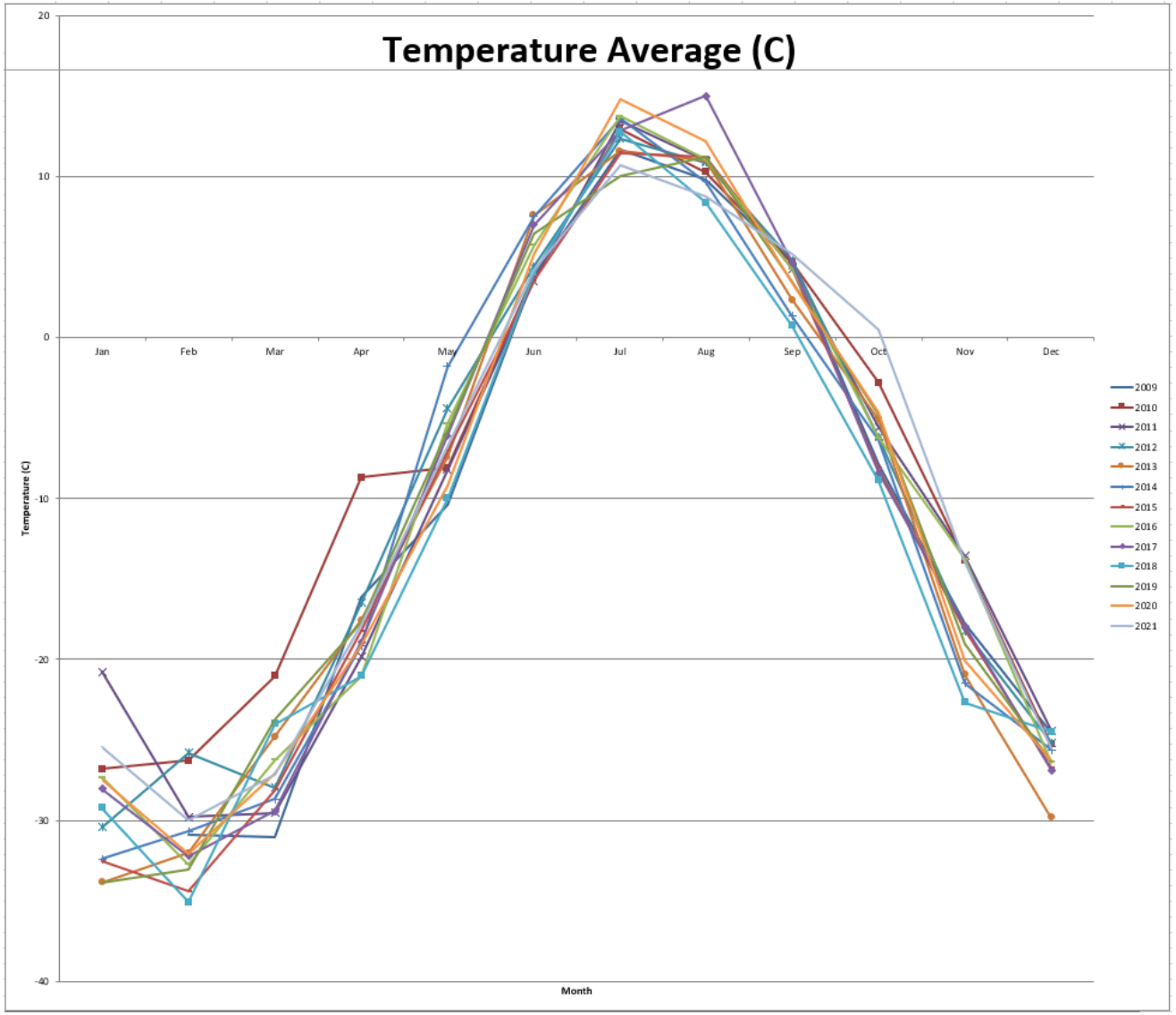


Figure 32 Meadowbank Site Wind Speed Average 2009-2021

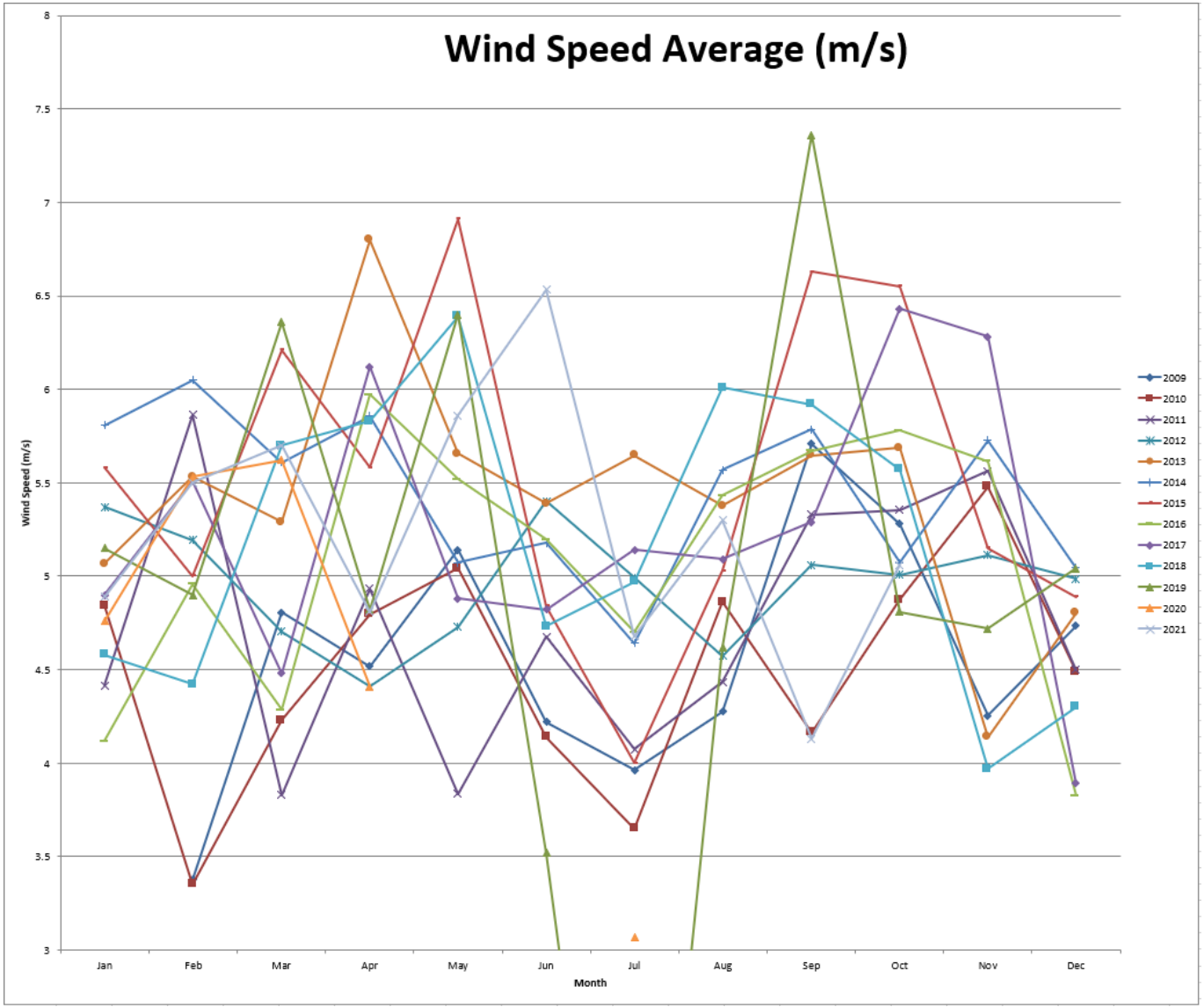
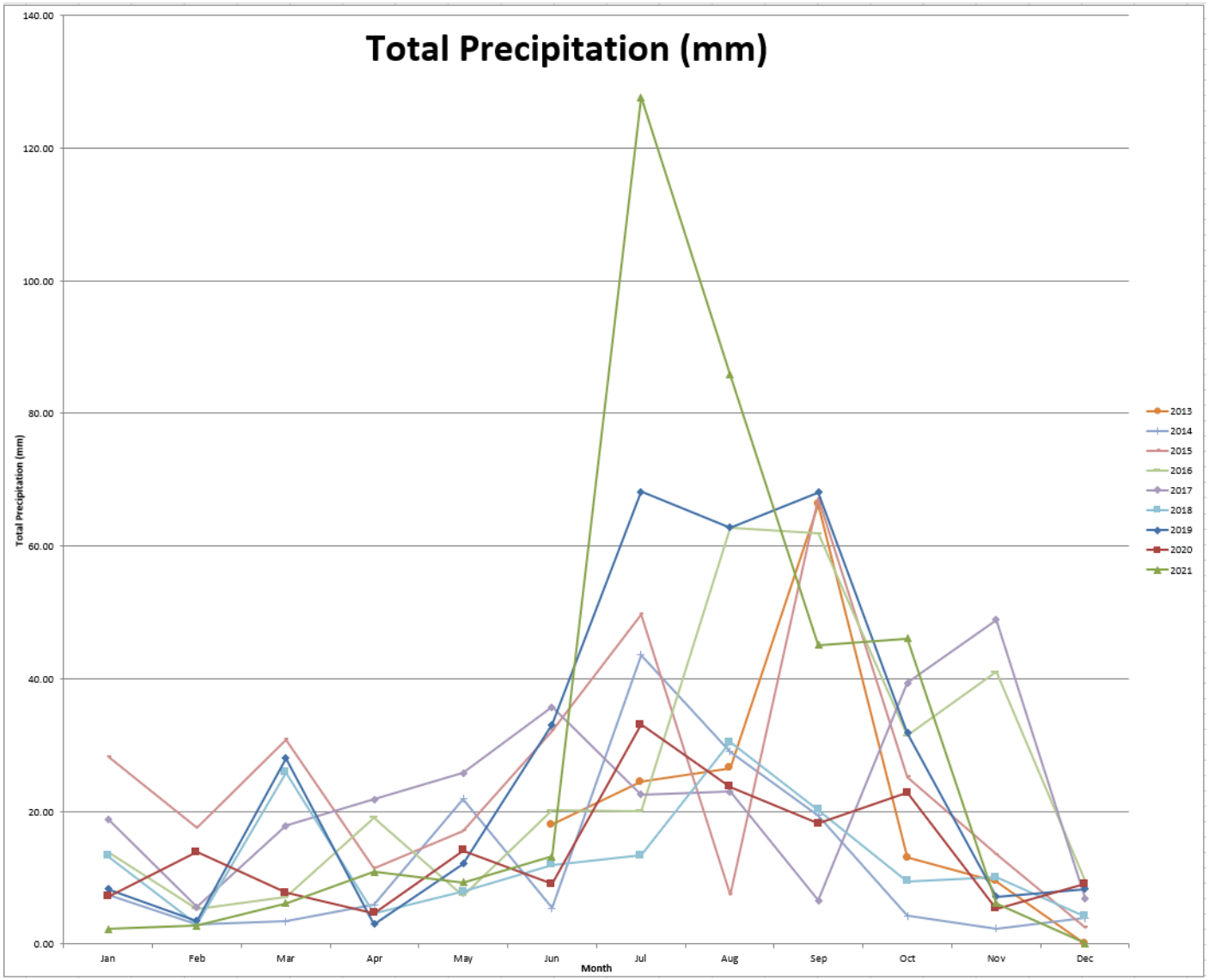


Figure 33 Meadowbank Site Total Precipitation 2013-2021



8.21.2 Whale Tail Site

The meteorological station at Whale Tail was in function for most of 2021. Due to a climate station issue, no data were however collected between November 24 to December 3rd. Table 8-144 includes average, minimum and maximum air temperatures, average and maximum wind speed as well as daily average, total and maximum volume of precipitation (rainfall / snowfall) on site. It should be noted that Agnico does not have a snow gauge but rather a rain gauge. For this reason, snow precipitations are reported as mm of rain.

In 2021, temperatures, winds and precipitation recorded were similar to the data obtained for Meadowbank Site and to historic data from Meadowbank and Baker Lake from 2009-2021. Figure 34, 35 and 36 below show, respectively, the temperature average, wind speed average from 2018-2021 and total precipitation data for 2019-2021. The coldest temperature for Whale Tail in 2021 was -42.54 °C and warmest temperature was 26.34°C. The maximum wind speed recorded in 2021 was 25.52 m/s. Total precipitation at Whale Tail site (325.90mm) were higher than 2020 data (198.05 mm), and similar to 2019 data (352.58 mm).

Table 8-144 Whale Tail 2021 monthly climate data

Date	Temperature Average	Temperature Max	Temperature Min	Wind Speed Average	Wind Speed Max	Total Precipitation	Daily average Precipitation	Max Precipitation
	ºC	ºC	ºC	m/s	m/s	mm	mm	mm
January	-26.92	-9.95	-40.46	4.46	21.21	15.6	0.5	5
February	-30.37	-8.13	-42.54	5.07	17.66	13.3	0.48	4.8
March	-27.17	-7.62	-40.43	5.87	25.52	12	0.39	4.4
April	-17.90	-3.35	-37.30	5.5	22.15	29.4	0.98	13.2
May	-6.48	3.02	-19.01	5.42	17.23	4.5	0.15	1.4
June	4.85	19.09	-7.23	4.69	18.03	9.3	0.31	5.4
July	11.17	26.34	1.53	5.46	23.13	80.6	2.6	21.9
August	8.53	22.32	1.49	5.65	19.25	85.3	2.75	23.8
September	4.52	13.32	-4.06	4.52	18.82	44.8	1.49	7.8
October	-0.48	8.77	-7.02	5.16	22.03	15.1	0.49	5.4
November	-13.08	-2.19	-5.32	0.51	9.45	11.4	0.41	4
December	-26.25	-12.87	-36.39	4.46	13.29	4.6	0.15	1
Total	N/A	N/A	N/A	N/A	N/A	325.9	N/A	N/A
Average	-9.96	4.06	-19.73	4.73	18.98	N/A	0.89	8.18

Figure 34 Whale Tail Site Temperature Average 2018-2021

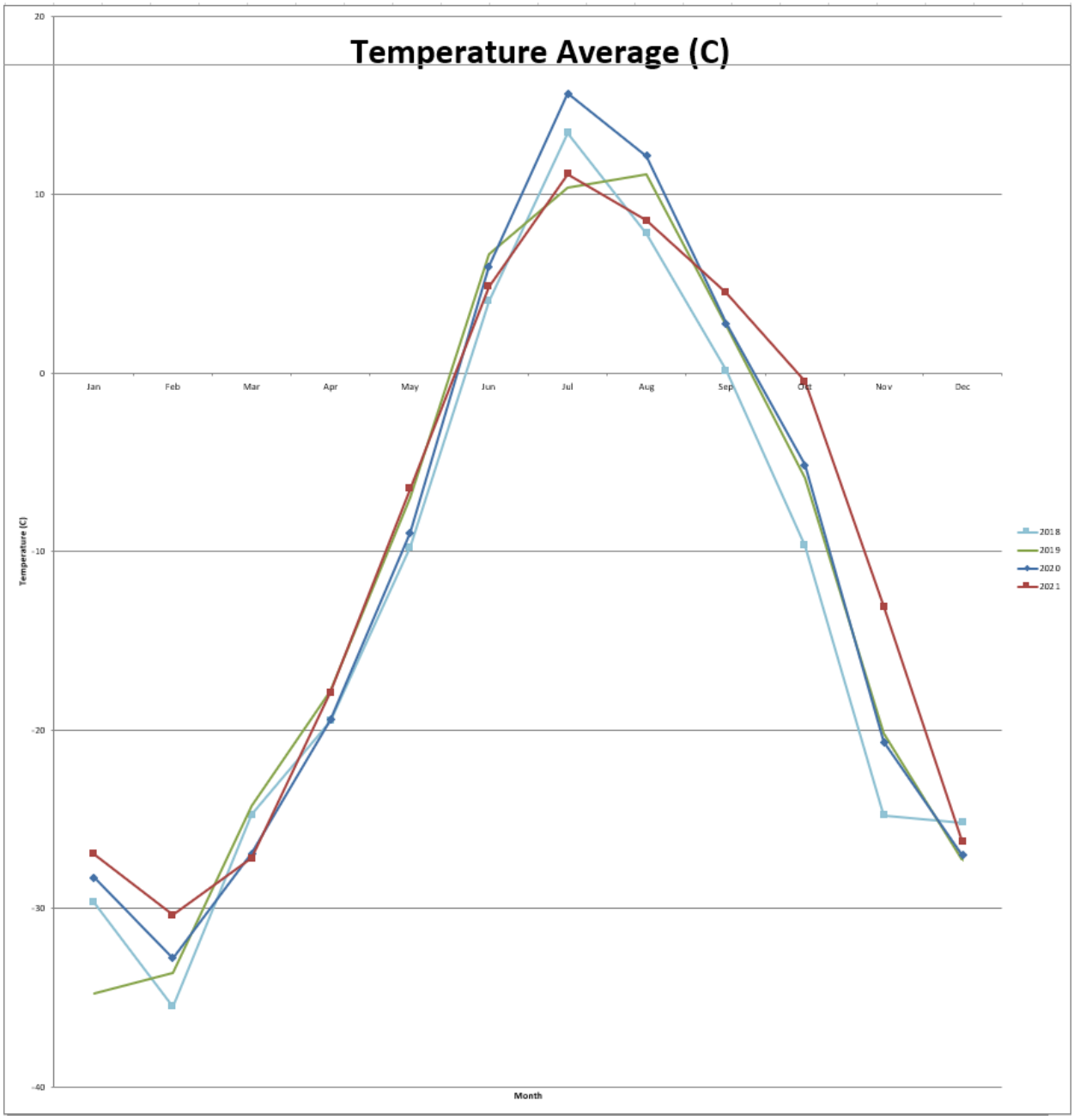


Figure 35 Whale Tail Site Wind Speed Average 2018-2021

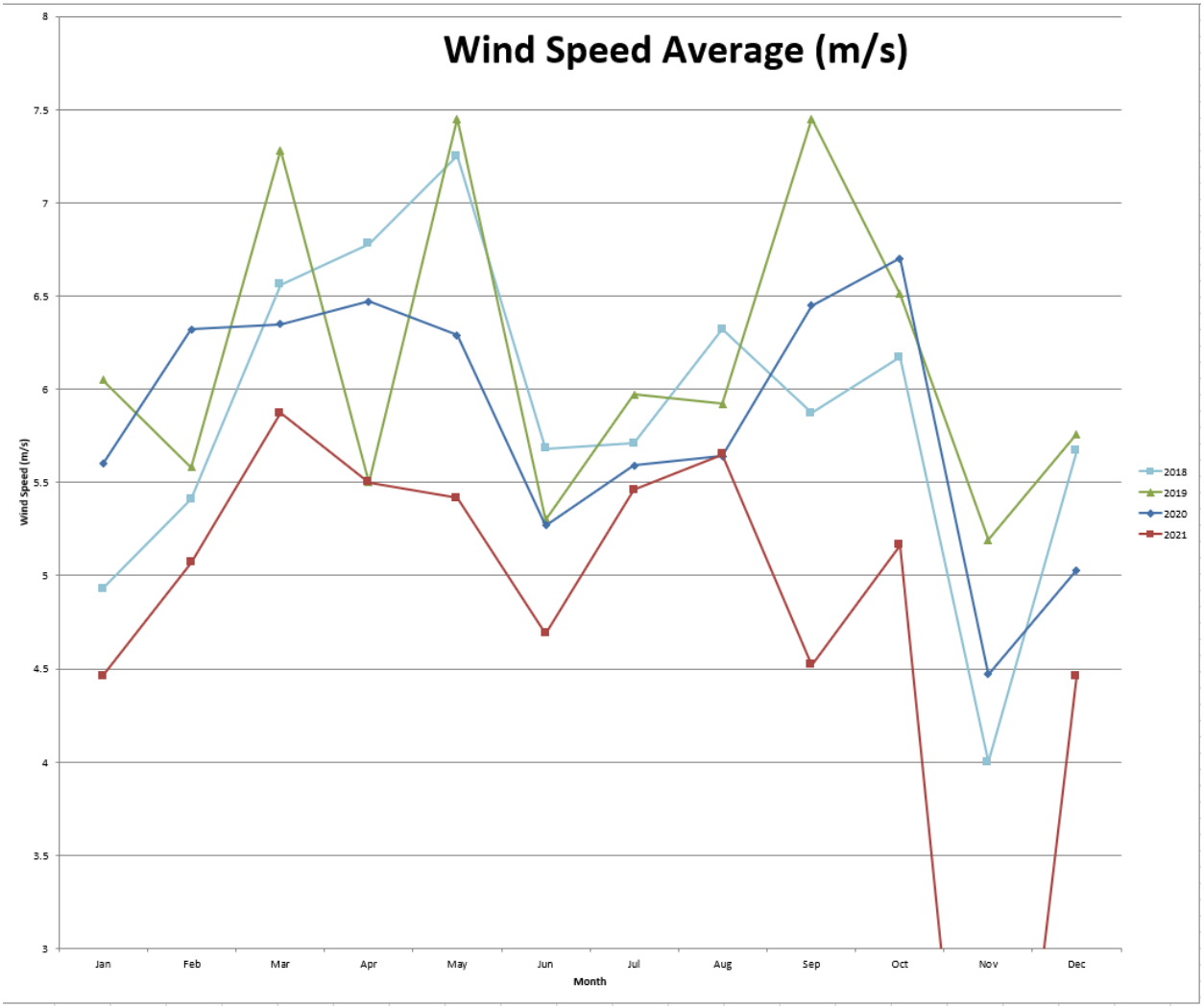
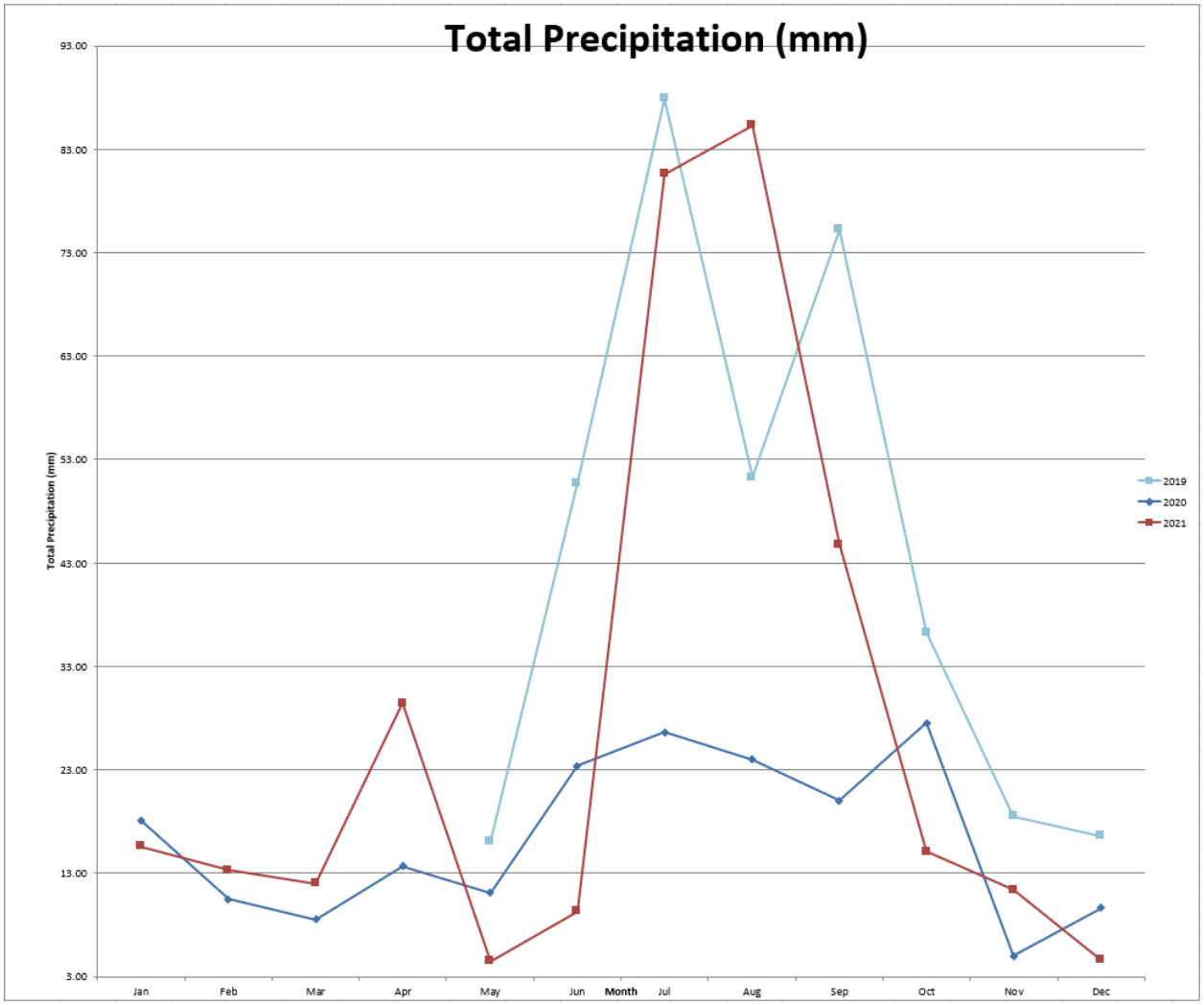


Figure 36 Whale Tail Site Precipitation 2019-2021



Historic average is provided in Table 8-145 and Figures 37 to 39 below for temperature average, total precipitation and wind speed max. Temperature average were very similar for Meadowbank, Whale Tail and Baker Lake. Precipitation at Meadowbank and Baker show a similar trending. It's difficult to compare the historic data to Whale Tail for precipitation as the data started to be collected only in May 2019. Based on the information collected over 2 years and a half, Whale Tail have received more precipitation compare to Meadowbank and Baker Laker. For the wind speed max, Meadowbank and Whale Tail have similar trending as Baker Lake.

Table 8-145 Historic Meadowbank, Whale Tail and Baker Lake monthly climate data

Date	Meadowbank (average 2009-2021)			Whale Tail (average 2018-2021)			Baker Lake (average 2009-2021)		
	Temperature Average	Wind Speed Max	Total Precipitation	Temperature Average	Wind Speed Max	Total Precipitation	Temperature Average	Wind Speed Max	Total Precipitation
	°C	m/s	mm	°C	m/s	mm	°C	m/s	mm
January	-29.01	17.69	12.43	-29.90	21.16	16.85	-28.99	22.24	9.63
February	-28.94	18.38	6.84	-33.06	18.52	11.90	-30.07	21.58	9.26
March	-26.83	19.36	15.86	-25.76	23.48	10.25	-25.86	21.88	10.81
April	-17.83	19.75	10.20	-18.64	19.83	21.55	-16.89	22.18	17.55
May	-6.96	18.60	14.44	-8.02	18.99	10.57	-6.19	19.87	15.96
June	5.15	17.87	19.86	5.38	19.37	27.80	5.58	19.19	19.70
July	12.45	18.02	44.76	12.67	20.06	65.03	12.09	18.61	31.07
August	10.80	18.15	39.07	9.93	19.98	53.53	10.93	19.83	36.92
September	3.69	21.31	41.45	2.52	20.19	46.67	4.20	21.00	48.18
October	-5.74	20.07	24.84	-5.28	22.61	26.29	-5.18	21.09	24.60
November	-17.81	20.19	16.00	-19.67	16.46	11.63	-17.59	21.32	23.83
December	-25.96	18.59	5.55	-26.42	18.39	10.28	-25.27	21.56	14.37

Figure 37 Historic Comparison Meadowbank, Whale Tail, Baker Lake Site Temperature Average 2009-2021

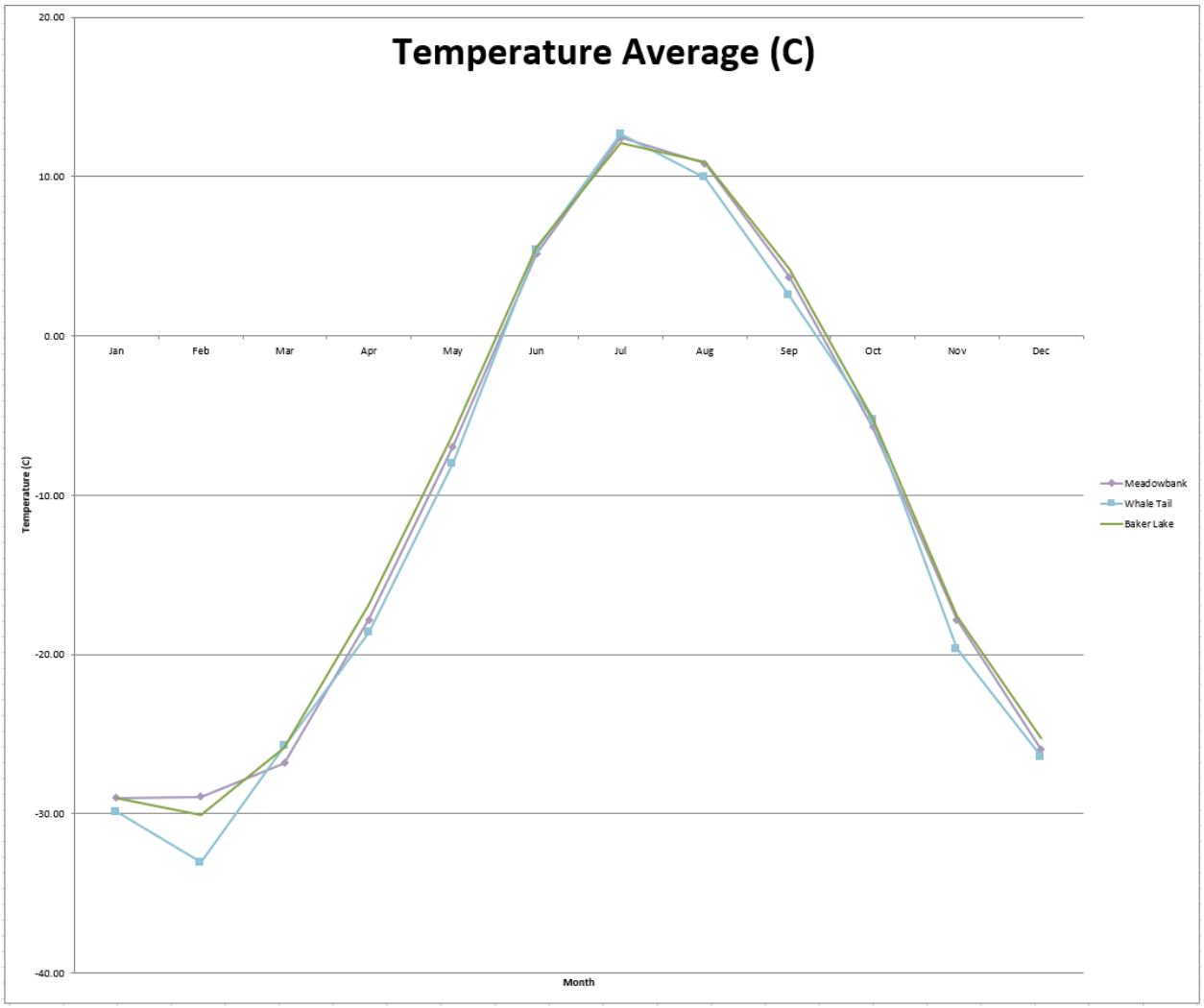


Figure 38 Historic Comparison Meadowbank, Whale Tail, Baker Lake Site Total Precipitation Average 2009-2021

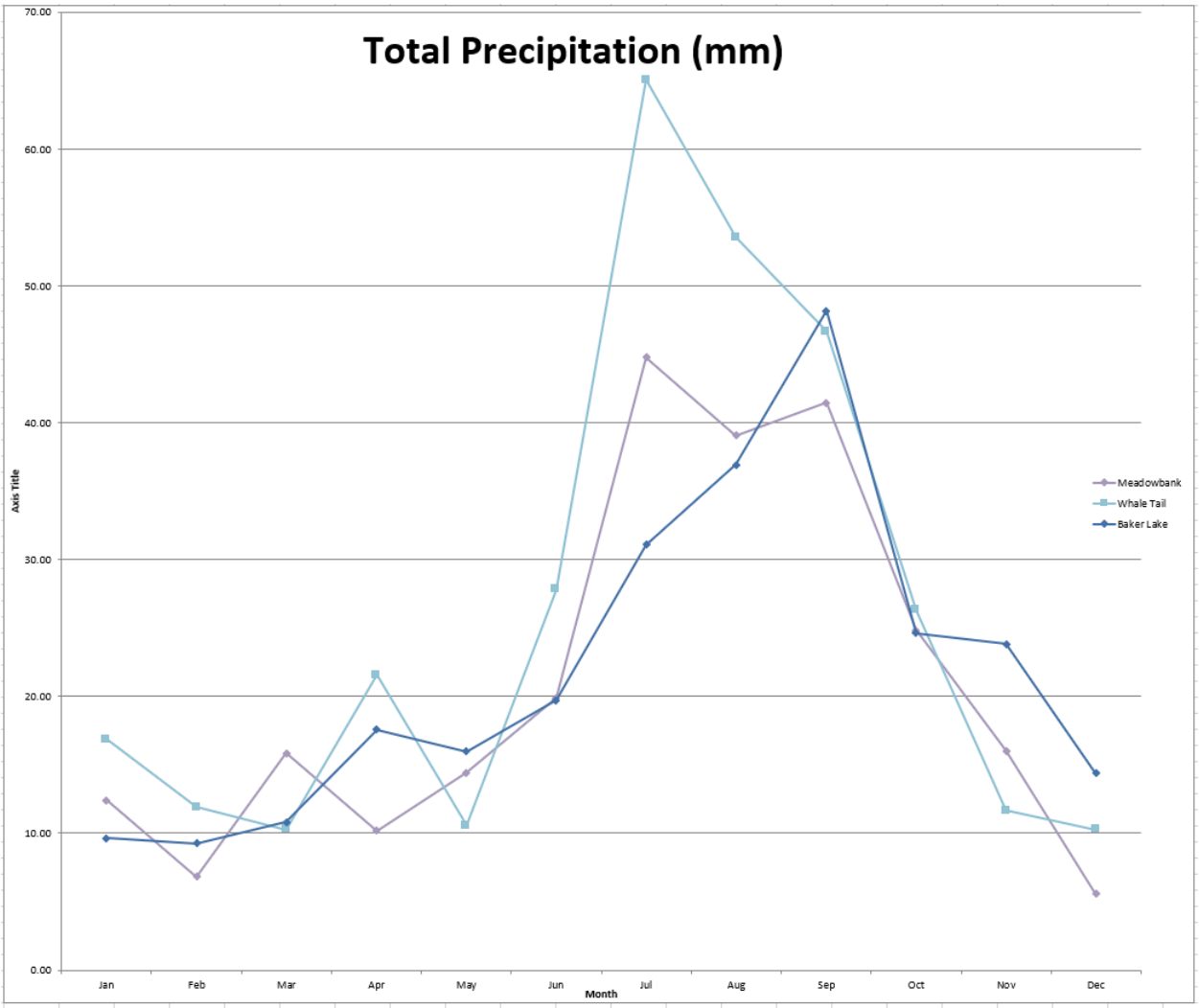
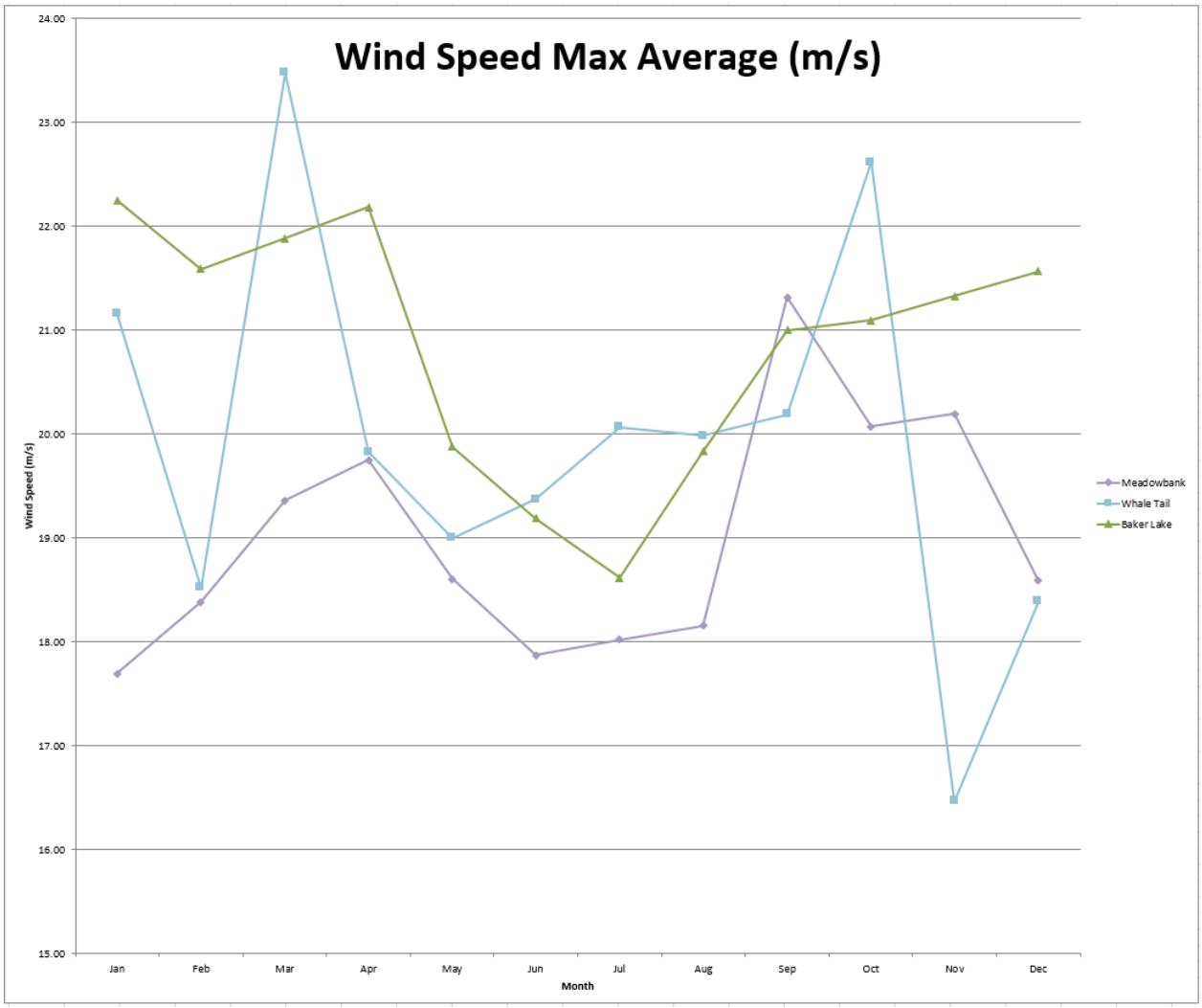


Figure 39 Historic Comparison Meadowbank, Whale Tail, Baker Lake Site Wind Speed Max Average 2009-2021



SECTION 9. CLOSURE

9.1 PROGRESSIVE RECLAMATION

9.1.1 Meadowbank Site

9.1.1.1 *Mine Site*

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 17: ***A summary of any progressive closure and reclamation work undertaken including photographic records of site conditions before and after completion of operations, and an outline of any work anticipated for the next year, including any changes to implementation and scheduling.***

And

As required by KIA KVPL08D280 Production Lease Condition 6.01 (9): ***Reclaim and remediate the Leased Land in accordance with the Closure and Reclamation Plan, on an ongoing basis through the Term and deliver to KIA, not later than March 31 of each year of the Term, beginning five years after the effective date, an amended C&R Plan detailing the activities taken in the last year and to be undertaken in the next year and planned for the balance of the Term, that includes, but is not limited to the proposed methods and procedures for progressive reclamation.***

Agnico Eagle submitted the Meadowbank Interim Closure and Reclamation Plan dated May 29th, 2019 to CIRNAC on June 7th, 2019 and on July 24th, 2019 to the NWB. On March 2020, Agnico Eagle made a revision to the Meadowbank Interim Closure and Reclamation Plan – Update 2019 (Appendix 55 of the 2019 Annual Report) to address action items identified by the NWB during the review of the 2018 Annual Report.

Best management practices, including progressive closure, have been incorporated in the Meadowbank operation period. The current mine plan includes progressive closure associated with the following components:

- Open pits;
- Portage RSF;
- Tailings Storage Facilities;
- Water management infrastructures.

The key closure activities that have been identified for progressive reclamation are detailed in the ICRP Section 6.2 for each individual component of the Project. The progressive reclamations activities provided in this ICRP will be updated in future versions of the plan to include new opportunities for progressive reclamation identified during operations.

In 2021 no new progressive reclamation activity occurred at the Meadowbank Site. It is not planned to perform progressive reclamation activity in 2022 at the Meadowbank Site.

The flooding of Vault and Phaser/BB Phaser pits with natural inflow begin at the end of mining operation in the area in 2019 and continued. At closure the flooding of this area will be supplemented by mechanical flooding. More details on this can be found in the Meadowbank Water Management Report and Plan.

In 2021 work progressed on the development and implementation of the closure water treatment system for the Portage and Goose Pit water as a results of in-pit deposition. The following main activities occurred:

- Conduct bench scale laboratory to define the water treatment technologies required for closure.
- Started environmental studies to assess the assimilative capacity of Third Portage Lake. The results from these studies will help define the allowable annual discharge volume and treated effluent requirements.
- Started the evaluation of discharge location and diffuser design.

Closure and reclamation of the Portage RSF occurred progressively during operations with the placement of the NPAG cover over the side slopes of the PAG RSF. Refer to Section 5.2.5.4 (Appendix 55 of 2019 Annual Report) for cover design details. Approximately 90% of the Portage PAG RSF has been covered. No additional work on this item is planned to occur before closure as it will not be possible to progressively reclaim the uppermost bench or the top surface of the Portage RSF as the demolition landfill is located on the RSF. A mandate was also started to re-affirm / update the landform design for the Portage WRSF.

Progressive reclamation by capping the tailings in the North Cell was undertaken in winter of 2015 following the completion of the tailings deposition. The construction continued in 2016-2019. There is an opportunity to progressively close the South Cell and North Cell TSF. In 2022 Agnico Eagle will re-affirm / update the closure landform design of the TSF. This option will be further evaluated by Agnico Eagle based on the current site condition once the closure landform as been re-updated.

Following conversion of the Portage Attenuation Pond into the Reclaim Pond (South Tailings Cell) in 2014, some of the dewatering equipment from the North Cell reclaim system (i.e. dewatering pipelines, reclaim barge, effluent diffuser pipelines, and pumps) has been dismantled and removed. This activity occurred in 2015. Water management facilities or equipment not used or deemed not necessary could be removed during operations. Some water management systems not required at Meadowbank were moved at Whale Tail Pit based on availability and needs on both sites. The clarifiers of the Water Treatment Plant (WTP) at Meadowbank was demobilized partially to be used at Vault WTP. The Vault water treatment plan was then demobilized to be installed at Whale Tail Pit.

Progressive reclamation activities for the buildings and equipment at Vault has occurred during operation after the mining activities. To date, the emergency camp and office at Vault have been removed. Specific timeline for progressive reclamation at Vault during operation will be eventually defined. Efforts are also made to reduce inventories of consumables leading up to the end of operations.

The landfill will be in active use throughout the operation period and also during the closure period in order to receive debris from decommissioning. Operation landfills are progressively closed in the Portage

RSF during operation, but final closure of the demolition landfill will occur at the end of the active closure stage. No specific progressive reclamation activities have been identified for the other waste disposal areas.

9.1.1.2 *AWAR*

As required by CIRNAC Land Lease 66A/8-71-2, Condition 33: ***The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with the approved Abandonment and Restoration Plan, as well as any variations from the said Plan.***

And

As required by KIA Right of Way KVRW06F04, Condition 26: ***File annually a progress report for the preceding year, outlining any ongoing restoration completed, in conformity with the Abandonment and Restoration plan***.

No progressive reclamation has been completed on the AWAR or associated quarries in 2021 as none of the quarries are considered as no longer being required as borrow source for road maintenance.

Quarries and granular borrow sites are required for maintenance work on the AWAR. The AWAR is used in operation, but also in closure and post-closure. The road will be preserved as the main access to the site in a sufficient condition to allow post-closure access for monitoring, inspection and maintenance activities. Material availability and proper maintenance are required to ensure the good state of the road.

9.1.1.3 *Quarries*

As required by CIRNAC Land Lease 66A/8-72-6, Condition 33: ***The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with C&R Plan, as well as any variations from the said Plan.***

No progressive reclamation has been completed on the AWAR or associated quarries in 2021 as none of the quarries are considered as no longer being required as borrow source for road maintenance.

9.1.2 Whale Tail Site

9.1.2.1 *Mine Site*

As required by NWB Water License 2AM-WTP1830 Part J, Item 2: ***The Licensee shall submit to the Board for approval within three (3) years of Operations, an updated Interim Whale Tail Pit Closure and Reclamation Plan prepared in accordance with the "Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories", issued by the Mackenzie Valley Land and Water Board (MVLWB) and Aboriginal Affairs and Northern Development Canada (AANDC) in 2013 (MVLWB/AANDC 2013) and consistent with the Mine Site Reclamation Policy for Nunavut, 2002. The Plan shall include all mine related facilities and Whale Tail Pit Haul Road.***

And

As required by NIRB Project Certificate 008 Condition 12: ***The Proponent shall provide a summary of its progressive reclamation efforts and associated feedback received from communities with respect to aesthetic values solicited by the Proponent as part of its public engagement processes in its annual reporting to the NIRB. As part of the Closure and Reclamation Plan, the Proponent shall develop and implement a program to:***

- ***Progressively reclaim disturbed areas within the project footprint, with an emphasis on restoring the natural aesthetics of the area through re-contouring to the extent practicable; and***

- ***In a manner that demonstrates that the Proponent has considered the aesthetic values of local communities (e.g. information regarding the acceptability of the topography and landscape of the project areas following progressive reclamation efforts).***

And

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 20: ***A summary of any progressive Closure and Reclamation work undertaken, including photographic records of site conditions before and after completion of operations, and an outline of any work anticipated for the next year, including any changes to implementation and scheduling.***

And

As required by KIA Production Lease KVPL17D01 Condition 6.01 (10): ***Deliver to KIA, not later than March 31, 2022 and not later than March 31st every three (3) years thereafter, a Conceptual Reclamation and Closure Plan and Reclamation Estimate, detailing the reclamation and remediation activities taken in the last three (3) years and to be undertaken in the next three (3) years and planned for the balance of the Term. That includes, but not is not limited to the proposed methods and procedure for the progressive […]***

Agnico Eagle submitted an updated version of the Whale Tail Interim Closure and Reclamation Plan (ICRP) on July 2020 to NWB. For details regarding the planned permanent and progressive reclamation, please refer to Section 5 and 6 of the Whale Tail ICRP provided in Appendix 51 of the 2020 Annual Report.

In 2021 progressive placement of the WRSF NPAG landform occurred cover over the side slopes of the WT WRSF. In 2022 it is planned to continue the progressive placement of the NPAG cover at WT WRSF and IVR WRSF.

9.1.2.2 *Whale Tail Haul Road*

As required by CIRNAC Land Lease 66H/8-2-1, Condition 25: ***The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with the approved Abandonment and Restoration Plan, as well as any variations from the said Plan.***

No reclamation work was undertaken at along the Whale Tail Haul Road in 2021.

9.1.2.3 *Quarries*

As required by KIA Quarry Lease KVCA15Q02, Condition 14: ***AEM shall conduct reclamation activities until November 22, 2018, in accordance with the Reclamation Plan attached Schedule 3. AEM shall annually thereafter submit to KIA a Reclamation Plan detailing the proposed reclamation activities for the upcoming year.***

And

As required by KIA Quarry Lease KVCA18Q01, Condition 20: ***The permittee shall conduct reclamation activities during the first twelve months of the term of this Permit in accordance with the Reclamation Plan attached as Schedule 3. The permittee shall annually thereafter submit to the Association an Reclamation Plan detailing the proposed reclamation activities for the upcoming year.***

And

As required by KIA Quarry Lease KVCA15Q01, Condition 13: ***The permittee shall conduct reclamation activities during the first twelve months of the term of this Permit in accordance with the Reclamation Plan attached as Schedule 3. The permittee shall annually thereafter submit to the Association an Reclamation Plan detailing the proposed reclamation activities for the upcoming year.***

And

As required by CIRNAC Land Lease 66H/8-1-4, Condition 35: ***The lessee shall file annually a report for the preceding year, outlining ongoing restoration completed in conformity with the approved Abandonment and Restoration Plan, as well as any variations from the said Plan.***

No restoration work was completed in 2021. Quarries/eskers may continue to be used in following year for construction project and road maintenance.

9.2 RECLAMATION COSTS

9.2.1 Meadowbank Site

9.2.1.1 *Project Estimate*

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 19: ***An updated estimate of the current restoration liability based on project development monitoring, results of restoration research and any changes or modifications to the Appurtenant Undertaking.***

And

As required by NIRB Project Certificate No.004, Condition 80: ***File annually with NIRB's Monitoring Officer an updated report on progressive reclamation and the amount of security posted, as required by KivIA, INAC, and/or the NWB.***

Refer to Section 9.1.1 for the progressive reclamation discussion.

A permanent closure and reclamation financial security cost estimate has been prepared with the present Project layout and infrastructure. The cost estimate covers the closure and reclamation of all Project

facilities as described in this report and was prepared using RECLAIM Version 7.0, March 2014, for permanent closure of the Project.

Reclamation of the Meadowbank Gold Project facilities can be divided into the following three general stages, as presented in the integrated schedule of closure activities presented in Appendix P of the ICRP (Appendix 55 of the 2019 Annual Report):

- Operations: during which time progressive rehabilitation measures may be undertaken;
- Active Closure: during which time the major reclamation measures are undertaken;
- Post Closure: all major construction activities have been completed and ongoing monitoring and maintenance is required, with minimal activity on-site.

Agnico Eagle was required to submit a detailed financial security cost estimate for the Meadowbank ICRP - Update 2019 to Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and to the Kivalliq Inuit Association (KivIA) to support land use and water licensing requirements. RECLAIM Version 7.0 workbook has been used for this estimate, as per the Guidelines for Closure and Reclamation Cost Estimates for Mines, issued by Indigenous and Northern Affairs Canada, Mackenzie Valley Land and Water Board and the Government of the Northwest Territories (INAC, MVLWB, GNWT, 2017).

This cost estimate provides for the closure measures described in detail in the Meadowbank ICRP – Update 2019. The schedule of closure activities, presented in Appendix P of the ICRP presented in Appendix 55 of the 2019 Annual Report, outlines the major closure measures and their expected timeline.

For the purpose of this financial security cost estimate, only progressive rehabilitation measures which have already been completed to date (up to 2017) are considered in the calculations.

The updated 2019 estimated closure and reclamation costs for the Meadowbank Project represent a total of $89,427,746. This total includes $62,269,580 of direct costs and $ 27,158,166 of indirect costs. The financial security cost estimate assumptions and methodology used for the calculations, along with the complete RECLAIM 7.0 spreadsheets are presented in Appendix Q of the ICRP (Appendix 55 of 2019 Annual Report).

9.2.1.2 *AWAR and Quarries*

As required by CIRNAC Land Lease 66A/8-71-2, Condition 19: ***The lessee shall submit to the Minister every two years after the commencement date of this lease (January 2007), a report describing any variations from the Abandonment and Restoration Plan and updated cost estimates.***

And

As required by CIRNAC Land Lease 66A/8-72-6, Condition 37: ***The lessee shall submit to the Minister every 2 years after the commencement date of this lease (January 2007), a report describing cumulative variations from the C&R Plan with updated cost estimates.***

And

As required by KIA Right of Way KVRW06F04, Condition 14: ***Submit to KIA every two years on each anniversary of the commencement date (February 2007), a report describing any variations from the Abandonment and Restoration Plan and updated cost estimates.***

No extensive progressive reclamation has been completed on the AWAR or associated quarries in 2021.

No modifications were made in the last updated interim closure plan from 2019 (Rev 1) compared to the previous version. The cost estimate for the reclamation of the AWAR and quarries cost estimated is C$993,078.

9.2.2 Whale Tail Site

9.2.2.1 *Project Estimate*

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 22: ***An updated estimate of the current restoration liability based on Project development monitoring, results of restoration research and any changes or modifications to the Appurtenant Undertaking.***

And

As required by NWB Water License 2AM-WTP1830 Part C, Item 7: ***The Licensee shall, within twelve (12) months following the commencement of Operations and when the Licensee files a Final Reclamation and Closure Plan as required under the Licence, submit to the Board for review an updated reclamation cost estimate, using the INAC RECLAIM Reclamation Cost Estimating Model (Version 7.0 or the most current version in use at the time the updated reclamation cost estimate is submitted to the Board).***

Agnico Eagle submitted the Whale Tail Interim Closure and Reclamation Plan on June 2016. A permanent closure and reclamation financial security cost estimate has been prepared to a conceptual level with the present Project layout and infrastructure (Appendix D of the ICRP 2016). As part of the Whale Tail Expansion Project, an updated ICRP was submitted in July 2020.

The cost estimate covers the closure and reclamation of all Project facilities as described in the ICRP and was prepared using RECLAIM Version 7.0, March 2014, for permanent closure of the Project. The 2020 estimated closure and reclamation costs for the Whale Tail Project represent a total of C$50,663,508. This total includes C$30,714,735 of direct costs and C$19,948,773 of indirect costs.

As per NWB Water License Part C Item 1, Agnico has provided to both the Government of Canada (CIRNAC) and KivIA a Letter of Credit in the amount of C$25,331,754 for a total of C$50,663,508.

9.3 TOPSOIL/ORGANIC MATTER SALVAGE AND REVEGETATION

As required by NIRB Project Certificate 008 Condition 13: ***The Proponent shall explore the feasibility of topsoil/organic matter salvage as part of project development and provide updates to the Closure and Reclamation Plan based on this investigation. The Proponent shall provide a summary of its management of topsoil in annual reports to the NIRB.***

And

As required by NIRB Project Certificate No.008 Condition 26: ***The Proponent shall include revegetation strategies within its Mine Closure and Reclamation Plan that support progressive reclamation, and promote natural revegetation and recovery of disturbed areas compatible with the surrounding natural environment. These strategies should include exploration of the feasibility and practicality of topsoil/organic matter salvage through Project development. Consideration for the results of similar reclamation efforts at other northern projects, including the Meadowbank Gold Mine Project, must be demonstrated. Within three (3) years from the commencement of construction, information regarding the revegetation strategies developed and implemented by the Proponent in fulfillment of this Term and Condition shall be included in the Proponent's annual report to the NIRB. Subsequently, information regarding the Proponent's progress in fulfillment of this Term and Condition shall be provided annually in the Proponent's annual report to the NIRB.***

Natural revegetation is already promoted and included in the Whale Tail ICRP. As per the 2019 Whale Tail ICRP Rev 1, active revegetation has not been planned at this time as part of the reclamation plan given the cold climate setting of the Project. Furthermore to below, Meadowbank had in 2020 a baccalaureate student that make his internship to assess the possibility of revegetation in Northern Arctic Condition. Result of this study will be reported in subsequent annual report and will be use to fulfill NIRB Condition 13 and 26. An update to the ICRP will be completed, as needed.

Agnico Eagle Meliadine Mine Site, as per the 11MN034 Project Certificate Condition 20 and 41, need to undertake a similar study as required by the Whale Tail Project Certificate 008 Condition 13 and 26.

Result of the study conducted by Meliadine mine site will be shared with Meadowbank in order to fulfill the current Project Certificate No. 008 obligations. Below is a summary of the study conducted in 2018-2021 at Meliadine.

On June 1st, 2018 Agnico Eagle Meliadine Mine and the University of Saskatchewan received a Natural Sciences and Engineering Research Council Collaborative Research and Development grant. The grant entitled "Tundra Restoration: Niche construction in early successional plant-soil systems" will support on-site and laboratory research from June 2018 to June 2022.

To better understand the barriers for revegetation and to identify potential vegetative species for restoration natural colonization of drilling wastes and disturbed substrates by biological soil crusts and native vascular plants was examined from 2018-2021. Primary findings include:

- native plant communities on drilling wastes appear to recover 20-25 years after disturbance;
- bryophytes are key early colonizing species with generalist ruderal acrocarpous mosses found on boreal and Arctic disturbed substrates;
- biological soil crusts modify the environment by changing abiotic conditions at the soil surface, which in turn promote development of native vegetation communities; and
- native legumes appear to play an important role in plant-soil interactions in early successional habitats.

Active restoration trials including ex-situ and in-situ examinations of the efficacy of transplanting upland tundra heath turfs and shredded materials were conducted from 2019-2021. Growth chamber trials

indicated that fertilization of adjacent substrates may reduce restoration timelines and highlighted the importance belowground expansion. In-situ restoration efforts at the Meliadine site revealed:

- turfs 40 cm^2 by 10-15 deep support native plant-soil communities that can act as resources for revegetation;
- shredded materials had poor establishment and may not be appropriate at Meliadine;
- in general, evergreen shrubs should be avoided due to high transplanting morality; and
- graminoids should be targeted for transplanting due to extensive belowground expansion.

Soil invertebrate surveys were conducted in 2018 at Meliadine and found soil invertebrate communities, expressed as the density of collembolan, enchytraeids and mites, were relative constant across the upland tundra heath sites, although vegetation and soil characteristics appear to influence species density and should be considered when selecting materials for restoration. An extensive invasive plant species survey was conducted in summer 2019 and no non-native invasive species were observed or identified. In fall of 2019 a website: tundrarestoration.com that provides information on tundra ecology, scientific and traditional Indigenous knowledge of common tundra plants, details and videos of our restoration trials and information on youth education programs was launched.

Finally, on-going examinations of the plant-soil interactions of early colonizing Arctic legumes has identified nitrogen-fixing legumes as important early colonizers on disturbed substrates at Meliadine. Characterization of nitrogen fixing bacteria associated with these species is currently underway and will be complemented by radioisotope imaging of carbon and nitrogen uptake and translocation.

Together these studies indicate that tundra turfs, biological soil crusts and nitrogen fixing legumes are all candidates for active and passive restoration and both natural recovery and active restoration of local native vegetation can support the development of healthy functioning tundra ecosystems.

The March 2022 Natural recovery and active restoration of tundra plant-soil systems at Agnico Eagle Mines Meliadine site, Nunavut is provided in Appendix 30 of the 2021 Meliadine Project Annual Report.

9.4 TEMPORARY MINE CLOSURE WHALE TAIL SITE

As required by NIRB Project Certificate No.008 Condition 47: ***The Proponent should undertake an analysis of the risk of temporary mine closure, giving particular consideration to how communities in the Kivalliq region may be affected by temporary closure of the mine, including consideration of the measures that can be taken to mitigate the potential for adverse effects (e.g. development of programs that provide transferable skills, identification of employment options that can include transfers amongst Agnico Eagle operations, etc.) This analysis is required to be updated as necessary to reflect significant changes to the Project or the socio-economic conditions in the region that may increase the risks and potential effects of temporary mine closures. This initial results of the Proponent's analysis should be provided to the Nunavut Impact Review Board (NIRB) within six (6) months of the issuance of the Project Certificate. Any updates to the analyses should be provided to the NIRB within three (3) months following completion of updated analyses by the Proponent.***

Agnico Eagle submitted the analysis of risk of temporary mine closure on September 11th, 2018. There have not been any updates since the last submission. The Analysis of the Risk of Temporary Mine Closure is included in the Appendix 50 of the 2018 Annual Report.

9.5 SOCIO-ECONOMIC CLOSURE PLAN WHALE TAIL SITE

As required by NIRB Project Certificate 008 Condition 51: ***The Proponent shall develop a conceptual Socio-economic Closure Plan that:***

- ***Links the socio-economic closure plans for Meadowbank and Whale Tail;***
- ***Identifies regular update and multi-party review requirements;***
- ***Shows evidence of consideration of socio-economic lessons learned from other northern mine closure experiences;***
- ***Includes evidence of consultation with Kivalliq communities and governance bodies on socio-economic objectives/goals related to closure planning;***
- ***Emphasizes plans, policies, and programs to increase transferable skills of Inuit workers, including into trades and other skilled positions; and***
- ***Includes all plans, policies and programs related to socioeconomic factors in a temporary closure situation; and***
- ***Includes a Workforce Transition Plan between the Whale Tail Project and other production mines owned and operated by the Proponent in the Kivalliq region.***

The Proponent shall advance the recommendations of the Conceptual Socio-economic Closure Plan through the development of a Final Socio-economic Closure Plan that will be part of the Whale Tail Pit Project Final Closure and Reclamation Plan.

The conceptual socio-economic closure plan will be provided to the Nunavut Impact Review Board within one (1) year of issuance of the Project Certificate, and updated as needed prior to closure with information provided in the Proponent's annual report to the Nunavut Impact Review Board.

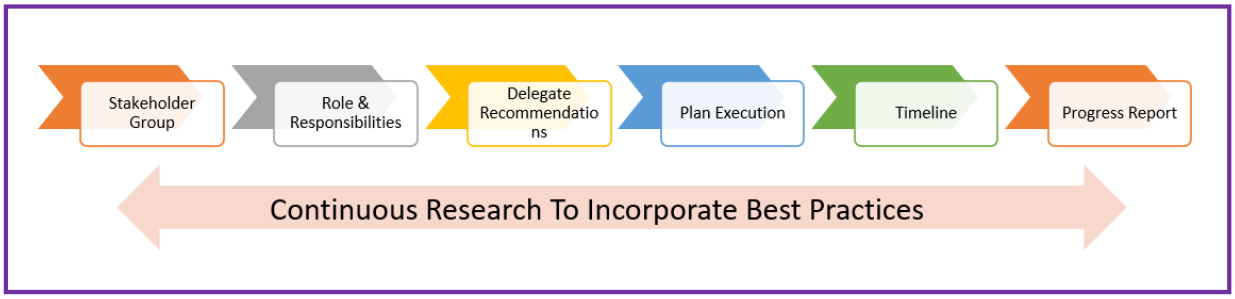
In accordance with their Project Certificate, Agnico Eagle prepared, in 2019, a conceptual Socio-Economic Closure Plan "to ensure workers at the project would be supported once operations cease". Socio-economic closure planning in the context of Agnico Eagle's Kivalliq operations is an integrated process that considers the schedules, workforces and contributions of Meadowbank, Whale Tail and Meliadine. In the past years, Agnico Eagle undertook several studies, engagements and consultations to inform the development of the Conceptual Closure Plan.

In 2021, Agnico Eagle established a framework (Figure 40) that will allow completion of the recommendations outlined in the 2019 Conceptual Socio-Economic Closure Plan. More specifically Agnico Eagle will follow a methodology to do progressive social closure planning that will ultimately contribute to the final Socio-Economic Closure plan. The framework includes:

- A stakeholder group(s) to consult – Internal and External
- Established Role and Responsibilities
- Delegation of Recommendations outlined in 2019 Conceptual Social Closure Plan – Internal vs. External or Collaborative Approach
- Development of an execution plan for each recommendation
- Development of timeline and key deliverable for each recommendation

- A structured progress report to remain accountable

Figure 40 Progressive Social Closure Planning Framework



Lastly, through the framework Agnico Eagle will continue to research and incorporate social closure best practices as the recommendations progress.

In 2021, based on the recommendations from the 2019 Conceptual Socio-economic Closure Plan Agnico Eagle identified the internal stakeholder group. Currently (early 2022), Agnico Eagle is developing the engagement plan and the roles and responsibilities of the internal working group.

SECTION 10. PLANS / REPORTS / STUDIES

10.1SUMMARY OF STUDIES

10.1.1 Meadowbank Site

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 20: ***A summary of any studies requested by the Board that relate to Water use, Waste disposal or Reclamation, and a brief description of any future studies planned.***

No studies were requested by the NWB in 2021.

10.1.2 Whale Tail Site

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 23: ***A summary of any studies requested by the Board that relate to Water use, Waste disposal or Reclamation, and a brief description of any future studies planned.***

No studies were requested by the NWB in 2021.

10.2 SUMMARY OF REVISIONS

A list management plans for the Meadowbank Gold Mine and Whale Tail Projects is included in Table 10-1. This table includes details on the latest version and submission date to regulators.

Table 10-1 Active Management Plans for the Meadowbank Gold Mine and Whale Tail Pit Projects

Meadowbank Gold Mine Project		
Management Plan	**Submission Date**	**Version**
Meadowbank No Net Loss Plan, Phaser Offsetting Plan addendum and In-Pit disposal addendum	February 2019	3
Habitat Compensation Monitoring Plan	February 2017	4
Groundwater Monitoring Plan	April 2020	11
Water Quality Monitoring and Management Plan for Dike Construction and Dewatering + Addendum	July 2016	4
Water Quality and Flow Monitoring Plan	March 2016	5
Interim Closure and Reclamation Plan	April 2020	Rev 1
OPEP/OPPP	April 2022	15
Baker Lake Bulk Fuel Storage Facility: Environmental Performance Monitoring Plan	January 2022	6.1
Operational ARD-ML Sampling and Testing Plan	November 2013	2
Incinerator Waste Management Plan	April 2022	9
Landfarm Design and Management Plan	March 2017	4

Landfill Design Management Plan	April 2021	5
Dewatering Dike OMS	April 2022	9
Freshet Action Plan	April 2022	10
Tailings Storage Facility OMS	April 2022	10
Waste Rock and Tailings Management Plan	April 2022	12
Pore Water Quality Management Plan	April 2020	2
Water Management Report and Plan	April 2022	10
Sewage Treatment Plant Management Plan	March 2017	6
Transportation Management Plan: AWAR	June 2021	5
Whale Tail Pit Project		
Management Plan	**Submission Date**	**Version**
Mercury Monitoring Plan	April 2019	3
Fish Habitat Offsetting Plan Whale Tail and Whale Tail expansion	June 2020	1
Fish Habitat Offseting Monitoring Plan (under DFO approval)	July 2021	2
Groundwater Monitoring Plan	May 2019	3
Arsenic Water Treatment Plan OMM	January 2019	2
Water Quality Monitoring and Management Plan for Dike Construction and Dewatering	May 2020	3
Water Quality and Flow Monitoring Plan	March 2019	6
Interim Closure and Reclamation Plan	July 2020	4
Operational ARD-ML Sampling and Testing Plan – Whale Tail Pit Addendum	November 2020	6
Landfarm Design and Management Plan	April 2021	2
Landfill Design Management Plan	April 2021	4
Water Management Infrastructure OMS	April 2022	2
Freshet Action Plan	April 2022	4
Waste Rock Management Plan	April 2022	9
Water Management Report and Plan	April 2022	9
Sewage Treatment Plant OMM	February 2019	2
Shipping Management Plan	April 2022	4
Thermal Monitoring Plan	April 2022	4
Migratory Bird Protection Plan	April 2020	3
Whale Tail Pit Haul Road Management Plan	April 2020	3
Adaptive Management Plan	July 2021	1.5
Erosion Management Plan	December 2018	2
Incinerator and Composter Waste Management Plan	April 2019	1
Meadowbank Gold Mine Project & Whale Tail Pit Project (Combined)		
Management Plan	**Submission Date**	**Version**
Air Quality and Dustfall Management Plan	April 2022	6
Noise Monitoring and Abatement Plan	December 2018	4
Aquatic Effects Management Program (AEMP)	April 2022	5
Core Receiving Environment Monitoring Program (CREMP) - Meadowbank V2 November 2015 + Whale Tail Addendum April 2019	April 2019	2

QAQC Plan	April 2022	7
Greenhouse Gas Reduction Plan	April 2020	3
Emergency Response Plan	April 2022	17
Hazardous Materials Management Plan	April 2022	7
Spill Contingency Plan	April 2022	16
Blast Monitoring Program	April 2022	7
MBK and Whale Tail Bulk Fuel Storage Facility	April 2021	6
Ammonia Management Plan	April 2022	5
Occupational Health & Safety Plan	December 2018	3
Wildlife Screening Level Risk Assessment Plan	April 2022	6
Terrestrial Ecosystem Management Plan	June 2019	7
Wildlife Protection and Response Plan	June 2018	1

10.2.1 Meadowbank Site

As required by NWB Water License 2AM-MEA1530 Part B, Item 16: ***The Licensee shall review the Plans or Manuals referred to in this Licence as required by changes in operation and/or technology and modify the Plans or Manuals accordingly. Revisions to the Plans or Manuals 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.***

And

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 21: ***Where applicable, revisions will be completed as Addendums, with an indication of where changes have been made, for Plans, Reports, and Manuals.***

As per Water License 2AM-MEA1530 Part B, Item 16 : '*The Licensee shall review the Plans or Manuals referred to in this Licence as required by changes in operation and/or technology and modify the Plans or Manuals accordingly. Revisions to the Plans or Manuals 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*.' Plan will be considered as approved unless a notification from the NWB requested the formal approval process.

The following monitoring and management plans were revised in 2021 and apply to Meadowbank Site:

- Meadowbank Mine Waste Rock and Tailings Management Plan, Version 12 (Appendix 22);
- Meadowbank Freshet Action Plan, Version 10 (Appendix 36);
- Meadowbank - Dewatering Dikes Operation, Maintenance and Surveillance Manual, Version 9 (Appendix 66);
- Meadowbank Water Management Report and Plan Version 10 (Appendix 12);

- Baker Lake Bulk Fuel Storage Facility: Environmental Performance Management Plan Version 6.1 (Appendix 17);
- AWAR Transportation Management Plan, Version 5 (Appendix 70);
- Oil Handling Facility: Oil Pollution Emergency Plan, Version 15 (Appendix 32).
- Incinerator Waste Management Plan, Version 9 (Appendix 65), and
- Meadowbank - Tailings Management Operation - Maintenance and Surveillance Manual, Version 10 (Appendix 67).

The following monitoring and management plans were revised in 2021 and apply to both Meadowbank and Whale Tail sites:

- Ammonia Management Plan Version 4 (Appendix 21);
- Hazardous Materials Management Plan, Version 7 (Appendix 55);
- Blast Monitoring Program, Version 7 (Appendix 40);
- Spill Contingency Plan, Version 16 (Appendix 27);
- Emergency Response Plan, Version 17 (Appendix 31);
- Quality Assurance / Quality Control (QA/QC) Plan, Version 7 (Appendix 54).
- Wildlife Screening Level Risk Assessment Plan, Version 6 (Appendix 48);
- Air Quality and Dustfall Monitoring Plan, Version 6 (Appendix 51); and
- Aquatic Effects Management Program (AEMP), Version 5 (Appendix 58)

The above listed plans are in their respective appendix. A brief description of revisions made to each of plans is provided in the Control Document at the beginning of each plans.

In order to maintain ease of public access for important information, the Agnico Eagle Web Portal, https://aemnunavut.ca/media/documents/ has been updated with the 2020 Annual Report, associated management plans, and other documents of interest. Moving forward, Agnico Eagle will commit to keeping the Web Portal updated for ease of public access.

10.2.2 Whale Tail Site

As required by NWB Water License 2AM-WTP1830 Part B, Item 17: ***The Licensee shall review the Plans or Manuals referred to in this Licence as required by changes in operation and/or technology and modify the Plans***

or Manuals accordingly. Revisions to the Plans or Manuals 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.

And

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 24: ***Where applicable, revisions as Addenda, with an indication of where changes have been made, for Plans, Reports, and Manuals.***

And

As required by NIRB Project Certificate 008 Item 13: ***The Proponent is encouraged to provide on-going opportunities for consultation and comment on any substantive revisions to the Project-specific monitoring program, modelling, studies, management plans, management measures, and reporting under the Project Certificate.***

As per Water License 2AM-WTP1830 Part B, Item 16 : '*The Licensee shall review the Plans or Manuals referred to in this Licence as required by changes in operation and/or technology and modify the Plans or Manuals accordingly. Revisions to the Plans or Manuals 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*.' Plan will be considered as approved unless a notification from the NWB requested the formal approval process.

The following monitoring and management plans were revised in 2021 and apply to Whale Tail Project:

- Whale Tail Water Management Infrastructure OMS Version 2, (Appendix 68);
- Whale Tail Freshet Action Plan, Version 4 (Appendix 37);
- Shipping Management Plan, Version 4 (Appendix 56);
- Whale Tail Thermal Monitoring Plan, Version 4 (Appendix 39);
- Whale Tail Waste Rock Management Plan Version 9 (Appendix 23); and
- Whale Tail Water Management Plan, Version 7 (Appendix 13).

The above listed plans are in their respective appendix. A brief description of revisions made to each of plans is provided in the Control Document at the beginning of each plans. Some plans detailed in Section 10.2.1 above apply to both Meadowbank and Whale Tail sites. Refer to this section for more details. In order to maintain ease of public access for important information, the Agnico Eagle Web Portal, https://aemnunavut.ca/media/documents/ has been updated with the 2020 Annual Report, associated management plans, and other documents of interest. Moving forward, Agnico Eagle will commit to keeping the Web Portal updated for ease of public access.

The community also have the opportunity to comment and ask questions related to the project during the different public consultations detailed in Section 11.9.

10.2.2.1 *Occupational Health and Safety Plan*

As required by NIRB Project Certificate 008 Condition 57: ***The Proponent shall update its Occupational Health and Safety Plan to include sexual health and well-being information in its employee orientation programming. In addition, the Proponent shall undertake an education program to inform workers of the range of health services available onsite. The updated plan shall be provided to the Nunavut Impact Review Board (NIRB), once completed within six (6) months of issuance of the Project Certificate. Summaries of the education programs undertaken and any future updates or modifications to the Occupational Health and Safety Plan and the education program shall be included in the Proponent's annual report to the NIRB.***

Agnico Eagle submitted the updated Occupational Health and Safety Plan on December 14th, 2018 to NIRB, which includes information on the inclusion of sexual health and well-being during employee orientation. The last updated Occupational Health and Safety Plan is included in the Appendix 51 of the 2018 Annual Report.

Agnico Eagle's education program on the range of health services on site includes:

- Introduction to clinic services on mandatory e-learning and onsite safety induction for all new employees;
- Visit to clinic during the general site orientation for all new employees;
- Dedicated bulletin board for health and wellness information; and
- General awareness communications: visits to departmental tool-box meetings, emails, Agnico TV, posters, brochures, etc. Since 2019, Agnico Eagle launched a site wide daily communicator being shared by the supervisors during the line-up meetings.

For detailed information on programs, please refer to the annual Agnico Eagle's Kivalliq Projects Socio-Economic Monitoring Report, which is included in the Appendix 62 of this 2021 Annual Report.

10.3 EXECUTIVE SUMMARY TRANSLATIONS

10.3.1 Meadowbank Site

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 22: ***An executive summary in English, Inuktitut and French of all plans, reports, or studies conducted under this Licence.***

Appendix 71 includes an executive summary in English, French and Inuktitut for the following documents:

- All monitoring and management plans listed in Section 10.2.1 above.
- Reports or studies submitted in 2021 for Meadowbank site:
  - 2021 Landfarm Report;
  - 2021 Thermal Monitoring Report;
  - 2021 Meadowbank Annual Open Pit Geomechanical Inspection;

- Environmental Effects Monitoring – Cycle 4, Meadowbank Interpretive Report;
- 2021 Groundwater Monitoring Report;
- 2021 Meadowbank Source Emission Survey Report (Stack Testing);
- 2021 Quarry 22 Report;
- KVPL08D280 2022 Mine Plan;
- KVCA06Q11 2022 Work Plan; and
- 2021 Habitat Compensation Monitoring report; and

- Reports or studies submitted in 2021 for both Meadowbank and Whale Tail sites:
  - 2021 Noise Monitoring Report
  - 2021 Air Quality and Dustfall Monitoring Report;
  - Meadowbank Dike Review Board – Report 29;
  - 2021 Core Receiving Environment Monitoring Program (CREMP) Report;
  - 2021 Wildlife and Country Foods Screening Level Risk Assessment;
  - 2021 Wildlife Monitoring Summary Report;
  - 2021 Marine Mammal and Seabird Observer (MMSO) Report;
  - 2021 Implementation of measures to avoid and mitigate serious harm report;
  - 2021 Annual Geotechnical Inspection;
  - 2021 Blast Monitoring Report;
  - 2021 Socio-Economic Monitoring Report;
  - 2021 Kivalliq Inuit Elders Advisory Committee Report;
  - 2021 Kivalliq Labour Market Analysis; and
  - Addendum 2021 Annual Report (Screening decision 11EN010);

10.3.2 Whale Tail Site

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 25: ***An executive summary in English and Inuktitut of all plans, reports, or studies conducted under this Licence.***

And

As required by NIRB Project certificate No.008 Item 9: ***The Proponent shall make significant monitoring results and/or summaries of significant results available in English, Inuinnaqtun, and Inuktitut, to the extent feasible.***

Appendix 71 includes an executive summary in English, French and Inuktitut for the following documents. A summary in Inuinnaqtum is also provide for reports or studies of interest:

- All monitoring and management plans listed in Section 10.2.2 above.
- Reports or studies submitted in 2021 for Whale Tail site:
    - 2021 Thermal Monitoring Report;
    - 2021 Annual Open Pit Geomechanical Inspection
    - Quarry KVCA15Q01 – 2022 Work Plan;
    - Quarry KVCA15Q02 – 2021 Work Plan;
    - Quarry KVCA18Q01 – 2022 Work Plan;
    - WTHR KVRW15F01 – 2022 Work Plan;
    - 2022 KVPL17D01 Mine Plan;
    - 2021 Whale Tail Groundwater Management Monitoring Report;
    - 2021 Mercury Monitoring Program;
    - Environmental Effects Monitoring - Pit cycle 1, Whale Tail Biological Study Interpretive Report; and
    - 2021 Fish Habitat Offset Monitoring Report;

Some reports detailed in Section 10.4.1 above apply to both Meadowbank and Whale Tail sites. Refer to this section for more details.

10.4 ADAPTIVE MANAGEMENT

The primary objective of the Adaptive Management Plan (Version 1.5, July 2021) is to document specific mitigation measures and associated management actions to be taken when specified thresholds are exceeded for the following facilities and activities:

- Waste rock storage facility (WRSF)
- Receiver water quality
- Surface water quantity
- Underground mine water quantity

Table 10-2 presents the threshold for the 2021 period for each of the component included in that plan.

Table 10-2 Summary of Adaptive Plan Threshold

Item	Threshold for 2021	Management Strategy
WRSF Permafrost Aggradation	Level 0 (normal operating condition)	Continue temperature monitoring of the WRSF
WRSF Surface Water Balance and Active Layer Development	Level 0 (normal operating condition)	Continue temperature monitoring of the WRSF
Receiver Water Quality Whale Tail South	Level 1 for total phosphorus (normal operating condition)	Continue Level 0 management strategy Complete analysis of site wide water quantity and quality data Report results of data review in annual reporting to the NWB including implications on the Water management plan and the evaluation of potential mitigation strategies
	Level 0 for arsenic (normal operating condition)	Continue monitoring as per Water Quality and Flow Monitoring Plan Update water balance and water quality forecast as part of the Annual Report
Receiver Water Quality Mammoth Lake	Level 0 for total phosphorus (normal operating condition)	Continue monitoring as per Water Quality and Flow Monitoring Plan Update water balance and water quality forecast as part of the Annual Report
	Level 0 for arsenic (normal operating condition)	Continue monitoring as per Water Quality and Flow Monitoring Plan Update water balance and water quality forecast as part of the Annual Report.
Surface Water Quantity	Level 0 (normal operating condition)	Continue water monitoring as per water management plan. Update water balance and water quality monitoring as part of Annual Report
Underground Water Quantity	Level 0 (normal operating condition)	Continue water monitoring as per water management plan Update water balance and water quality monitoring as part of Annual Report

The WRSF adaptive management threshold level was evaluated based on the review of the thermal data. These data are provided in the 2021 thermal monitoring report. Permafrost aggradation was observed in the foundation of the WRSF in 2021. Freeze-back within the first 7 m is currently aligned with the model prediction (model predicted an active layer up to 7 m which has not been observed so far in the monitoring data). Follow up of the monitoring data will continue.

For Whale Tail South and Mammoth Lake, the water quality data collected as part of the annual CREMP (Appendix 33) were used to assess adaptive management levels going into 2022. For Mammoth Lake (total phosphorus and arsenic) and Whale Tail South (arsenic), the water quality was assess as Level 0. Monitoring as per the Water License will continue during 2022. Total phosphorus was at Level 0 for most of the samples collected from WTS in 2021. Two samples exceeded Level 0: one in March (Level 1) and one in September (Level 2). As part of existing management actions, a Level 1 management strategy is implemented based on measured concentrations of phosphorus in 2021. As a result, a site wide water balance analysis was performed. Agnico Eagle's understanding of the deviation from FEIS projection originates from a change in water movement sequencing. Water was discharged in Whale Tail South earlier than planned. As part of adaptive management actions, nutrients will continue to be tracked closely in 2022, and additional measures outlined in the adaptive management plan may be implemented if warranted. It is important to note that the 2021 water quality data were compared to thresholds that are based on the 2019 FEIS predictions. The 2019 FEIS model predictions do not consider management activities that occurred on site in 2020 and 2021.

The surface and underground water quantity threshold in 2021 was at Level 0 as there was enough water storage capacity on site to manage water from these sources.

SECTION 11. MODIFICATIONS / GENERAL / OTHER

11.1MODIFICATIONS

11.1.1 Meadowbank Site

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 14: ***A summary of modifications and/or major maintenance work carried out on all water and waste related structures and facilities.***

Minor maintenance occurred at the East Dike seepage station in November 2021. Following the observation of seepage flowing on the downstream access road in the winter of 2021, in October 2021 a trench was constructed downstream of East Dike on the access road to redirect water towards the existing seepage station. Repairs to the NCIS were also done at the North Cell in four spots damaged by erosion. The repair included adding aggregate to repair erosion.

Modification to the internal structure at the North Cell took place in June and July 2021 and was performed to prevent tailings from entering the tailings water pumping system and pond area used to transfer water from the North Cell to the South Cell. This was done by reprofiling the existing structure to increase its height while reducing its width.

At the request of the WSCC rockfill berm were added on the crest of Bay-Goose dike on the downstream side for worker safety consideration.

11.1.2 Whale Tail Site

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 17: ***A summary of Modifications and/or major maintenance work carried out on all Water and Waste-related structures and facilities.***

Maintenance activity occurred in June, September, and October 2021 at the saline ditches for the underground WRSF to improve water flow through the ditch and restore flow capacity.

The WTD seepage collection system work consisted of remediation work to the WTD Seepage Trench and V-Notch. The slope of the entire channel was adjusted by lessening the slopes on each side and removing sediment from the bottom of the channel. At the end of the trench, a new V-notch weir was installed with a piezometer for real-time readings. The work was completed in late September 2021.

11.2 MINE EXPANSION

As required by NIRB Project Certificate No.004 Condition 29: ***report to NIRB if and when [Cumberland] develops plans for an expansion of the Meadowbank Gold Mine, and in particular if those plans affect the selection of Second Portage Lake as the preferred alternative for tailings management.***

11.2.1 Whale Tail Pit Expansion Project

Permitting for the Expansion Project was completed in July 2020 with receiving approval of the Fish Habitat Compensation Plan Associated with the Listing of specified waterbodies in Schedule 2 of the Metal and Diamond Mining Effluent Regulations (MDMER) for the Whale Tail Pit Expansion Project. No permitting was done in 2021.

11.2.2 Whale Tail and IVR Pushbacks

Agnico Eagle proposed a Modification to the Whale Tail Project; specifically, the IVR Pushback and Whale Tail Pushback, which consisted of the:

- IVR Pushback located in the southwest portion of the IVR Pit and under the east portion of the Whale Tail Waste Rock Storage Facility
- Whale Tail Pushback located in the northeast portion of the Whale Tail Pit

The project proposal was submitted to the NPC on March 30yh, 2021. On April 20th, 2021 the NPC determined that the proposed Modification was exempt from screening by the NIRB, as the Whale Tail and IVR Pushbacks did not change the general scope or previously amended activities.

On June 11th, 2021, Agnico Eagle submitted a 60-day notice to the NWB for a Modification to Type A Water Licence 2AM-WTP1830. The Modification included an updated Water Management Plan and Waste Rock Management Plan for the Whale Tail Project. The NWB sent an invitation for public comment on June 14th, 2021. As a result, two recommendations were provided by CIRNAC on July 14th, 2021 and Agnico Eagle provided responses on July 22nd, 2021. The NWB provided its approval of the Modification for the Whale Tail and IVR Pushbacks on August 3rd, 2021 indicating the modification proposed is consistent with the scope of activities considered under Type A Water Licence 2AM-WTP1830. The NWB also approved the Water Management Plan and the Waste Rock Management Plan submitted with the June 14th, 2021 Modification package.

Parallel to this, Agnico Eagle issued notice to the NIRB on May 18th, 2021 to inform of monitoring activities associated with the proposed Modification. On May 19th, 2021, the NIRB acknowledged Agnico Eagle's letter and commented that they should be kept informed of changes to Management Plans associated with the Whale Tail and IVR Pushbacks.

11.3 EXPLORATION WHALE TAIL SITE

11.3.1 Ongoing Exploration Programs

As required by NIRB Project Certificate No.008, Condition 64: ***Within its annual reporting, the Proponent is encouraged to include detailed updates on the status of ongoing exploration programs associated with the Project and associated implications for future phase developments of the Amaruq property. Status updates in fulfillment of this Term and Condition shall be included in the Proponent's annual report to the Nunavut Impact Review Board.***

Diamond drilling completed by Agnico Eagle in 2021 on the Amaruq Property comprised delineation, conversion, exploration and geotechnical targets. Drill holes done on the Amaruq property in 2021 resulted in an improved geological model, a better understanding of the local geology and increased confidence in our resources and reserves. This work was based out of the Amaruq camp, a satellite mining camp situated approximately 50 kilometers north-northwest of the Meadowbank mine site. The 2021 drilling campaign totalled 344 diamond drill holes totalling 46,119 meters. Particular attention was paid to the delineation drilling of the IVR phase 2 (14,550 meters) and Whale Tail deposit (8,914 meters from surface and underground). A conversion campaign for the underground potential of IVR was completed for a total of 12,043 meters. Exploration targets were drilled mainly in the Mammoth Zone area

as well as in the area between the Whale Tail deposit and V Zone (10,272 meters). Two geotechnical were completed (340 meters).

In 2022, the drilling campaign will continue the delineation program for both open pit and underground operations. Exploration drilling will occur to increase the resources at both Amaruq and Meadowbank. The main focus of this exploration campaign will be around the western part of Whale Tail deposit and the Mammoth Zone. A conversion program for the resources of V Zone will be continued later in 2022.

11.4 INTERNATIONAL CYANIDE MANAGEMENT CODE

As required by NIRB Project Certificate No.004, Condition 28: ***Cumberland shall become a signatory to the International Cyanide Management Code, communicate this to shippers, and do so prior to Cumberland storing or handling cyanide for the Project.***

In 2014 and 2015 audits and completion work were completed and assessed. A management of change process was implemented and put forward. From the status of Substantial Compliance in 2014, Agnico Eagle received full ICMC certification in March 2016 and again in January 2019. Agnico Eagle completed a self-audit of the ICMC principals and standards in 2020. A third-party recertification audit of the Meadowbank Complex and its Supply Chain was completed in 2021.

As in previous years, a cyanide information brochure was made available to employees and the public. Copies are available at the Agnico Eagle's office in Baker Lake and are also online www.aemnunavut.ca/documents/.

As per previous years shipments, the transport of cyanide in 2021 included a qualified nurse and an Emergency Response Team (ERT) member escorting the convoy of cyanide up to the Meadowbank mine site. In addition, they were present at the Baker Lake Marshalling facility for the removal of cyanide from the barge and the loading of the tractor trailers for hauling. As well, the road was completely closed for other traffic during cyanide transportation. Baker Lake community stakeholders were advised of scheduled transportation plans in August and September 2021, and the public was kept advised of road closures on radio and Facebook throughout the transportation process. In 2021, eight (8) convoys containing 127 sea cans of cyanide was needed during the barge season.

Agnico Eagle maintains its compliance with ICMC requirements. The full certification information can be found at: Agnico Eagle Mines Limited, Canada | The Cyanide Code

As part of the International Cyanide Management Code (ICMC), Agnico Eagle is required to inform the community of Baker Lake and Chesterfield, details regarding the cyanide shipping and transportation along the All Weather Access Road (AWAR), along with associated restrictions that apply to hamlet residences with regard to the usage of the AWAR. Due to COVID restrictions in 2021, a general meeting with the public was not completed. The Baker Lake Community Liaison and Community relations team provided notices and updates regarding the cyanide transportation on social media and radio announcements.

11.5 INSPECTIONS AND COMPLIANCE REPORTS

11.5.1 Meadowbank and Whale Tail

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 23: ***A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.***

And

As required by NWB Water License 2AM-WTP1830 Schedule B, Item 26: ***A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.***

11.5.1.1 *CIRNAC*

CIRNAC Inspectors conducted inspections of the Meadowbank and Whale Tail Water Licences (2AM-MEA1530 and 2AM-WTP1830) on August 9th – 12th, 2021. The purpose of this visit was to ensure compliance with the term and condition of these license/lease. No formal inspection report was received.

An observation made relating to Whale Tail Water Licence (2AM-WTP1830) was that there was some concern regarding the height of the landfill. Additionally, some debris was observed outside of the landfill footprint. Agnico Eagle was instructed to correct this.

On September 7th, 2021 CIRNAC conducted an inspection at Baker Lake to follow up on the TSS release that occurred on the Spud Barge extension. Communication was sent via email from CIRNAC to confirm that this activity was within the scope of the NIRB Project Certificate No. 004 and Water License (2AM-MEA1530). Agnico Eagle provided a response back to CIRNAC on September 10th

11.5.1.2 *Environment and Climate Change Canada*

ECCC did not conduct any inspections in 2021.

11.5.1.3 *Kivalliq Inuit Association*

KivIA conducted brief site tour of the Whale Tail site on June 30th, 2021. During this visit, minor non-compliances were observed as small spills in the Mine parking areas. Additionally, the KivIA Baker Lake Lands Officer was often patrolling the All Weater Access Road to review and ensure application of TEMP measures.

11.5.1.4 *Nunavut Impact Review Board*

The annual NIRB inspection of the Meadowbank and Whale Tail site was conducted virtually in 2021 due to COVID-19 restrictions. Agnico Eagle prepared a virtual tour in the form of updates and photos of the site. NIRB completed an combined inspection report for Meadowbank and Whale Tail that was received September 3rd, 2021. The report can be accessed from NIRB Public registry: www.nirb.ca/project/125253.

Agnico Eagle also received on November 9th, 2021 the Nunavut Impact Review Board's 2020-21 Annual Monitoring Report for the Meadowbank Gold Project and the Whale Tail Pit Project with Board Recommendations. Agnico Eagle has provided to NIRB, responses to their concerns along with the

responses to the Board's Recommendations provided on February 7th, 2022 with a revised version submitted on February 10th, 2022. Agnico Eagle's responses can be found on the NIRB public registry.

11.5.1.5 *HTO*

HTO conducted surveys almost daily on the AWAR during caribou migration. However, due to COVID pandemic restriction no site visit was organized in 2021.

11.5.1.6 *Government of Nunavut – Conservation Officer*

There were no onsite inspections conducted by the GN in 2021. They however went to Baker Lake Marshalling Facilities to conduct site visit. No inspection or site visit reports were received.

11.5.1.7 *DFO*

DFO did not conduct any site inspections at Meadowbank and Whale Tail in 2021.

11.6 NON-COMPLIANCE ISSUES

11.6.1 Meadowbank Site

As required by NIRB Project Certificate No.004 Condition 4: ***Take prompt and appropriate action to remedy any noncompliance with environmental laws and regulations and/or regulatory instruments, and shall report any noncompliance as required by law immediately and report the same to NIRB annually.***

Two (2) non-compliances related to the MDMER and Meadowbank Water License 2AM-MEA1530 regulation at Meadowbank occurred in 2021. These events were not reported through to the GN Spill hotline but were reported to the ECCC inspector and were included as part of the monthly NWB monitoring summaries. Non-compliances were associated with effluent discharge from East Dike to Second Portage Lake (ST-8 / ST-MMER-3).

- In April 2021, two (2) weekly effluent samples were collected at ST-8/ST-MMER-3 during the month. The TSS results did not exceed the maximum allowable grab sample concentration (30 mg/L), however the maximum monthly average concentration (15 mg/L) permitted by the Water License, Part F, Item 7 and MDMER was exceeded at 17.5 mg/L. Agnico Eagle did not suspect the April 29th result to be at the grab concentration limit set out in the Water License/MDMER as the internal result for this day was determined to be at 10 mg/L and thus Agnico Eagle did not suspect any potential non-compliance to the maximum allowable monthly mean concentration. The ECCC inspector was advised on May 20th, 2021.
- In May 2021, two (2) weekly effluent samples were collected at ST-8/ST-MMER-3 during the month. The TSS results did not exceed the maximum allowable grab sample concentration (30 mg/L), however the maximum monthly average concentration (15 mg/L) permitted by the Water License, Part F, Item 7 and MDMER was exceeded at 16 mg/L. Historically, the East Discharge effluent has been stopped prior to freshet each spring to prevent any TSS exceedances. As a precautionary measure, the East Dike Discharge was stopped on May 6th, 2021. An exceedance notification was submitted to ECCC on May 20th, 2021.

One (1) exceedance of dioxins and furans as part of the 2021 incinerator stack testing program above for more details. As required by the Project Certificate No. 004 Term and Condition 72, an investigation into

understanding the cause for the exceedance is currently underway. Refer to Section 6.2.1.1 above for more details.

11.6.2 Whale Tail Site

As required by NIRB Project Certificate No.008 Item 6: ***The Proponent shall take prompt and appropriate action to remedy any occasion of non-compliance with environmental laws and regulations and/or regulatory instruments, and shall report any non-compliance as required by law immediately. A description of all instances of non-compliance and associated follow up is to be reported annually to the NIRB.***

There is no non-compliance to report in 2021.

11.7 AWAR / WHALE TAIL HAUL ROAD USAGE REPORTS

11.7.1 Authorized and Unauthorized Non-Mine Use

11.7.1.1 *AWAR Meadowbank Site*

As required by NIRB Project Certificate No.004 Condition 32g: ***Record all authorized non-mine use of the road, and require all mine personnel using the road to monitor and report unauthorized non-mine use of the road, and collect and report this data to NIRB one (1) year after the road is opened and annually thereafter.***

And

As required by NIRB Project Certificate No.004 Condition 33: ***Cumberland shall update the Access and Air Traffic Management Plan to: 1. Include an All-weather Private Access Road Management Plan, including a right-of-way policy developed in consultation with the KivIA, GN, INAC and the Hamlet of Baker Lake, for the safe operation of the all-weather private access road; and 2. To facilitate monitoring of the environmental and socio-economic impacts of the private road and undertake adaptive management practices as required, including responding to any concerns regarding the locked gates.***

The security department at the Meadowbank Complex maintains fully staffed security gatehouse at Baker Lake on a 24/7 schedule. The Security staff monitors the safety, traffic and security of all personnel and the public using the road. Agnico Eagle procedures for non-mine uses of the road require that any local users report to the Baker Lake Gatehouse and sign a form that describes the safety protocol while on the road. The road is used primarily by local hunters using ATV's and snowmobiles. Daily records are kept. A summary of the non-mine authorized road use for 2021 is provided in Table 11-1. In 2021, 3,079 non-mine authorized road uses were recorded (drivers and passengers). This represent the highest ATV's and snowmobiles usage since 2012. Table 11-2 below show the ATVs and snowmobiles usage from 2012-2021.

In 2020, Baker Lake community members were informed of measure needed to be implemented to ensure the safety of all Nunavummiut regarding the use of the All-Weather Access Road during Covid-19. Since the AWAR is used by Nunavummiut for numerous reasons such as the practice of traditional activities, the decision was made that an employee from Baker Lake would work at the gatehouse as a dispatcher. Some specific measures related to the pandemic were implemented to ensure that the no-contact procedure was maintained between on-site employees and community members. This Gatehouse Isolation procedure remained in place for all of 2021 to ensure continued safety of the Baker Lake community. Agnico Eagle also communicated the No-Contact policy in 2021 by local radio, various

Facebook posts, Nunavut-page photo banner and during virtual meetings with mayors and Senior Administrative Officer (SAO).

Table 11-1 2021 Monthly AWAR ATVs and Snowmobile Usage Records

Month	Numbers of ATV's (drivers and passengers)
January	0
February	0
March	0
April	0
May	29
June	437
July	391
August	692
September	735
October	455
November	339
December	1
Total	**3,079**

Table 11-2 2012-2021 AWAR ATVs and Snowmobile Usage Records

Year	# of ATV's
2012	1,456
2013	1,958
2014	1,319
2015	2,366
2016	1,504
2017	1,715
2018	1,091
2019	2,163
2020	2,223
2021	3,079

Agnico Eagle's Project Certificate 004 was issued in 2006. Following the approval of the All Weather Access Road (AWAR) in 2007, the Project Certificate was revised in 2009 to address concerns regarding access to the AWAR. Pursuant to condition 33, Agnico Eagle prepared the Transportation Management Plan: All weather Private Access Road in 2009. It was submitted and later approved by CIRNAC and GN. Therefore no revision of the 2005 Access and Air Traffic Management Plan was undertaken. Agnico Eagle is of the opinion that the Transportation Management Plan replaced the Access and Air Traffic

Management Plan in 2009. The AWAR Transportation Management Plan was last updated in June 2021 and can be found in Appendix 70.

11.7.1.2 *Whale Tail Haul Road*

As required by NIRB Project Certificate No.008, Condition 31: ***The Proponent shall develop and implement a Road Access Management Plan and maintain traffic monitoring logs along the haul road between the Whale Tail Pit project and the Meadowbank mine. Where traffic exceeds levels predicted within the Environmental Impact Statement, the Proponent shall develop and implement appropriate modifications to its wildlife protection measures. The Road Access Management Plan shall be provided to the Nunavut Impact Review Board (NIRB) 90 days prior to operations commencing. An annual summary of the monthly maximum, minimum and average traffic levels shall be provided to the NIRB in the Proponent's annual report.***

And

As required by CIRNAC Road lease 66H/8-2-1 Condition 60: ***The lease shall before the first (1st) day of September in each and every year during the term of the lease, provide to the Minister, a report of that years road activities. The report shall include, but not limited to:***

1. ***total number of loads hauled in that year***

2. ***total road operating cost for that year***

And

As required by CIRNAC Road lease 66H/8-2-1 Condition 63: ***The lessee agrees to monitor and report unauthorized non-mine use of the road, and collect and report this data to the Minister, who shall make this report accessible to the Nunavut Impact Review board, one (1) year after the road is opened and annually thereafter.***

Agnico Eagle has provided and implemented the Whale Tail Haul Road Management Plan to meet Condition 31 of the NIRB Project Certificate No. 008. The Security staff monitors the safety, traffic and security of all personnel using the road. Table 11-3 below shows the traffic data for 2021 along the Whale Tail Haul Road. Total one-way traffic along the WTHR included 54,532 long-haul, 3,341 medium equipment, and 4,164 light equipment vehicles, for a total of 62,037 vehicles. Total traffic along WTHR was 23% higher in 2021 compared to the 50,441 vehicles in 2020. The higher traffic in 2021 compare to 2020 may be explained in part by the reduce operation that occurred at the beginning of 2020 in response to the COVID-19 restrictions and the grow of the long-haul fleet to increase in hauling capacity. Lowest traffic rates were recorded in February, and highest rates were recorded in June and July when caribou are not as abundant.

Table 11-3 Whale Tail Haul Road 2021 Traffic Data

Date	Long Haul	Medium Equipment	Light Equipment	Total
January	3,750	372	434	4,556
February	3,492	250	206	3,948
March	4,966	319	277	5,562
April	3,750	244	271	4,265
May	4,594	262	297	5,153
June	5,528	258	354	6,140
July	5,398	323	397	6,118
August	4,990	347	271	5,608
September	4,952	301	447	5,700
October	4,768	297	371	5,436
November	4,560	173	510	5,243
December	3,784	195	329	4,308
Total	**54,532**	**3,341**	**4,164**	**62,037**

The haul road traffic volumes for the Expansion Project are consistent with those applied to the Approved Project FEIS Volume 4, Appendix 4-B, Table 4-B-15 (Agnico Eagle 2016c). Table 11-4 below provided the FEIS daily vehicle traffic on the haul road based on an estimated number of days that there will be traffic on the road is 352 days. In 2021, the Whale Tail road was fully closed on 13 days, partially closed on 1 day, and had speed restrictions applied for 29 days for a total of 43 days with restrictions related to caribou migration.

In order to make comparison to FEIS, explosive truck, fuel, cargo and oversize were categorized as medium equipment. Pickup and bus were categorized as light equipment. Based on data collected in 2021, there is no exceedance to the FEIS (Table 11-5) for the medium and light equipment. Long haul truck 2021 data is slightly higher than the FEIS average but still lower than the upper 95%.

Table 11-4 FEIS Daily Vehicle Traffic on the Haul Road

Category	Lower 5%	Average	Upper 95%
Long Haul	64	154	173
Explosive	2	4	5
Fuel	1	2	4
Cargo	4	7	10
Pickup	12	20	26
Bus	0	2	4
Oversize	0	1	4

Table 11-5 2021 Daily WTHR Traffic Comparison to Average FEIS

Category	FEIS	2021 Data
Long Haul	154	154.9
Medium Equipment	14	9.5
Light Equipment	22	11.8

There is no non-mine uses of the Whale Tail Haul Road by any local as the road is closed for public use. Two traditional land use crossing locations were identified during IQ/TK workshops and following meetings with the Hunters and Trappers Organization, a first location has been set at km 127 and is currently functional. Following consultation with HTO in 2019, it has been determined that no more locations for Traditional Land Use Crossings needed to be implemented along the WTHR.

Here is some specification regarding the crossing:

-Haul traffic from the Whale Tail Pit to Meadowbank Mill will have the right-of-way;

-Traditional land users (i.e. hunters on ATVs or snowmobiles) crossing the Whale Tail Haul Road on identified ramps must yield to Haul Road Traffic;

-Haul Road Traffic approaching traditional land use crossings must be vigilant of the potential use by ATVs or snowmobiles;

-This intersection has a stop sign on the traditional land use crossing locations to give way to the mine haul trucks. Hunters and traditional land users on snowmobiles or ATVs have to stop, look both ways and yield to traffic before crossing the road; and

-Traditional land use marked signs were installed on the haul road to warn haul trucks and other vehicles on the road to ensure users protection and safety of traditional land users on ATVs or snowmobiles.

In 2021, no incidents involving non-mine authorized use occurred. Agnico Eagle is confident that the current procedures and protocols provide for the safety of the local public while using the road either for hunting access or for general recreational opportunities.

11.7.2 Safety Incidents

11.7.2.1 *AWAR Meadowbank Site*

As required by NIRB Project Certificate No.004 Condition 32e: ***Prior to opening of the road, and annually thereafter, advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is a private road with non-mine use of the road limited to approved, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities.***

And

As required by NIRB Project Certificate No.004 Condition 32f: ***Place notices at least quarterly on the radio and television to explain to the community that the road is a private road with non-mine use of road limited to authorized, safe and controlled use by all-terrain-vehicles for the purpose of carrying out traditional Inuit activities.***

And

As required by NIRB Project Certificate No.004 Condition 32h: ***Report all accidents or other safety incidents on the road, to the GN, KivIA [KIA], and the Hamlet immediately, and to NIRB annually.***

In 2021, the following meetings were held to review AWAR procedure and safety practices:

-One public meeting in Baker Lake

-One meeting with the Hamlet of Baker Lake

-Two meetings with Baker Lake HTO

-One meeting with the Elders

In 2021, Agnico Eagle continued to remain connected to communities via radio and Facebook. The Meadowbank Facebook page provided updates on the road closure throughout the year. The Baker Lake community was able to access the AWAR procedure via the Facebook Meadowbank Page or the website www.aemnunavut.ca/community/roads.

A meeting took place on August 5th, 2021 with the Baker Lake Hamlet, HTO, Fire Chief, RCMP and Baker Lake Health Center to present about the 2021 Cyanide Transportation. This meeting was conducted in-person and virtually. During the meeting, the 2021 Cyanide transportation safety and monitoring procedures were presented as well as the communication plans. In addition, Agnico Eagle presented the COVID-19 measures undertaken during the transportation to ensure minimal impact on the surrounding community.

More details on the 2021 Sealift Season & Cyanide Transportation can be found in Appendix 60.

In response to COVID-19, Agnico Eagle developed a ‘Gatehouse Isolation’ procedure in May 2020 to ensure Baker Lake gatehouse Nunavummiut employees maintain distance and isolation from mine employees. This procedure continued to remain in place during 2021. In 2021, there were no incidents reported involving non-mine authorized vehicles and no accidents to date involving mine related truck traffic and locals using ATV’s/snowmobiles.

In 2021, there were three (3) environmental spills that occurred along the AWAR. Table 7-3 provides details on this spill. These spills were managed appropriately according to Agnico Eagle’s spill contingency plan. The spills were remediated, and contaminated material was deposited at the Meadowbank Complex landfarm. There were no impacts to any watercourses.

In 2021, there were fourteen (14) project-related wildlife mortalities along the AWAR. Five (5) Arctic Foxes and nine (9) Arctic hares were killed due to vehicle interaction.

All the incident/mortality reports can be found in 2021 Wildlife Monitoring Summary Report (Appendix 47).

To continue avoiding further incidents, messages are continually provided to employees and contractors to reinforce the procedures for wildlife protection during road use. As well, reminders were given on reporting any issues or observations concerning wildlife to the AWAR road dispatch.

11.7.2.2 *Whale Tail Haul Road*

As required by CIRNAC Road lease 66H/8-2-1 Condition 64: ***The lessee agrees to report any information received, including accidents or others safety incidents on the road, including the locked gates, to the minister, who shall make this information accessible to the GN, KIA a, the Hamlet of Baker Lake immediately.***

And

As required by NIRB Project Certificate No 008 Condition 66: ***The Proponent shall operate the Whale Tail haul road as a private access road, implement any reasonable measures to limit public access to the road, and develop strategies that account for unauthorized use. These measures must include, but are not limited to, the following:***

> ***a) The posting of signs in English and Inuktitut at the gate, each major bridge crossing, and each 10 kilometres of road, stating that public use of the road is prohibited;***
>
> ***b) Annually advertise and hold at least one community meeting in the Hamlet of Baker Lake to explain to the community that the road is restricted to mine use only;***
>
> ***c) Place local notices (e.g., radio, television, social media) at least quarterly to explain to the community that the road is restricted to mine use only;***
>
> ***d) Record all unauthorized non-mine use of the road, and require all mine personnel using the road to monitor and report unauthorized non-mine use of the road; and,***
>
> ***e) Develop management strategies to ensure public and operator safety in the event of unauthorized public use.***

On May 8th, 2020, Baker Lake community members were informed of measure needed to be implemented to ensure the safety of all Nunavummiut regarding the use of the All-Weather Access Road (AWAR) during COVID-19. Since the AWAR is used by Nunavummiut for numerous reasons such as the practice of traditional activities, the decision was made that an employee from Baker Lake would work at the gatehouse as a dispatcher. Some specific measures related to the pandemic were implemented to ensure that the no-contact procedure was maintained between on-site employees and community members. This Gatehouse Isolation procedure remained in place for all of 2021 to ensure continued safety of the Baker Lake community. Agnico Eagle also relayed safety information and AWAR/WTHR procedure during the public and hamlet meetings in Baker Lake. Additionally, through Facebook posts on the AWAR, the community could access the procedure and road status via the website www.aemnunavut.ca/community/roads.

No incidents involving non-mine authorized use occurred in 2021.

There have been no accidents to date involving mine related truck traffic and locals using ATV's/snowmobiles.

A total of ten (10) environmental spills occurred along the Whale Tail Haul Road in 2021. Table 7-4 and Table 7-5 provides details on each of these spills. All spills were managed appropriately according to Agnico Eagle's spill contingency plan. The spills were remediated and contaminated material was deposited in roll-off containment on Whale Tail Site before disposal at the Meadowbank Landfarm. There were no impacts to any watercourses.

In 2021, there were thirteen (13) project-related mortalities along the Whale Tail Haul Road. Two (2) Arctic Foxes, ten (10) Arctic Hares, and one (1) Arctic ground squirrel were killed due to vehicle interaction. To avoid incidents, messages are continually provided to employees and contractors to reinforce the procedures for wildlife protection during road use. As well, reminders were given on reporting any issues or observations concerning wildlife to the Whale Tail Haul Road dispatch.

11.7.2.2.1 Road Closure

As required by CIRNAC Road lease 66H/8-2-1 Condition 65*: The lessee shall give notice of any closure of the road to the Minister and the reasons thereof, and post any notice of closure at the access point and along the road.*

There was no Whale Tail Haul Road closures in 2021 that may have impacted local usage as the road is not public. There were road closures in 2021 due to bad weather and wildlife migration (Wildlife Monitoring Summary Report Appendix 47) at various intervals throughout the year. When this situation occurred, the road status was provided to all Agnico Eagle and contractor employees, the GN, KivIA and BLHTO with regular updates.

11.8 SHIPPING MANAGEMENT

As required by NIRB Project Certificate No.008, Condition 37: ***The Proponent shall maintain a Shipping Management Plan in coordination and consultation with applicable regulatory authorities and the Kivalliq Inuit Association, and the Hunters and Trappers Organizations of the Kivalliq communities. The updated plan should be submitted to the Nunavut Impact Review Board at least 90 days prior to the start to commencement of shipping activities, with subsequent updates submitted annually thereafter in the Proponent's annual report or as may otherwise be required by the NIRB.***

Agnico Eagle has developed and maintained the Shipping Management Plan prior the 2018 shipping activities. In 2021, Agnico Eagle followed the approved Shipping Management Plan (Version 3, Dec 2018) developed and approved as part of the Whale Tail Expansion Project.

11.8.1 Marine Shipping Routing

As required by NIRB Project Certificate No.008 Condition 38: ***The Proponent shall ensure that marine shipping activities avoid sensitive wildlife habitat and species along the shipping route and use a routing south of Coats Island as the primary shipping route, subject to vessel and human safety considerations. Confirmation that the requirements of this term and condition are being effectively implemented by shipping companies contracted by the Proponent should be submitted as part of annual reporting to the Nunavut Impact Review Board.***

And

As required by NIRB Project Certificate No.008 Condition 39: ***The Proponent shall ensure that, subject to vessel safety requirements, a setback distance of at least 500 metres is maintained from colonies and aggregations of seabirds and marine mammals during Project shipping transiting through Hudson Strait, Hudson Bay, and Chesterfield Inlet. Confirmation that the requirements of this term and condition are being effectively implemented by shipping companies contracted by the Proponent should be submitted as part of annual reporting to the Nunavut Impact Review Board.***

And

As required by NIRB Project Certificate No.004 Condition 41: ***Subject to vessel and human safety considerations, Cumberland shall require shippers carrying cargo to the Project through Chesterfield Inlet to follow the following mitigation procedures in the event that marine mammals are in the vicinity of the shipping activities:***

- ***Wildlife will be given right of way;***
- ***Ships will maintain a straight course, constant speed, and will avoid erratic behaviour; and***
- ***When marine mammals appear to be trapped or disturbed by vessel movements, the vessel will stop until the mammals have moved away from the area.***.

For the second year, Agnico Eagle produced a joint MMSO report with Agnico Eagle Meliadine Mine. As the shipping company Groupe Desgagnés and Woodward ship equipment, supplies, and fuel to Meadowbank and Meliadine and sometimes vessel deserve both sites during the same trip, it was determined that it will be efficient to report all the observations into the same report while ensuring that the requirement from both sites are clearly identified. The below is a summary of the findings and Agnico Eagle will refer to the 2021 Marine Mammal and Seabird Annual Report presented in Appendix 57 for a complete review.

During the 2021 shipping season, a total of 29 Groupe Desgagnés and Woodward vessels serviced the Projects between June and October during the 2021 shipping season: 13 for Meadowbank, 9 for Meliadine, and seven serviced both Meadowbank and Meliadine. No incidents with marine mammals or seabirds were reported for the 2021 shipping season.

Vessel Mitigation

Vessels are required to transit south of Coats Island whenever the weather is safe to do so. The majority (76%) of vessels servicing the Meadowbank and Meliadine projects in 2021 travelled south of Coats Island, with the exception of seven occasions, five of which occurred in June and early July due to ice conditions in Hudson Bay, and the other two occurred in September and October, both due to inclement weather.

Setbacks from Sensitive Habitats

In compliance with Whale Tail Project Certificate No. 008, Term and Condition 39, project vessels must follow a setback distance of 500 m from colonies and aggregations of seabirds and marine mammals while transiting through the Hudson Strait, Hudson Bay, and Chesterfield Inlet. Vessel tracks were mapped along with identified sensitive areas for wildlife; where detailed data was available, vessels were shown to avoid these areas where safe to do so. Groupe Desgagnés and/or Woodward had several occasions where tracks appeared to intersect with 500 m setback polygons. However, in all cases no ship

track point was located within a setback polygon. Track data is based on satellite Automatic Identification System; therefore, ship track intersections likely occurred due to lack of ship track resolution and the intersection of existing points to create a continuous shipping track. Additional effort will be made in 2022 to ensure Groupe Desgagnés and Woodward provide more defined track data to Agnico Eagle.

Updated training materials were also supplied to dedicated MMSO crew observers including detailed methods for marine mammal and seabird surveys (on moving vessels and stationary vessels), data sheets, and training videos. Training material distributed before the 2021 shipping season is presented in appendices A, B and C and discussed in Section 1.3 of the report presented in Appendix 57.

The 2021 MMSO program resulted in similar effort to 2020. Both 2021 and 2020 resulted in greater survey effort compared to previous years. Datasheets were obtained from 23 of the 29 vessels, which is greater than all previous years.

11.8.2 Wildlife Monitoring on Vessel

As required by NIRB Project Certificate No.008 Condition 40: ***The Proponent shall develop and implement a ship-based marine mammal monitoring program, as part of a Marine Mammal Management and Monitoring Plan, in consultation with Fisheries and Oceans Canada, communities, and other interested parties. The Proponent shall report any accidental contact by project vessels with marine mammals or seabird colonies to applicable responsible authorities including Fisheries and Oceans Canada and Environment and Climate Change Canada. The Plan should be submitted to the Nunavut Impact Review Board at least 90 days prior to commencement of shipping activities, with subsequent updates submitted annually thereafter. Confirmation that the requirements of the Plan are being effectively implemented by shipping companies contracted by the Proponent should be provided with annual reporting.***

And

As required by NIRB Project Certificate No.004, Condition 36: ***ensure the placement of local area marine mammal monitors onboard all vessels transporting fuel or materials for the Project through Chesterfield Inlet***

And

As required by NIRB Project Certificate No.004, Commitment 95: ***Inuit observation and encounter reports for on-board vessels transporting goods and fuel through Chesterfield Inlet.***

The Marine Mammal Management and Monitoring Plan was provided as Appendix B of the Shipping Management Plan (Version 4, April 2022).

A complete report, 2021 Marine Mammal and Seabird Annual Report, detailing the 2021 mammal and seabird observations during the shipping season can be found in Appendix 57. Below is a summary of the report and Agnico Eagle will refer the reader to the report in Appendix for a complete review.

<u>Marine Mammal Monitoring</u>

In 2021, 56 transects were surveyed for marine mammals. There was a total of 35 sightings (23 during dedicated surveys and 12 incidentally) of marine mammals during the 2021 shipping season, compared to 12 (surveys and incidentally) in 2020, seven (all during surveys) in 2019, none in 2018, and six (all

incidental) in 2017. The majority of all marine mammal sightings between 2017 and 2021 were recorded in the Eastern Hudson Strait or near Marble Island. There are an insufficient number of marine mammal sightings recorded to conduct a density analysis. No marine mammal-vessel interactions (e.g., strikes) were recorded by Groupe Desgagnés or Woodward in 2021, or in previous years (2017, 2018, 2019, or 2020).

Seabird Monitoring

No interactions between vessels and seabirds were recorded during the MMSO in 2021, or in previous years. Seabird survey effort on moving vessels in 2021 was double the average over previous years (2018-2020), with 173 surveys compared to a range of 72-87 surveys per year previously. Over four years of moving vessel surveys for seabirds between 2018 and 2021, 49 species and 6,296 individual birds were recorded. The most common species recorded in 2021 were thick-billed murre, common murre, northern fulmar, and manx shearwater. Common murre and manx shearwater were reported in large numbers for the first time in 2021; while both species can occur in the eastern portion of the shipping zone near Newfoundland, they are not common through the majority of the survey area. It is possible that identifications of common murre were actually thick-billed murre and that the manx shearwater was not identified correctly.

Ninety-five percent of stationary seabird surveys were conducted in 2020 and 2021, with a handful of surveys conducted in 2018-2019. A total of 1,828 individuals from 26 known species and five unknown species were recorded during stationary vessel surveys from 2019 - 2021. Nearly 70% of records were from 2021. Data from 2021, which represents the majority of the stationary vessel data, shows a higher detection rate.

In compliance with Project Certificate No. 004 Condition 36, local area marine mammal monitors have conducted a program of community wildlife observers on barges ferrying supplies between Helicopter Island and Baker Lake within Chesterfield Inlet between 2008 and 2019. In 2021, community members were not permitted to board vessels due to health and safety restrictions in place related to the COVID-19 pandemic (as in 2020). Therefore, Groupe Desgagnés and Woodward had their MMSOs record sightings of marine mammals and seabirds when possible while travelling on the barge. In 2021, no marine mammal survey transects were conducted by the dedicated MMSO, when possible, while the barge was moving; however, 25 stationary surveys were completed while vessels were anchored at Helicopter Island. During one of the stationary surveys, one harbor seal and two unknown seals were recorded in July. No other marine mammals were observed during the surveys. Nine seabird surveys were conducted in 2021 on the barge between Helicopter Island and Baker Lake on July 28th, October 5th, October 6th (two surveys), October 10th, and October 18th (four surveys). 96 birds were observed, including two herring gulls, 12 Iceland gulls, 14 long-tailed ducks, 30 unknown gulls, eight unknown ducks, two unknown geese, and 28 birds that could not be identified.

In previous year (except 2020-2021), prior to the beginning of the barge season, Agnico Eagle toured the related communities, including Chesterfield Inlet, to advertise the need of having monitors available for the upcoming shipping season.

For 2022, if health and safety restrictions in place related to the COVID-19 pandemic are lifted, it is Agnico Eagle’s intent to hired local monitors in compliance with Term and Condition 36. Recruitment will be done with the community agents to find reliable and available monitors that are willing to board the

vessels for a significant time period, as the vessels are travelling back and forth from the Inlet to the Baker community. Recruitment from the community has always proved to be challenging as multiple candidates first accepted the proposed work but declined and/or changed their minds at the last minute or decide to unboard the vessel on short notice and did not want to pursue this type of work any further.

As an alternative to ensure data collection as per Condition 36, Agnico Eagle will continue to work with Desgagnés Group and Woodward for the possibility to pursue, in the following years, the marine mammal monitoring from Helicopter Island to Baker Lake infrastructures.

Agnico Eagle will continue to improved the effectiveness of the MMSO Program in compliance with Whale Tail Pit Project Certificate No. 008 Term and Conditions 38, 39, 40 and Meadowbank Project Certificate No. 004, Term and Condition 36. The training material that summarize and simplify both the Marine Mammal Management and Monitoring Plan (MMMMP) and Shipping Management Plan (SMP) has continue to show there effectiveness in 2021.

11.8.3 Notification to Communities

As required by NIRB Project Certificate No.008 Condition 41: ***The Proponent shall provide notification to communities regarding scheduled ship transits throughout the regional study area, including Hudson Bay and Chesterfield Inlet. The Proponent shall provide a summary of public consultation undertaken to address this term and condition in its annual report to the Nunavut Impact Review Board.***

A teleconference was held on May 26th, 2021 with Chesterfield Inlet Hamlet representatives to present the 2021 Sealift Season schedule. Due to COVID-19 restrictions, Agnico Eagle was not able to hold the usual community information meetings in person. During the teleconference, the following topics were presented:

- Vessel routing from Quebec to Nunavut and routing to Rankin Inlet
- Monitoring of marine mammals and seabirds
- All Weather Access Road closure process
- Caribou Monitoring
- Process to find live information about the vessel routing
- Process to ask questions and raise concerns via Tusaajugut ‘We are Listening’

Nunavut Sealink & Suppy Inc—Desgagnes Transarctik representatives and Agnico Eagle Environment team were present during the teleconference to answer any questions or concerns. DFO representative was invited to attend the teleconference, however, no representative joined the call.

11.8.4 Ingress/Egress of Ship Cargo

As required by NIRB Project Certificate No.004 Condition 82: ***Monitor the ingress/egress of ship cargo at Baker Lake and report any accidents or spills immediately to the regulatory agencies as required by law and to NIRB’s Monitoring Officer annually.***

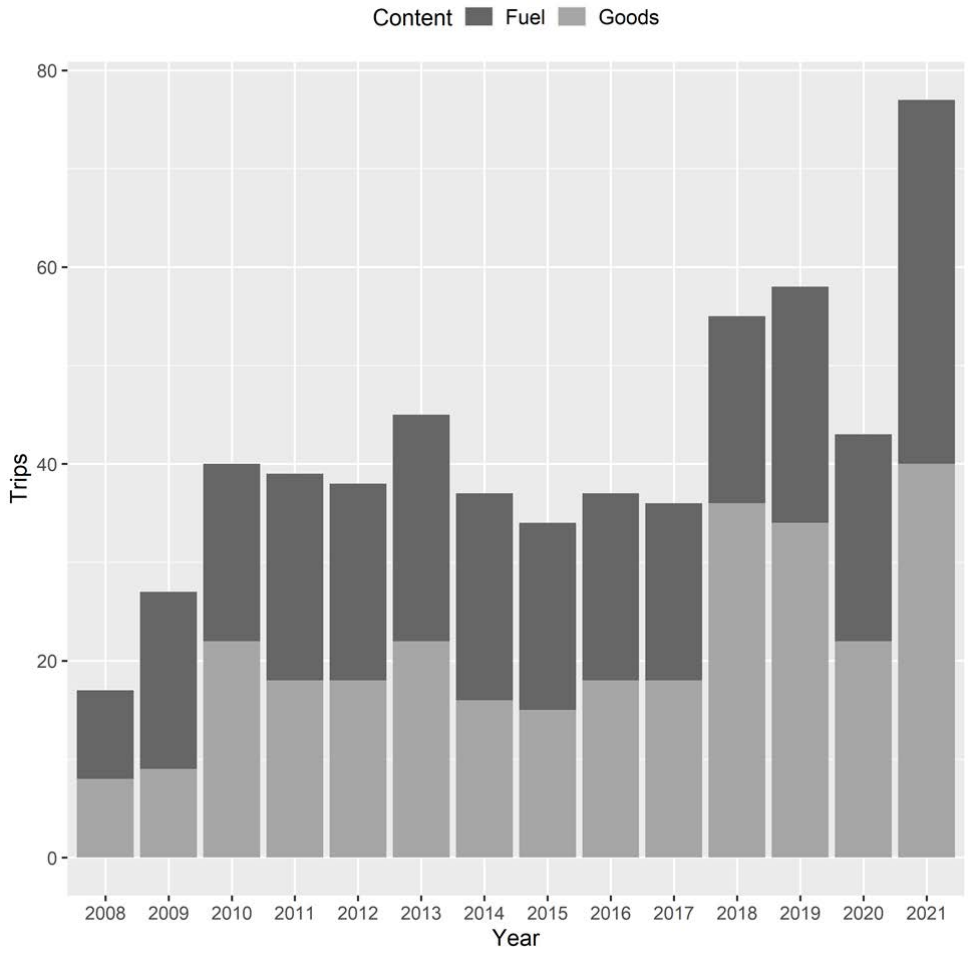
And

As required by NIRB Project Certificate No.008 Condition 43: ***The Proponent shall contract only certified vessels to carry cargo for the Project, and will ensure shippers are aware of the requirements of the Shipping Management Plan, the Risk Management and Emergency Response Plan, and the Oil Pollution Emergency Plan. Evidence of meeting the requirements of this term and condition should be submitted as part of annual reporting to the Nunavut Impact Review Board***

In 2021, Agnico Eagle monitored the ingress/egress of ship cargo at Baker Lake and the results are summarized in the below Figure 41. Barge trips from Chesterfield Inlet in 2021 numbered 40 for general cargo and 37 for fuel. With the expansion at the Whale Tail site traffic increased in 2018 and 2019 compared to previous years (e.g., from < 40 in 2016 and 2017 to ~ 55 in 2018). In 2021, the number of trips increased for general cargo and fuel compared to 2020 and represented the highest reported number of trips since monitoring began in 2008.

Only certified vessels were hired to carry the cargo at Meadowbank Complex. Annual meeting were held with the dry cargo and fuel carriers to review the shipping and emergency plan.

Figure 41 Barge traffic (number of trips/year) arriving in Baker Lake from Chesterfield Inlet since 2008



On October 12th, a CIRNAC inspector contacted Agnico Eagle to report a petroleum product that was photographed on October 4th, in the water near the Marshalling Facilities at Baker Lake along the floating dock. Based on the photographs, the estimated spilled volume is 1L. Agnico Eagle inspected the spud barge upon notification on October 12th and found no remaining evidence of petroleum product in or near the water. The Spud Barge is operated by Desgagnes to transport shipping containers to Agnico Eagle. No exact cause of the spill was identified. However, it is possible the rain observed in Baker Lake on October 4th may have encouraged runoff of the product used to lubricate hydraulic components of the equipment in service at the Spud Barge. Results from water that was sampled around the Spud Barge on October 13th showed no elevated parameters. The inspection frequency of the Spud Barge was increased following the notification by CIRNAC, until barge activities were completed. Additionally, a remainder was given to all crews operating near the water of the importance of clean equipment, to avoid rain-caused runoff into water bodies.

On October 12th, during a ship-to-shore fuel transfer, a visible sheen was observed in Baker Lake in proximity to the MT Kivalliq W. vessel. Due to winds and current, the patch was being transported South-East. Within 3 hours of the spill being detected, the patch had thinned-out, and was being carried far away. On October 13th, boats and a helicopter were deployed to try and locate the sheen patch and were unsuccessful. During the clean-up operations on the 12th, no fuel could be smelled. Following water samples and petroleum test strips, no fuel or petroleum product were detected in Baker Lake. Despite various analysis, the product remains unknown, and as a result, quantity of spilled material is undetermined. This spill was declared by Agnico Eagle by due diligence, as cause and ownership of the spill remains undetermined.

11.8.5 Insurance

As required by NIRB Project Certificate No.004 Condition 45: ***"[Cumberland] shall carry, and require contracted shippers to carry adequate insurance to fully compensate losses arising from a spill or accident, including but not limited to the loss of resources arising from the spill or accident; any claims are to be reported to proper officials with a copy to NIRB's Monitoring Officer"***

All shipping contractors have insurance to fully compensate losses arising from a spill or accident, including but not limited to the loss of resources arising from spill or accident for all marine transport vessels and vehicles travelling on the AWAR and WTHR.

No claim was reported by our marine or trucking shippers in 2021.

11.9 CONSULTATION, ENGAGEMENT AND COMMUNICATION

As required by NWB Water License 2AM-MEA1530 Schedule B, Item 24: ***A summary of public consultation and participation with local organizations and the residents of the nearby communities, including a schedule of upcoming community events and information sessions.***

Refer to table in Appendix 60 for more information regarding the public consultation and participation with local organization and the residents of the nearby communities. Appendix 60 is also use as reference in the following sections.

11.9.1 Chesterfield Inlet

As required by NIRB Project Certificate No.004, Condition 39: ***annually advertise and hold a community information meeting in Chesterfield Inlet to report on the Project and to hear from Chesterfield Inlet residents and respond to concerns; a consultation report shall be submitted to NIRB's Monitoring Officer within one month of the meeting.***

And

As required by NIRB Project Certificate No.004, Condition 40: ***Gather Traditional Knowledge from the local HTOs and conduct a minimum of a one-day workshop with residents of Chesterfield Inlet to more fully gather Traditional Knowledge about the marine mammals, cabins, hunting, and other local activities in the Inlet. Report to the KIA and NIRB's Monitoring Officer annually on the Traditional Knowledge gathered including any operational changes that resulted from concerns shared at the workshop.***

And

As required by NIRB Project Certificate No.008 Condition 42: ***The Proponent shall design monitoring programs to ensure that local users of the marine area along the shipping route have the opportunity to provide feedback and input in relation to monitoring and evaluating potential project-induced impacts and changes in marine mammal distributions. The Proponent shall demonstrate how feedback received from community consultations has been incorporated into the most appropriate mitigation or management plans. The Proponent shall provide a summary of public consultation undertaken to address this term and condition in its annual report to the Nunavut Impact Review Board.***

A teleconference was held on May 26th, 2021 with Chesterfield Inlet Hamlet representatives to present the 2021 Sealift Season schedule. Due to COVID-19 restrictions, Agnico Eagle was not able to hold the usual community information meetings in person. During the teleconference, the following topics were presented:

- Vessel routing from Quebec to Nunavut and routing to Rankin Inlet
- Monitoring of marine mammals and seabirds
- All Weather Access Road closure process
- Caribou Monitoring
- Process to find live information about the vessel routing
- Process to ask questions and raise concerns via Tusaajugut 'We are Listening'

Nunavut Sealink & Suppy Inc—Desagnes Transarctik representatives and Agnico Eagle Environment team were present during the teleconference to answer any questions or concerns. DFO representative was invited to attend the teleconference, however, no representatives joined the call.

Despite COVID-19 challenges Agnico Eagle ensured Chesterfield Inlet community members and key stakeholders are continuously informed and consulted on various topics. In 2021, the following community engagement activities took place in Chesterfield Inlet:

-One (1) meeting with Elders to collect IQ testimony on Shipping route in Chesterfield Inlet.

-Five (5) Mental Health Interview with the Hamlet, Recreational Center and RCMP to present and collect answers for Nunavut Mental Health Project

The purpose and outcomes of the above engagement initiatives are summarized in the Engagement Table appended in Appendix 60

11.9.2 Hunters and Trappers Organizations

As required by NIRB Project Certificate No.004, Condition 40: ***Gather Traditional Knowledge from the local HTOs and conduct a minimum of a one-day workshop with residents of Chesterfield Inlet to more fully gather Traditional Knowledge about the marine mammals, cabins, hunting, and other local activities in the Inlet. Report to the KIA and NIRB's Monitoring Officer annually on the Traditional Knowledge gathered including any operational changes that resulted from concerns shared at the workshop.***

And

As required by NIRB Project Certificate No.004, Condition 58: "*in consultation with Elders and the HTOs and subject to safety requirements, design the lighting and use of lights at the mine site to minimize the disturbance of lights on sensitive wildlife and birds*"

And

As required by NIRB Project Certificate No.004, Condition 59: ***In consultation with Elders and the HTOs, design and implement means of deterring caribou from the tailing ponds, such as temporary ribbon placement or Inukshuks, with such designs not to include the use of fencing"***

And

As required by NIRB Project Certificate No.004, Condition 68: ***Cumberland shall, in consultation with Elders, local HTOs and the Meadowbank Gold Mine SEMC, demonstrate that they are working toward incorporating Inuit societal values into mine operation policies."***

In 2021, seven (7) meetings and two (2) teleconferences were held with the Baker Lake HTO. Agnico Eagle continued to have regular engagements on project activities throughout 2021, including regular communication between the Project Environment team and HTO.

Meeting and teleconferences topics included:

- Meadowbank TAG Governance
- Fuel conveys, AWAR measures and Caribou migration
- ICMC and Cyanide transportation
- Proposed exploration and drilling activities
- Amaruq Site Expansion and Meadowbank Life of Mine
- IQ and traditional place names for local exploration areas
- Updates on current and upcoming projects at the mine.

The purpose and outcomes of the above engagement initiatives are summarized in the Engagement Table appended in Appendix 60

11.9.3 Community Liaison Committees

In 2021, Agnico Eagle did not facilitate any Community Liaison Committee in Baker Lake due to COVID-19 restrictions. However, in 2021, several community engagement activities took place in Baker Lake with Elders, the Hamlet, the RCMP and the Hunters and Trappers Organization. These engagements provided a medium for Agnico Eagle to inform the stakeholders on the activities at the mine and to consult them on specific issues and projects.

In 2022, new version of the Community Liaison Committee in Baker Lake is planned to be implemented that encourages dialogue exchange between Agnico Eagle and the local sub-groups (youth, women, Elders, etc.). Engagement with specific community sub-groups will allow better understanding of the issues and provide a venue for stakeholder sub-groups to advice Agnico Eagle Management for solutions. Furthermore, the new version of the Community Liaison Committee in Baker Lake will provide an opportunity for various sub-groups to review and comment on the implementation of the Kivalliq Projects Socio-Economic Monitoring Program.

11.9.4 Elders and IQ Validation

In 2021, Agnico Eagle developed a Kivalliq Inuit Elders' advisory committee comprised of 21 Elders from Baker Lake, Chesterfield Inlet, Rankin Inlet, Whale Cove and Arviat to integrate Inuit Qaujimajatuqangit (IQ), Inuit Societal Values (ISV) and community knowledge into our exploration, planning, workforce, wellness and operational plans. The selection of the committee members was led by Agnico Eagle's IQ Coordinator through extensive consultations with wildlife organizations and local leaders. The full report of the Kivalliq Inuit Elders Advisory Committee is appended in Appendix 61.

In 2021, engaging with Elders was ongoing – Agnico Eagle ensured to consult with Elders to collect and validate information. In 2021, following engagement initiatives took place with the Elders members of the Kivalliq Elders Advisory Committee:

- Two (2) events– Tour for Traditional Place Names and Archeology and site tour with Elders around Upper Amer Lake

- Three (3) meetings – update on Meadowbank Complex operation and upcoming projects, to collect traditional knowledge at Upper Amer Lake, and to collect IQ testimony on Shipping route in Chesterfield Inlet.

- Three (3) meetings with the Kivalliq Elders Advisory Committee on Nunavut and Rankin Inlet Mental Health project

- One (1) meeting with the Kivalliq Elders Advisory Committee on Meliadine and Meadowbank Complex operations update and Meliadine Extension activities.

The purpose and outcomes of the above engagement initiatives are summarized in the Engagement Table appended in Appendix 60.

11.9.5 Baker Lake

11.9.5.1 *Community Meetings in Baker Lake*

A teleconference was held on May 25th, 2021 with Baker Lake Hamlet representatives to present the 2021 Sealift Season schedule. Due to COVID-19 exceptional circumstances, Agnico Eagle was not able to hold the usual community information meetings in person. During the teleconference, the following topics were presented:

- Vessel routing from Quebec to Nunavut and routing to Baker Lake
- Monitoring of marine mammals and seabirds
- All Weather Access Road closure process
- Caribou Monitoring
- Process to find live information about the vessel routing
- Process to ask questions and raise concerns via Tusaajugut 'We are Listening'

A teleconference was held on August 5th, 2021, to present the 2021 Cyanide Transportation program. Due to COVID-19 exceptional circumstances, Agnico Eagle was not able to hold the usual community information meetings in person. The Baker Lake Hamlet and HTO, Fire Department and RCMP representatives joined the call. The health center was invited but could not attend the teleconference. During the teleconference, the 2021 Cyanide Transportation safety and monitoring procedures were presented as well as the communication plans. In addition, Agnico Eagle presented the COVID-19 measures undertaken during the transportation to ensure minimal impact on the surrounding community.

Despite COVID-19 challenges Agnico Eagle ensured Baker Lake community members and key stakeholders were continuously informed and consulted on various topics. In 2021, the following community initiatives took place in Baker Lake:

-12 Meetings
-One (1) Public Meeting –Coffee and Chat
-Four (4) Teleconferences

The purpose and outcomes of the above engagement initiatives are summarized in Appendix 60.

11.9.5.2 *Site Tours for Baker Lake Residents*

Each year, Agnico Eagle offers a variety of ways for the residents of Baker Lake, as well as various other groups or individuals from the Kivalliq, to visit Meadowbank Complex site. In 2021, due to COVID-19 pandemic and community restrictions Agnico Eagle did not host any Meadowbank Complex site tour for Baker Lake residents.

11.9.6 Community Engagement Initiatives

Community engagement and consultation initiatives that Agnico Eagle held or participated in during 2021 are summarized in Appendix 60.

11.9.6.1 *Community Coordinators Program*

The Community Coordinators program consists of full or part-time Agnico Eagle Officer in all Hamlets in the Kivalliq Region, including Agnico Eagle's offices in the communities of Rankin Inlet and Baker Lake.

The objective of the community based Agnico Eagle Officer is to provide a point of contact in each community to facilitate communications, provide services, and coordinate activities in the following areas:

- Support Human Resources (HR) department and the recruitment team.
- Assist HR and other Agnico Eagle departments to locate employees or potential employees as required.
- Provide advice and assistance to Agnico Eagle to organize and hold information sessions in the community on Agnico Eagle projects, initiatives, and engagement activities, including Labour Pool and business opportunities initiatives outlined in the Meadowbank and Whale Tail IIBA.
- Provide updates to the Hamlet Council and to other community stakeholders on Agnico Eagle activities.
- Distribute Agnico Eagle information and promotional materials.
- Participate in Agnico Eagle's Nunavut donation initiatives and processes.
- Participate in organization community events and education initiatives.

This increased community involvement by the Community Officers will allow Agnico Eagle to achieve recruitment goals and the obligations for the NIRB and IIBA; therefore, rendering this position essential to Agnico Eagle's Nunavut operations. In 2021, all the seven (7) Kivalliq communities had a Community Liaison Officer. However, due to COVID-19 pandemic and subsequent restrictions, the new CLO Development Program was not fully launched. The aim of this program is to support Community Officers to develop new skills and advance in their positions.

11.9.7 Communication

As required by NIRB Project Certificate No.008 Item 12: ***The Proponent shall establish a publicly-accessible Project-specific web portal or web page to make available in a central location all significant non-confidential monitoring and reporting information submitted to regulatory authorities pursuant to the Project Certificate and other territorial or federal permits issued for the Project. For clarity, posting on the Project-specific site does not replace any reporting obligation of the Proponent pursuant to the Project Certificate or any territorial or federal permit.***

In 2018, Agnico Eagle launched a Facebook page for Meadowbank Complex (Meadowbank and Whale Tail) which acts as another method with which it can inform the Kivalliq communities of important information, including road closures, recruitment information, and public meetings. This additional medium of communication was suggested by multiple stakeholder groups, including the Kivalliq Socio-Economic Monitoring Committee.

Agnico Eagle continues to use the Meadowbank Complex Facebook page as a key medium of communication with employees and Kivalliq communities. In 2021, the social media platform was used to keep communities of impact informed and build awareness on the following topics:

- COVID-19 related support available from Agnico Eagle during the pandemic

- Return to work information for employees at home
- Baker Lake and Rankin Inlet community office hours of operation
- Employment information Session dates in Kivalliq communities
- Business Opportunities Posts
- Job posting
- Sealift Season & Cyanide transportation
- All Weather Access Road – Awareness and Road Rules
- Nunavut Impact Review Board hearing dates
- Caribou Migration and related road closures

The above social media posts are outcomes of active management plans for example, the 'Sealift Season' posts are directly related to the Shipping Management Plan and the 'Caribou Migration' posts are product of Wildlife Management Plan. Social media posts were used to encourage engagement from community members. In 2021 Agnico Eagle Meadowbank Complex Facebook page made in total 192 posts.

In 2021, the Nunavut Agnico Eagle website had blog posts on the following topic:

- Our Response to COVID-19 (7 blog posts)
- Spills Reports –total of one (1) blog post on this topic
- Agnico Eagle Helps Nunavut Revolutionize Firefight Training
- Information on fatal accident at our Hope Bay mine
- Update from Agnico Eagle Regarding Nunavut Posters
- Carved in stone story on soapstone donation
- Agnico Eagle aids Iqaluit during crisis by donating potable water

All the blog posts were re-shared on the Nunavut Facebook pages to reach wider community audience and to encourage engagement from the community of impact.

11.10 SOCIO-ECONOMIC MONITORING PROGRAM (SEMP, SEMC, SEMWG, SEMR)

11.10.1 Meadowbank and Whale Tail Sites

As required by NIRB Project Certificate No.004 Condition 63: ***the GN and INAC shall form a Meadowbank Gold Mine Socio-Economic Monitoring Committee ("Meadowbank SEMC") to monitor the socio-economic impacts of the Project and the effectiveness of the Project's mitigation strategies; the monitoring shall supplement, not duplicate, the monitoring required pursuant to the IIBA negotiated for the Project, and on the request of Government or NPC, could assist in the coordination of data collection and tracking data trends in a comparable form to facilitate the analysis of cumulative effects; the terms of reference shall focus on the Project, include a plan for ongoing consultation with KivIA and affected local governments and a funding formula jointly submitted by GN, INAC and [Cumberland]; the terms of reference shall be submitted to NIRB for review and subsequent direction within six (6) months of the issuance of a Project Certificate; [Cumberland] is entitled to be included in the Meadowbank SEMC.***

And

As required by NIRB Project Certificate No.004, Condition 64: ***[Cumberland] shall work with the GN and INAC to develop the terms of reference for a socio-economic monitoring program for the Meadowbank Project, including the carrying out of monitoring and research activities in a manner which will provide project specific data which will be useful in cumulative effects monitoring (upon request of Government or NPC) and consulting and cooperating with agencies undertaking such programs; [Cumberland] shall submit draft terms of reference for the socio-economic monitoring program to the Meadowbank SEMC for review and comment within six (6) months of the issuance of a Project Certificate, with a copy to NIRB's Monitoring Officer.***

And

As required by NIRB Project Certificate No 008, Condition 44: ***The Proponent is strongly encouraged to continue to participate in the work of the Kivalliq Socio-Economic Monitoring Committee along with other agencies and the communities of the Kivalliq region, and to identify areas of mutual interest and priority for inclusion into a collaborative monitoring framework that includes socio-economic priorities related to the Project, communities, and the Kivalliq region as a whole.***

And

As required by NIRB Project Certificate No.008, Condition 54: ***Proponent should ensure that the development of all project monitoring plans and associated reporting and updates are undertaken with active engagement of Kivalliq communities, land users, and harvesters. The Proponent should work with the Kivalliq Inuit Association, the local Hunters and Trappers Organizations and the Kivalliq Socio-Economic Monitoring Committee to report on the collection and integration of Inuit Qaujimaningit through its monitoring programs for the Project. To the extent that the sharing of such information is consistent with, and not limited by, any confidentiality or other agreements, summaries addressing the Proponent's fulfillment of this term and condition should be included in the Proponent's annual report to the Nunavut Impact Review Board.***

In 2021, Agnico Eagle continued to meet the requirements in the above conditions through its work in the following:

- The Socio-Economic Monitoring Program (SEMP) acts as a framework for the monitoring program. It outlines the indicators, metrics, units of measurements, etc., including those that are mandated by the Project Certificates. Agnico Eagle commits to reporting on the SEMP annually. In 2022, Agnico Eagle proposed new indicators for Cultural and Traditional Lifestyle and Individual and Community Wellness (Housing and Food Security) Valued Socio-Economic Component (VSECs) to the SEMWG. The motivation behind the review was to enhance Agnico Eagle's monitoring efforts and ensure subsequent community-based initiatives are based on immediate requirements. Based on the feedback from the SEMWG, the updated SEMP consists of:
    - Two (2) new indicators under Cultural and Traditional Lifestyle VSEC
    - Four (4) new *housing* indicators under Individual and Community Wellness VSEC
    - Two (2) new *food security* indicators under Individual and Community Wellness VSEC

  The updated SEMP can be found in Appendix 62.

- The SEMWG traditionally included GN and CIRNAC, however, in 2020 KivIA has officially joined the SEMWG. The aim of this working group is to support Agnico Eagle's SEMP and the Kivalliq Socio-Economic Monitoring Committee (KvSEMC). In 2022, Agnico Eagle organized one (1) teleconference with the SEMWG to propose: new indicators and metrics for the SEMP, Socio-Economic Monitoring Report re-design, and to receive an update on 2021-2022 Kivalliq SEMC.

- The Kivalliq Socio-Economic Monitoring Committee (KvSEMC) meets annually to present data and consider socio-economic impacts and benefits of mining projects generally on the Kivalliq region. Members of the KvSEMC include Government of Nunavut (including specific departmental representation), Government of Canada, Kivalliq Inuit Association, Hunters and Trappers Organizations, Community representatives, community organizations and Project owners. The Government of Nunavut chairs the KvSEMC. Feedback provided in the KvSEMC informs the final Socio-Economic Monitoring Report. Additionally, the KvSEMC can recommend additional monitoring priorities. Agnico Eagle is an active participant in the KvSEMC. In 2021, due to COVID-19 pandemic and Kivalliq travel restrictions the 2020-2021 Kivalliq Socio-Economic Monitoring Committee meeting was not scheduled. Several email communications took place between Agnico Eagle and the SEMWG to host the 2020-2021 KvSEMC meeting. However, due to logistical challenges and community COVID-19 outbreaks the committee meeting could not be scheduled. Nonetheless, the Government of Nunavut and CIRNAC recognized that Agnico Eagle did their utmost to fulfill this Project Certificate requirement.

- The Socio-Economic Monitoring Report (SEMR) is the annual report on the SEMP. It is a comprehensive socio-economic monitoring report that contains Project-level data (data collected by Agnico Eagle at each Project site or regionally) and community-level data (data provided by or in communities), including data that is mandated by the Project Certificate. It is reviewed by the SEMWG prior to its submission, to allow for those groups to provide insight. In 2022, Agnico Eagle proposed a re-designed format of the SEMR to the SEMWG which was approved. In the new report formatted report, the sequencing of the Valued Socio-Economic Components (VSECs) has been re-ordered to enhance the flow from demographic through economic to social. Each VSEC section will be briefer and begin with a high-level summary, allowing sections to act as standalone documents. They will be written in more reader-friendly language, using simpler infographics and avoiding repetition or unnecessary technical detail. In the report, the data will be presented in singular graphs encompassing the three sites to simplify information and improve document flow.

- In 2020, at the SEMWG meeting Agnico Eagle proposed to move the deadline of the SEMR to meet the NIRB Annual Report submission deadline. This was based on past discussions with the SEMWG. This effectively moves the deadline from June 30 to March 31. The main impact of the change in reporting deadline is that some community-level data would not be available, and therefore some community-level data would be reported with a year-delay annually, however the benefit would be to better align reporting and review processes for Agnico Eagle and reviewers. The change was approved by the SEMWG. Therefore, Agnico Eagle is appending the 2021 Agnico Eagle Kivalliq Projects Socio-Economic Monitoring Report, in Appendix 59.

Application of Inuit Qaujimaningit (IQ) and Traditional Knowledge (TK) to Monitoring Plans

In 2021, the Community Relations team developed a methodology that allows consistent collection and integration of Inuit Qaujimajatuqangit and Inuit Traditional Knowledge into Agnico Eagle project phases. In 2022, the methodology is planned to be implemented.

The Inuit Qaujimajatuqangit and Inuit Traditional Knowledge Methodology consists of four steps:

1. Collection
   Inuit Qaujimajatuqangit and Inuit Traditional Knowledge are collected and validated through multiple engagement channels with Kivalliq individuals, communities, and community groups. Engagement channels includes one-on-one conversations, focus groups, public consultations and open house with field experts and knowledge holders.

2. Documentation
   The IQ and TK collected during engagement are documented in IQ/TK collection forms. The forms gather details such as the date, engagement purpose, engagement type, engagement leader, Agnico Eagle supporting team, community participants and their organization, meeting notes, questions, and comments. Furthermore, the form also documents outcomes of the engagement and commitments made by Agnico Eagle to the participants. Lastly, the IQ/TK form requires the participants to provide consent that allows Agnico Eagle to use the shared information on Inuit Qaujimajatuqangit and Inuit Traditional Knowledge.

3. Interpretation
   This step consists of two sub-steps:
   a. *Cross-referencing*—New IQ/TK collected are cross-referenced with past collected IQ/TK to avoid duplication.
   b. *Linking Valued Components*—Agnico Eagle Inuit knowledge holders and supporting staff links the collected IQ/TK to specific Environmental and Socio-Economic Valued Components

4. Storing
   All collected and interpreted data are stored in an internal database software system that allows history tracking and reporting. The database tracks all the consented and validated IQ/TK as well as the integration into the operational management and monitoring plans.

11.10.2 Whale Tail Site Updates

As required by NIRB Project Certificate No.008, Condition 45: ***The Proponent shall work in collaboration with other socio-economic stakeholders including, the Government of Nunavut, Indigenous and Northern Affairs Canada, the Kivalliq Inuit Association, and communities of the Kivalliq region, to establish a socio-economic working group for the Project to develop and oversee a Kivalliq Projects AEM Socio-Economic Monitoring Program. The working group will develop a Terms of Reference, which outlines each member's roles and responsibilities with regards to, where applicable, project specific socio-economic monitoring throughout the life of the projects. The Proponent shall work with the other parties to use the updated Kivalliq Projects Socio-Economic Monitoring Program to monitor the predicted impacts outlined in the projects' respective environmental impact statements as well as regional concerns identified by the Kivalliq Socio-Economic Monitoring Committee. The Proponent shall work in collaboration with all other socio-economic stakeholders***

such as the Government of Nunavut, Indigenous and Northern Affairs Canada, Kivalliq Inuit Association, and the communities of the Kivalliq region in developing this program, which should include a process for adaptive management and mitigation in the event unanticipated impacts are identified. The Terms of Reference for this multi-party, multi-project Working Group are to be provided to the Nunavut Impact Review Board (NIRB) upon completion, and within one (1) year of issuance of the Project Certificate. The Proponent shall produce annual joint "AEM Kivalliq Projects" Socio-Economic Monitoring reports throughout the life of the Projects that are submitted to the NIRB and discussed with the wider Kivalliq Socio-Economic Monitoring Committee. Details of the Kivalliq Projects Socio-Economic Monitoring Program are to be provided to the NIRB upon finalization, and within one (1) year of issuance of the Project Certificate. Information regarding the Proponent's efforts in fulfillment of this term and condition shall be included in the Proponent's annual report to the Nunavut Impact Review Board.

And

As required by NIRB Project Certificate No.008, Condition 53: ***Provided the collection and sharing of such information is consistent with and not limited by any Inuit Impact and Benefit Agreement with the Kivalliq Inuit Association and that employees are willing to voluntarily provide this information, the Proponent should collect and provide project-specific data concerning employee community of residence and number of employees that relocated from the year prior (where available, to and from, for Arviat, Baker Lake, Chesterfield Inlet, Coral Harbour, Naujaat, Rankin Inlet and Whale Cove). The details of this process will be captured in the terms of reference for the project specific Whale Tail Pit Socio-Economic Monitoring Committee. Summaries of this information should be included in the annual Whale Tail Pit socio-economic monitoring reports submitted to the Nunavut Impact Review Board and shared with the wider Kivalliq Socio-Economic Monitoring Committee throughout the life of the Project.***

And

As required by NIRB Project Certificate No 008, Condition 46: ***The Proponent should develop a Project-specific Whale Tail Pit Socio-Economic Monitoring Program designed to:***

- ***Monitor for project-induced effects, including the impacts predicted in the Environmental Impact Statement through indicators presented in the Whale Tail Pit Socio-Economic Monitoring Plan;***
- ***Reflect regional socio-economic concerns identified by the Kivalliq Socio-Economic Monitoring Committee (KivSEMC);***
- ***Work in collaboration with all other socio-economic stakeholders such as the Kivalliq Inuit Association, the Government of Nunavut, and Indigenous and Northern Affairs Canada, and the communities of the Kivalliq region to develop the program;***
- ***Include a process for adaptive management and mitigation to respond if unanticipated impacts are identified; and***
- ***Monitor the success of existing and newly implemented gender-specific initiatives to determine their success and why they were considered successful or to identify any challenges to their implementation.***

Details of the Whale Tail Pit Socio-Economic Monitoring Program should be submitted to the Nunavut Impact Review Board (NIRB) within one (1) year of issuance of the Project Certificate. The Proponent should produce annual Whale Tail Pit socio-economic monitoring reports throughout the life of the Project that are submitted to the NIRB and shared with the wider KivSEMC.

And

As required by NIRB Project Certificate No 008, Condition 50: ***The Terms of Reference for this multi-party, multi-project Working Group are to be provided to the Nunavut Impact Review Board (NIRB) upon completion, and within one (1) year of issuance of the Project Certificate. Details of the Kivalliq Projects Socio-Economic Monitoring Program are to be provided to the NIRB upon finalization, and within one (1) year of issuance of the Project Certificate. The Proponent shall produce annual joint "AEM Kivalliq Projects" Socio-Economic Monitoring reports throughout the life of the Projects that are to be submitted as part of the Proponent's annual report to the NIRB.***

Refer to Section 11.10.1 above.

11.10.3 Socio-Economic Monitoring Report

As required by NIRB Project Certificate No.004, Condition 65: ***Cumberland shall include in its socio-economic monitoring program for the Meadowbank Project the collection and reporting of data of community of origin of hired Nunavummiut.***

And

As required by NIRB Project Certificate No.004, Commitment 18: ***Observe, collect and maintain information on road-use to facilitate monitoring of the nonproject uses of the road***

And

As required by NIRB Project Certificate No.004, Commitment 21: ***Track the community of origin of hired Nunavimmiut to direct monitoring and followup activities***

And

As required by NIRB Project Certificate No.004, ***Commitment 104: Cumberland agrees with GN that labor force adjustments, any pressures on physical and social infrastructure (including by emergency response planning), socio-economic impacts of public use of the access road, and community physical and mental health are issues that should be included in socio-economic monitoring***

And

As required by NIRB Project Certificate No.004, Commitment 108*: Information made available by or to Cumberland under the terms of the IIBA in the areas of support to businesses in accessing project opportunities will be forwarded to the GN*

And

As required by NIRB Project Certificate No.008, Condition 48: ***The Proponent is strongly encouraged to submit staff schedule forecasts that should, at a minimum, include the following:***

- ***Title of positions required by department and division;***
- ***Quantity of positions available by project phase and year;***

- ***Transferable skills, both certified and uncertified which may be required for, or gained during, employment within each position;***
- ***The National Occupational Classification code for each individual position.***

The Proponent should also identify and register all trades occupations, journeypersons, and apprentices working with the Project and make this information available to the Government of Nunavut to assist in delivery of training initiatives and programs. The Staff Schedule should be submitted to the Nunavut Impact Review Board six (6) months prior to each phase of the Project (construction, operations, closure).

And

As required by NIRB Project Certificate No.008, Condition 53: ***Provided the collection and sharing of such information is consistent with and not limited by any Inuit Impact and Benefit Agreement with the Kivalliq Inuit Association and that employees are willing to voluntarily provide this information, the Proponent should collect and provide project-specific data concerning employee community of residence and number of employees that relocated from the year prior (where available, to and from, for Arviat, Baker Lake, Chesterfield Inlet, Coral Harbour, Naujaat, Rankin Inlet and Whale Cove). The details of this process will be captured in the terms of reference for the project specific Whale Tail Pit Socio-Economic Monitoring Committee. Summaries of this information should be included in the annual Whale Tail Pit socio-economic monitoring reports submitted to the Nunavut Impact Review Board and shared with the wider Kivalliq Socio-Economic Monitoring Committee throughout the life of the Project.***

And

As required by NIRB Project Certificate No.008, Condition 61: ***The Proponent, in collaboration with the Government of Nunavut and the Nunavut Housing Corporation, is encouraged to investigate measures and programs designed to assist Project employees with pursuing home ownership or accessing affordable housing options in the Kivalliq region. The Proponent should provide access to financial literacy, financial planning, and personal budgeting as part of the regular Life Skills Training and/or Career Path Program. Evidence of meeting the requirements of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board.***

And

As required by NIRB Project Certificate No.008, Condition 59: ***The Proponent is encouraged to work with the Kivalliq Inuit Association to establish cross-cultural training initiatives, which promote respect and consideration for the importance of Inuit Qaujimajatuqangit to the Inuit identity and to make this training available to Project employees and on-site sub-contractors. The Proponent should actively monitor the implementation of these initiatives, including the following items:***

- ***Descriptions of the goals of each program offered;***
- ***Language of instruction;***
- ***Schedules and location(s) of when each program was offered;***
- ***Uptake by employees and/or family members where relevant, noting Inuit and non-Inuit participation rates; and***
- ***Completion rates for enrolled participants, noting Inuit and non-Inuit participation rates.***

Summaries of the cross-cultural training initiatives implemented by the Proponent in fulfilment of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board.

And

As required by NIRB Project Certificate No.008, Condition 62: ***The Proponent should work with the Government of Nunavut to develop an effects monitoring program that identifies Project-related pressures to community infrastructure such as airport and transportation infrastructure, policing, health and social services, in Baker Lake and all the point-of-hire communities of the Kivalliq Region. Evidence of meeting the requirements of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board***

The section below summarizes key Agnico Eagle's socio-economic reporting, related primarily to employment and training. For the full report on the Project's socio-economic monitoring, please refer to the Appendix 59.

Reports can also be viewed on the Socio-Economic Monitoring Committee website www.nunavutsemc.com or on Agnico Eagle's website http://aemnunavut.ca/media/documents/.

11.10.3.1 *Workforce*

Agnico Eagle calculates the workforce based on headcount (snapshot of active employees taken at the end of the year, which includes full-time and part-time employees) and full-time equivalents (number of full-time positions based on hours worked, where one full time position is equivalent to 2,184 hours worked in a year).

The number of active Agnico Eagle employees working at Meadowbank and Whale Tail on December 31st, 2021, was 1,195, of which 286 employees were Inuit employees. The respective full-time equivalencies were 1078 Agnico Eagle employees in total, with 240 full-time (FTE) Inuit Agnico Eagle employees.

The number of contractors employed at the project is only calculated using full-time equivalents (FTEs) due to the cyclical nature of contractor work. Therefore, during 2021 there were 875 full time equivalent contractor positions, of which approximately 17 are filled by Inuit.

Taken together, there were 2,210 active employees (Agnico Eagle permanent, temporary, on-call, students, and contractors), working full- and part-time jobs, at the end of 2021.

Agnico Eagle defines job statuses as follows:

- Permanent employee: an employee whose current job is not specifically tied to a short-term project and the position is expected to be required throughout the life of mine (LOM).

- Temporary employee: an employee whose current job will not continue beyond a specified period.

- On-call employee: an employee who has an undefined contract and is called upon when the need arises. It is expected that on-call employees will move to temporary or permanent positions as they become available.

11.10.3.1.1.1 Employment Demographics for Nunavut Based Employees

Table 11-6 shows the employment demographics for community of hire by headcount:

Table 11-6 Home communities of Agnico Eagle Inuit employees (by headcount)

Community of Hire	2020 Agnico Eagle headcount	2021 Agnico Eagle headcount
Arviat	74	63
Baker Lake	168	144
Naujaat	16	15
Rankin Inlet	15	14
Chesterfield Inlet	6	4
Whale Cove	7	5
Coral Harbour	12	12
Kitikmeot	0	1
Qikiqtani	0	0
Outside of Kivalliq	22	28
Total	**320**	**286**

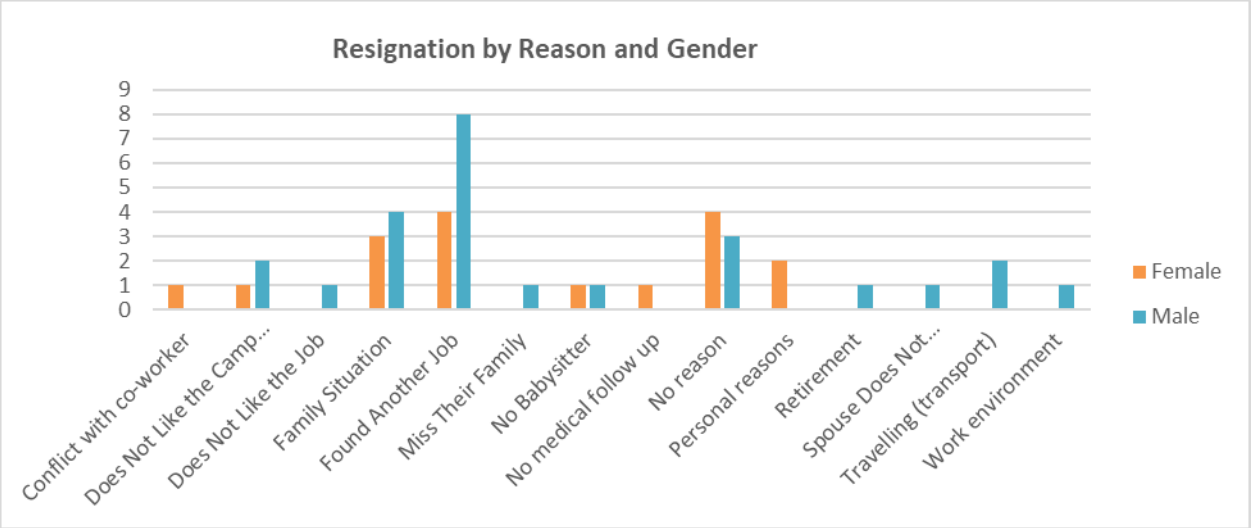
Agnico Eagle pays for the transportation of all Kivalliq-based employees from their home community to the mine for each work rotation. For employees coming from Arviat, Chesterfield Inlet, Rankin Inlet and/or Whale Cove, Agnico Eagle has a service contract with Calm Air to transport employees by charter plane from Rankin Inlet directly to and from the Meadowbank mine airstrip. For employees coming from Coral Harbour and/or Naujaat, a commercial ticket is bought from their home communities to the Baker Lake airport. Once in Baker Lake, they are transported by bus to and from the mine site via a daily ride similar to employees coming from Baker Lake. For all other employees not located in the Kivalliq region, transportation is provided from Mirabel and Val-d'Or via a charter flight operated by Nolinor Aviation.

11.10.3.1.1.2 Employee Retention

Based on Agnico Eagle's experience and testimonies of former employees, it was noted that many Inuit have never had full time work in their home communities, where full time employment opportunities are potentially limited. Many such individuals want a job but working away from home for two weeks at a time in a structured industrial environment is a change that many have difficulty adapting. Furthermore, many Inuit employees have raised concerns about the lack of child support and family situations back home which makes it harder to stay away working for 14-days.

Exit interviews support this assumption and Figure 42 provides the reasons given for voluntary departures by gender.

Figure 42 Reasons given for voluntary terminations



Agnico Eagle developed a new approach and has rolled out new initiatives with a focus on providing information, skills, and education to job applicants to ensure that they are better informed about what working life is like at a remote mine site, and to be better prepared to adapt, cope, and be successful in employment. The result is the development and implementation of a Labour Pool Process.

The Labour Pool Program consists of a suite of activities that provides future employees with information, skills, and education for working life and conditions in a remote, fly in/fly out, industrial workplace.

In 2021, the pre-employment program was reviewed. The revised two (2) weeks program is now a 10-days community-based training consists of series of suite, including more practical workshops and training, incorporation of new technologies such as virtual reality to help guide new employees when they start working at the mine site.

11.10.3.1.1.3 Summer Student Employment Program

Agnico Eagle offers two summer employment programs that are accessible to students. Firstly, Agnico Eagle's company-wide policy offers a summer employment program to the children of all Agnico employees (both Inuit and non-Inuit) that are undertaking postsecondary education. Secondly, in 2019 Agnico Eagle also offered the Inuit Summer Employment Opportunities postings, which is targeted to Inuit students in high school or post-secondary and tries to match students to positions in their areas of interest. In 2021, the Summer Employment program was offered only in the communities and not at the mine site to accommodate the COVID-19 situation. Advertisement was done in March and April however, AEM received very low number of applicants. A summer employment was provided to (1) one person at the Rankin Inlet office with the Community Relations team. In 2022, Agnico Eagle and KivIA will be working on a new strategy to encourage and support Inuit youths to participate in Agnico Eagle Inuit Summer Employment Program.

As per Agnico Eagle policies, students must be 18 years or over to work at the operation, and over 16 years old to work in the offices in Baker Lake or Rankin Inlet.

11.10.3.2 *Training*

Agnico Eagle's Training Management System (TMS) and the Learning Management System (LMS) tracks and reports on training activities. The list of training provided can be found in Appendix 63.

11.10.3.2.1 Pre-employment training

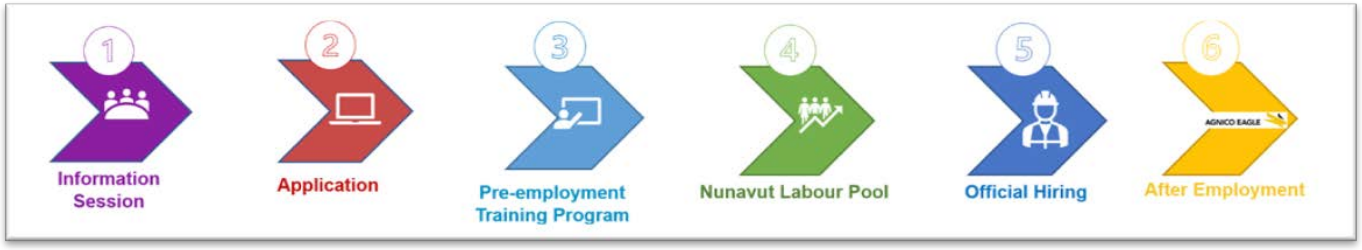
The Labour Pool Process, implemented in 2014 and revised in 2015 and 2021, is based on an agreement between Agnico Eagle and the KivIA through the IIBAs to offer pre-employment opportunities to Inuit from all Kivalliq communities. It is illustrated in Figure 43.

The goal of the program is to pre-qualify candidates from Kivalliq communities through 4 steps:

1. Employment information sessions (EIS)
2. Online application which is facilitated by Employment Information Sessions
3. Pre-Employment Training Program (more details provided below)
4. Labour Pool List which is facilitated by the Labour Pool Coordinator

In 2021 Agnico Eagle and Kivalliq Inuit Association agreed to modify the Labour Pool Process via a Memorandum of Understanding (MOU). The Work Readiness and the Mandatory Trainings were merged to become the Pre-employment Training program (10-day community-based training). The modification will reduce the Labour Pool Process steps and decrease the length of delay for applicants to get employment.

Figure 43 Labour Pool Process



Step 1: Employment Information Sessions (EIS)
As part of the Labour Pool Process, Employment Information Sessions are to be conducted in all Kivalliq communities. The purpose of the information session is to provide information about the mine site, the work lifestyle requirements, career opportunities and understanding how to apply online.

In 2021, Agnico Eagle re-introduce the employment information sessions after the pause due to COVID-19 situation. In total, 11 employment information sessions were completed and in total 98 individuals attended those sessions. Three (3) scheduled sessions were canceled due to COVID-19 outbreaks.

Step 2: Online Application
The second step in the Labour Pool Process is to apply online. In order to facilitate online application in the communities, Agnico Eagle has a Community Liaison Officer (CLO) in each Kivalliq community who can deliver employment information sessions and provide one-on-one assistance to interested candidates with their online application.

In 2021, CLOs were present in the seven (7) Kivalliq communities. They were able to support the online application via the phone or in-person from the Agnico Eagle Hamlet offices. Also, in May of 2021, a new Labour Pool Coordinator was hired at the Agnico Eagle Rankin Inlet Office. The coordinator is available to support the applicants but also the CLOs in all the communities.

Step 3: Pre-Employment Training Program
Agnico Eagle continues to utilize the Work Readiness Training program that was developed as a pre-employment initiative. In 2018, the Work Readiness Training was delivered in collaboration between Aglu Consulting. The Work Readiness program is the next step of the Labour Pool Process for those individuals who have applied online and who do not have work experience relevant to the positions for which Agnico Eagle hires.

The objective of the program is for Inuit applicants to be better prepared for the work environment in an industrial setting. Mandatory trainings are now included in the Pre-employment training program which are delivered in the communities. The program provides coaching on a range of issues including: awareness of employers' unspoken expectations, communication in the workplace, and problem-solving skills for resolving workplace issues.

In 2021 Agnico Eagle collaborated with Ilitaqsiniq (Nunavut Literacy Council) to review the program and adapt the curriculum to the Nunavummiut clientele. The training approach and teaching materials integrated IQ and Adult Education principles however, the themes and subjects remained the same. The training is now a 10-day community-based training. In 2021, Agnico Eagle delivered three (3) Pre-employment Training programs—One (1) in Baker Lake and two (2) in Rankin Inlet. In 2021, a total of 25 participants completed the Pre-employment Training program.

Step 4: Labour Pool List
The Labour Pool List is a list of candidates who have successfully completed the steps of the Labour Pool Process. These candidates are now eligible for opportunities with Agnico Eagle or Agnico Eagle's contractors. The list is managed by the Labour Pool Coordinator.

In 2021, the Labour Pool list remains updated following each step of the Labour Pool process by the Labour Pool Coordinator.

11.10.3.2.2 Training Hours

The following categories of training are available:

- Mandatory: Mandatory training related to compliance with the Nunavut Mine Act, as well as training that is mandated according to Agnico Eagle Health and Safety policies. Many of these training sessions are offered via e-learning prior to employee's arrival on site.

- General: Training activities required at a departmental level and covers many employees working in different departments. General training includes training on light duty equipment as well as enterprise software systems and cross-cultural training.

- Specific: Focused on developing individual competencies related to a specific position. This training qualifies individual workers for promotion following their progression through the Career

Path. These training programs are provided by in classroom (theory) learning as well as practical (one-on-one) learning.

- Education
- Emergency Response Training

Table 11-7 provides the training hours provided to Agnico Eagle employees at Meadowbank and Whale Tail (excluding contractors) in 2021.

Table 11-7 2021 Training hours

Type of Training	Inuit	Non-Inuit	Total
Mandatory	2,246	8,308	10,554
General	346	5398	5744
Specific	4,601	9,125	13,726
Education	144	0	144
Specific Practical Evaluation	96	768	864
Specific Primary Evaluation	6	33	39
ERT	252	4,190	4,442
Total	**7,691**	**27,822**	**35,513**

11.10.3.2.3 Training Programs

11.10.3.2.3.1 E-Learning

Before coming to an Agnico Eagle site for the first time, newly hired employees must complete their Mandatory Training online, which consists of six (6) modules: General Induction, WHMIS, Fire Suppression, Job Hazard Analysis and Work Card, Spill Response, and Occupational Health and Safety (Personal Protective Equipment, Ladder Safety, Surface Standard Operating Procedure). The General Induction chapter provides general information about Agnico Eagle and working life at the mines, waste management, as well as information on the IIBAs and archaeological awareness. The e-learning training material has been translated into English, French, and Inuktitut.

In 2020, an external firm started the development of all six (6) E-learning modules. The six (6) new modules that were in development in 2020 and early 2021, were launched in 2021 to replace the previous versions. In 2021, a new version of the Chemical Awareness and the Mill Induction courses has been developed and launched for Meadowbank. In 2021, the SOP Mine - Class module has been developed and launched for Meadowbank. This online module is the first part of a 3-part course with an objective to acquire the necessary knowledge to drive on the Meadowbank site, open pit and roads.

11.10.3.2.3.2 Cross-Cultural

Implemented first at Meadowbank, the Cross-Cultural Training Program is a 5 hour in-class training course. This course allows employees from different cultures and backgrounds to understand each other's culture to improve understanding and communication at the workplace.

The program was revisited with the assistance of the Nunavut Literacy Council in 2013, and a revised program was initiated in 2014. This s program is mandatory for all Agnico Eagle employees and contractors who will be on site for six months or more. Cross-cultural training began at Meliadine in 2017.

Spring and Summer of 2021, all supervisors re-took the Cross-Cultural course in preparation for the return of the Nunavummiut and to ensure a mindset of cultural awareness on-site. In 2021, Meliadine had 13 sessions and Meadowbank had 27 sessions. A total of 217 Agnico Eagle employees and 75 contractors have completed the training.

11.10.3.2.3.3 Career Paths

The Career Path Program was designed in 2012 at Meadowbank, with the intention of supporting upward mobility of Inuit employees at Agnico Eagle's Project sites. This program identifies the incremental steps that any employee is required to complete to advance in their chosen career of interest.

The objective is to have only internal promotions of employees, with external candidates being hired only as an entry level position to feed the trainee programs at the base.

In 2021, two (2) Career Paths have been launched: The Warehouse Career Path at Meadowbank and the Warehouse Career Path at Meliadine. Also, three (3) Career Paths have been reviewed: The Energy & Infrastructure Career Path at Meadowbank, and the Underground and the Process Plant Career Paths at Meliadine.

11.10.3.2.3.4 Haul Truck Trainee

The Haul Truck Trainee program is a 28-day (336 hour) program to certify haul truck operators, which includes training on a simulator, in the classroom, and on the job. The program is aimed at existing employees in entry level positions (dishwashers, janitors, chambermaids, etc.). To provide the best training possible to all the trainees, there is a maximum of four (4) trainees at a time with one (1) trainer.

In 2021, there were no other cohort of the Haul Truck Trainee Program due to the reintegration phase of the Nunavummiut on site.

11.10.3.2.3.5 Process Plant Trainee/Super Operator Program

With the success of the Haul Truck Trainee Program, a Process Plant Trainee Program was developed in 2015. The 28-day program provides employees with an understanding of the mining and milling process and trains them to be competent and certified to fill positions as a process plant helper or a utility person. In 2021, there were no cohort of the Process Plant Trainee Program due to the reintegration phase of the Nunavummiut on site.

Implemented in the second half of 2016, the Super Operator Program is an extension of the Process Plant Trainee Program. This 168-hour training is provided to employees who have successfully completed the Process Plant Trainee Program. The extension of the Process Plant Trainee Program will consist in teaching the basics of maintenance principles to have employees with more diversified skills in the Process Plant Department. These employees will eventually be able to perform specific basic maintenance repairs throughout the plant. In 2021, the Super Operator Program was on hold.

11.10.3.2.3.6 Long Haul Trainee

The Long-Haul Truck Trainee program is a 28-day (336 hour) program to certify long haul truck operators, which includes training on a simulator, in the classroom, and on the job. The program is aimed at existing employees in the mine department. To provide the best training possible to all the trainees, there is a maximum of four (4) trainees at a time with one (1) trainer.

In 2021, there were no cohort of the Long-Haul Truck Trainee Program due to the reintegration phase of the Nunavummiut on site.

11.10.3.2.3.7 Apprenticeship Program

The Apprenticeship Program combines on-the-job learning and in-school technical instruction to allow Inuit employees the opportunity to be educated and trained in the trade of their choice. By the end of the program, the apprentice is able to challenge their Certificate of Qualification (COQ) to become a Journeyperson and will have the opportunity to challenge their Red Seal Exam. Currently, Agnico Eagle offers (9) trades: baker, cook, carpenter, millwright, electrician, heavy duty equipment technician, welder, housing maintainer and plumber.

In 2019, the program was reviewed in order to substantially increase our support to apprentices while they are at school for their technical instruction. Logistical, material, educational and financial support is provided to our Apprentices.

In 2021, one (1) apprentice went to technical training in Alberta. Two (2) apprentices continued their training on-the-job during the year: one (1) apprentice at Meliadine and one (1) pre-apprentice at Meadowbank. All other apprentices stayed home due to COVID-19 pandemic restrictions until the site re-integration which started in June 2021. At the end of 2021, there were five (5) apprentices and pre-apprentices at Meadowbank and two (2) apprentices and pre-apprentices at Meliadine.

Since 2015, a total of eight (8) employees successfully completed their apprenticeship training within Agnico Eagle.

11.10.3.2.3.8 Adult Educator

In 2018, Agnico Eagle started an on-site education strategy at its Nunavut sites, starting with a permanent Adult Educator at Meadowbank. The objective of the Adult Educator is to support Agnico Eagle employees to develop numeracy, literacy, and soft skills which will assist employees to access higher job positions and be successful in their apprenticeship journey. The Adult Educator works with pre-apprentices to help them gain the academic skills and confidence to successfully pass their trade's entrance exam, as well as apprentices to support them in their level exams. Instruction takes place during an employee's workday and is specific to their learning needs.

The Adult Educator is also tasked with planning and implementing school-based initiatives such as TASK (Trades Awareness, Skills and Knowledge) week. The goal of TASK week is to motivate the students to think about their future after graduation.

In 2021, due to the absence of our Nunavummiut employees for half of the year, Meadowbank's Adult Educator supported the management of the Leadership Development Program. Nonetheless, the Adult Educator was able to continue supporting one (1) Nunavummiut apprentice who was living in the south. In June 2021, once the Nunavummiut workforce returned to work the Meadowbank Adult Educator started to provide support to Nunavummiut on pre-trades skills and level exams.

11.10.3.2.3.9 Emergency Response Team (ERT) training

At Agnico Eagle Mines Ltd., the most important priority is to keep employees safe. Meadowbank and Whale Tail Emergency Response Team (ERT) consists of internal employees that volunteers to respond to emergencies such as fire. The ERT practice takes place weekly, and each member must attend at least six (6) practices throughout the year. Currently, there are 105 active Emergency Response and Mine Rescue members and out of which nine (9) are Inuit members. Due to COVID-19 pandemic response and isolation restrictions eight (8) Inuit out of nine (9) are not active. In 2021, five (5) basic mine rescue courses were given to on-board new ERT members for both Meadowbank and Whale Tail site. In total 38 training sessions were given that included weekly practices, mock scenarios, and specialized trainings.

11.11 GENERAL SOCIO-ECONOMIC PROVISIONS

11.11.1 Whale Tail Site

11.11.1.1 *Staff Schedule*

As required by NIRB Project Certificate No.008, Condition 48: ***The Proponent is strongly encouraged to submit staff schedule forecasts that should, at a minimum, include the following:***

- ***Title of positions required by department and division;***
- ***Quantity of positions available by project phase and year;***
- ***Transferable skills, both certified and uncertified which may be required for, or gained during, employment within each position;***
- ***The National Occupational Classification code for each individual position.***

The Proponent should also identify and register all trades occupations, journeypersons, and apprentices working with the Project and make this information available to the Government of Nunavut to assist in delivery of training initiatives and programs. The Staff Schedule should be submitted to the Nunavut Impact Review Board six (6) months prior to each phase of the Project (construction, operations, closure).

Construction Phase staff schedules have been sent to NIRB on May 2nd, 2018 and Operations Phase staff schedules have been sent to NIRB on April 25th, 2019 with an updated Version on June 25th, 2019 (Appendix 54 of the 2019 Annual Report).

11.11.1.2 *Semi-Annual Call with Regulators*

As required by NIRB Project Certificate No.008, Condition 49: ***The Proponent shall make best efforts to collaborate with the Government of Nunavut's Career Development Officer, Regional Manager of Career Development, and Director of Career Development. Semi-annual calls, at a minimum, should be initiated by the Proponent to address:***

- ***Hiring procedures and policies***
- ***Issues regarding employee recruitment and retention***
- ***AEM policies regarding career pathways and opportunities for advancement***
- ***Internal and/or partnered training and development of employees***
- ***Long-term labour market plans to facilitate training in communities***

Summary information addressing the Proponent's fulfillment of this term and condition shall be included in the Proponent's annual report to the Nunavut Impact Review Board.

In 2021 the first meeting with the Government of Nunavut and Family Services was scheduled however, cancelled due to COVID-19 pandemic. In November 2021, Agnico Eagle representatives attempted to schedule a meeting with the Government of Nunavut and Family Services, but the contact person was on leave for personal reason. Due to the unforeseen challenges in 2021 both parties decided to postpone the meetings to early 2022.

11.11.1.3 *Listing of Formal Certificates and Licences*

As required by NIRB Project Certificate No.008, Condition 52: ***The Proponent should develop and maintain an easily referenced listing of formal certificates and licences that may be acquired via on-site training or training during project employment. The listing shall indicate which of these certifications and licences would be transferable to a similar job site within Nunavut. The initial listing should be provided to the Nunavut Impact Review Board within six (6) months of the Project Certificate being issued. Updates to the list should be included in the Proponent's annual reports submitted to the Nunavut Impact Review Board and shared with the wider Kivalliq Socio-Economic Monitoring Committee throughout the life of the Project.***

The listing of formal certificates and licenses was sent to NIRB on December 14th, 2018. There have not been any updates since the last submission. The list can be found in Appendix 59 of the 2018 Annual Report.

11.11.1.4 *LMA and IWBS*

As required by NIRB Project Certificate No.008, Condition 50: ***The Proponent will report the results of its Labour Market Analysis (LMA) and Inuit Work Barrier Study (WBS) to the Kivalliq Socio-Economic Monitoring Committee upon completion in 2018, which should integrate the findings into its ongoing work identifying gaps between the Kivalliq labour market and mining market needs, and how to activate latent labour pool in the Kivalliq region to maximize labour "capture" from mining for the region. The Proponent shall report the results and implications of the LMA and WBS within its first year's Annual Report to the Nunavut Impact Review Board (NIRB), and show how the results have been integrated into an updated Socio-Economic Monitoring Plan for the Whale Tail Pit Project.***

Agnico Eagle is appending the IIBA-required 2021 Labour Market analysis (LMA) report with the 2021 NIRB Annual Report. The 2018 IWBS was submitted to NIRB on March 6th, 2019. The results from the 2021 LMA and 2018 IWBS is incorporated into the 2021 Socio-Economic Monitoring Report.

The LMA and IWBS Reports can be respectively found in Appendix 64 of the 2021 Annual Report and Appendix 61 of the 2019 Annual Report.

In 2021, IIBA's Employment and Culture Committee started working on a new format and frequency update for those required studies. This committee work will better support employment projects, initiatives, and decisions for the Kivalliq.

11.11.1.5 *Health Committee*

As required by NIRB Project Certificate No.008, Condition 58: ***The Proponent is encouraged to form a subcommittee which includes Government of Nunavut representatives to reach consensus decisions on health related issues that the Proponent or the Government of Nunavut bring forward (e.g. programs and services to address sexually transmitted infections, a process for the treatment and transport of workers that may require medical services beyond that which the mine provides, monitoring and reporting on the impacts of the Project on health services within the potentially impacted communities and particularly, Baker Lake. etc.). Information regarding the Proponent's fulfillment of this term and condition shall be included in the Proponent's annual report to the Nunavut Impact Review Board.***

And

As required by NIRB Project Certificate No.008, Condition 60: ***The Proponent shall engage with the Government of Nunavut to develop a process to ensure that any conditions first treated at the mine site and requiring ongoing care is appropriately accommodated in a timely manner at community health centres as required. Evidence of meeting the requirements of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board.***

In 2020, a Memorandum of Understanding (MOU) was planned to be presented, which establishes the foundations of a greater collaboration and communication between the Agnico Eagle Nunavut clinics and the Kivalliq Health Centers. However, due to COVID-19, this initiative was put on hold which continued in 2021. The MOU includes the involvement of the Agnico Nunavut clinics in the diagnostic and initiation of treatment of Sexually Transmitted Diseases (STD) as well as the participation of the Agnico Eagle Nunavut clinics in STD prevention programs. Some other health prevention subjects were covered by this MOU, like flu and tuberculosis.

When required, Agnico Eagle Nunavut clinic nurses organize all the logistics around transportation and treatment of Nunavummiut down south. The appointments with the doctors are organized by the Agnico Eagle nurses. Agnico Eagle takes care of all the required booking and funds the whole transportation, which includes lodging, meals, and medical fees.

When a worker is treated on-site for a personal or a work-related condition and requires medical attention off-site, the worker is always provided with a ''Return to Work'' form. The form explains the worker's condition and the treatment provided thus far to the receiving healthcare professional. This form is also used to transmit information back to the Agnico Eagle Nunavut clinics. The Return-to-Work form is an effective form of communication as it prevents loss of information between healthcare professionals and the care of the worker is documented versus having only verbal communication.

Any emergencies being transferred to Baker Lake, the healthcare center is always contacted prior to initiating the transport to make sure they can receive the patient safely. Also, if a community healthcare center requires Agnico Eagle Nunavut clinics to continue some special treatment initiated in the

community, they can call and email the respected clinics. Subsequently, necessary arrangements can be made between the clinics to ensure continuity of care.

11.11.1.6 *Home Ownership*

As required by NIRB Project Certificate No.008, Condition 61: ***The Proponent, in collaboration with the Government of Nunavut and the Nunavut Housing Corporation, is encouraged to investigate measures and programs designed to assist Project employees with pursuing home ownership or accessing affordable housing options in the Kivalliq region. The Proponent should provide access to financial literacy, financial planning, and personal budgeting as part of the regular Life Skills Training and/or Career Path Program. Evidence of meeting the requirements of this term and condition should be submitted as part of the Proponent's annual reporting to the Nunavut Impact Review Board.***

Agnico Eagle Mines Ltd continues to support the growing Agnico Eagle local workforce in the Kivalliq region of achieving home ownership. In 2019, Agnico Eagle received NR Can funding ending in December 2021 for a project called Kivalliq Region Energy Efficient Worker Housing Program ("Program"). This Program seeks to assess the current gaps in the arctic building supply chain so to introduce commercially available energy efficient innovation to shift regional construction paradigms towards Net-Zero energy efficient multiplexes. In cooperation with Kivalliq Inuit, local entrepreneurs and centres of industrial expertise, the Program will introduce the concept of Path to Net Zero open innovation to local builders.

This Program, funded in the amount of $200,000 matched by Agnico Eagle's in-kind contribution of $200,000, has identified current supply chain gaps and has uncovered energy efficient and economical solutions to be made available for local builders. Path to Net-Zero housing will appeal to an underserved middle-class market (single women, women with children and young couples) in Nunavut.

11.12 STATUS OF COMMITMENTS

As required by NIRB Project Certificate No.008, Condition 68: ***The Proponent shall maintain an up-to-date listing of the status of implementation for its commitments made during the Nunavut Impact Review Board's (NIRB) assessment of the Whale Tail Pit Project Proposal and the Whale Tail Pit Expansion Project Proposal through engagement of parties and active monitoring of associated implementation.***

The Proponent shall provide a status report on the implementation of all its commitments within three (3) months of issuance of the Project Certificate for the Whale Tail Pit Expansion Proposal and annually thereafter within its annual report to the NIRB

An up to date listing of the status of implementation for commitments made during the NIRB assessment is provided in Appendix 72 .

SECTION 12. POST-ENVIRONMENTAL ASSESSMENT MONITORING PROGRAM (PEAMP) – EVALUATION OF IMPACT PREDICTIONS

12.1 PURPOSE

According to Appendix D of Meadowbank's NIRB Project Certificate No. 004, the Post-Environmental Assessment Monitoring Program (PEAMP) is a conceptual program designed "*to work as an instrument of the proponent's overall monitoring efforts and should provide feedback to the NIRB and other agencies regarding ongoing project monitoring*." The goal of the PEAMP is to provide the NIRB and other regulatory agencies information on how actual environmental and socioeconomic effects of the Meadowbank mine site compare to impacts predicted in the Final Environmental Impact Statement (FEIS; Cumberland, 2005).

The objectives of the PEAMP as specified in Appendix D of the Project Certificate are to:

a) Measure the relevant effects of the project on the ecosystemic and socioeconomic environment(s). These effects may be measured through biophysical and socioeconomic monitoring programs undertaken by the Proponent or by other means as described in the Project Certificate;
b) Assess the accuracy of the predictions made within the FEIS;
c) Evaluate the effectiveness of project monitoring procedures and plans;
d) Identify impacts requiring additional mitigation or adaptive management; and
e) Provide relevant data and information to support regional monitoring initiatives where feasible.

Based on comments from the NIRB on Agnico Eagle's 2017 and 2018 PEAMP reports, and discussions by phone with NIRB representatives in November 2019, Agnico Eagle has revised the PEAMP to also more specifically address the following NIRB recommendations to:

1) Include a discussion that references the baseline and previous years' monitoring data and identifies any trends for each valued ecosystem component where an effect has been observed. Include this information in table and graphic format in order to clearly demonstrate what is being observed.

2) Identify instances where original and/or amended impact predictions can no longer be supported based on project experience to date and include an analysis of the effectiveness of management and mitigation strategies currently employed;

Agnico Eagle recognizes the following recommendation, but asserts at this time that it is not a requirement of the PEAMP according to the Project Certificate:

3) Include a summary of lessons learned from the Project to date which can be applied to both updating existing project plans and to any of Agnico Eagle's other planned or ongoing projects as applicable.

Beginning in 2019, Agnico Eagle extended the PEAMP to include the Whale Tail Pit Project, which is replaced by the Whale Tail Pit Expansion Project beginning in 2020. Measured impacts are compared to

those described in the FEIS for the Whale Tail Pit Project (Agnico Eagle, 2016) and the FEIS Addendum for the Whale Tail Pit – Expansion Project (Agnico Eagle, 2018), as appropriate.

This 2021 evaluation incorporates revisions to summary tables to provide a brief overview of results where FEIS predictions are not met or where further discussion is required, rather than just a reference to the full discussion section (per NIRB comments on the 2020 PEAMP, to facilitate the review process).

12.2 PEAMP EVALUATION

To fulfill Items A through D described in Appendix D of the Meadowbank Project Certificate No. 004, and in support of NIRB Recommendations 1 and 2 described above, a PEAMP evaluation has been carried out for each valued ecosystem or socioeconomic component (VC) identified in the FEIS documents for the Meadowbank Project and the Whale Tail Pit Project (Cumberland, 2005; Agnico Eagle, 2016; Agnico Eagle, 2018). A conceptual model of the PEAMP evaluation process is provided in Figure 44. This process involves five components, described below. After an initial review of the FEIS to identify and summarize impact predictions for the current project phase (Part 1), Parts 2 – 5 are repeated on an annual basis to form the evaluation.

Part 1: For each VC, predicted residual impacts are summarized for the current project phase. Residual impacts are those occurring after planned mitigation measures are implemented (a summary of the FEIS-planned mitigation measures for each VC is provided Part 5, along with a description of implementation in the current monitoring year). Only predicted residual impacts for which monitoring was recommended in the FEIS are summarized, since the PEAMP program focuses on evaluating monitoring results in relation to impact predictions.

Part 2: For each predicted impact, current-year results of the associated monitoring programs are reviewed and summarized. Future results will be added to these tables to ensure historical trends can be observed, even when predicted impacts are not exceeded in a given year.

Part 3: When current monitoring results do not support an impact prediction (i.e. current-year measured impacts are outside of the range of predicted impacts), a trend analysis is conducted to review baseline and all monitoring data to date. A discussion of those results is provided.

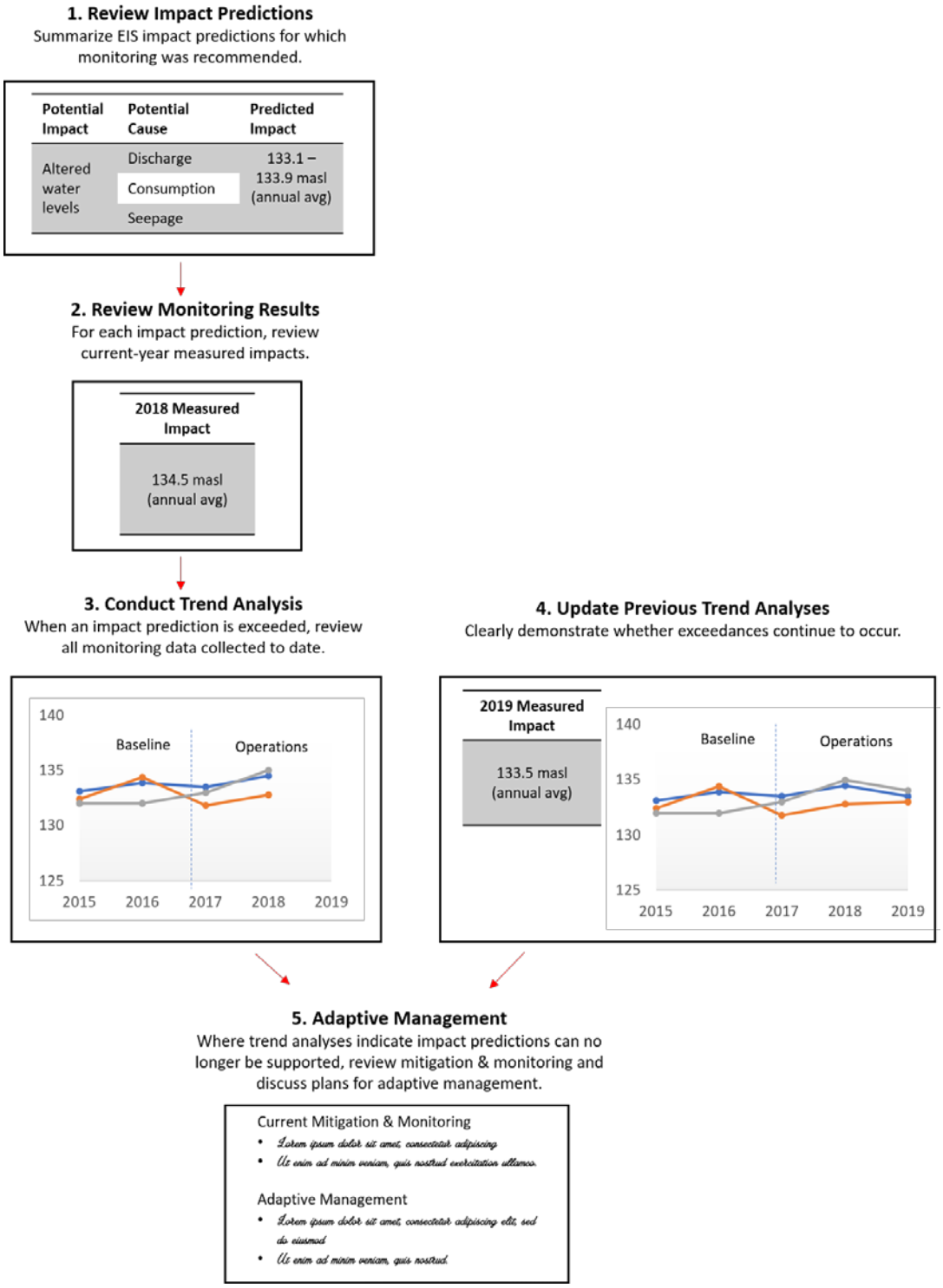
Part 4: Previously reported trend analyses are updated, regardless of current year monitoring results. In this way, discussions and trend analyses will be presented in the PEAMP moving forward for all instances where impact predictions have historically been exceeded on one or more occasions.

Part 5: Effectiveness of the monitoring programs at assessing impact predictions is discussed. A summary of the FEIS-planned mitigation measures for each VC is provided, along with a description of implementation in the current monitoring year. Where monitoring results indicate that impact predictions can no longer be supported, a description will be provided of the proposed adaptive management approaches.

It should be noted that the monitoring programs as described in the FEIS were developed at a conceptual level to assist in evaluating the overall potential impacts of the project. These were supporting documents in the FEIS and assisted in informing predictions, establishing regulatory limits, and forecasting management and mitigation actions to assist in the impact prediction process. Monitoring plans and

sampling locations have since undergone changes and revisions to reflect actual mine operations. These differences are taken into account and identified when making comparisons to FEIS predictions.

Figure 44 Conceptual model of the PEAMP evaluation process



12.3 SUMMARY OF IMPACTS

A summary of the predicted potential impacts for the Meadowbank site with references to the Project FEIS (Cumberland, 2005) are provided in Table 12-1.

A summary of the predicted potential impacts (primary effect pathways) for the Whale Tail site with references to the Project FEIS or FEIS Addendum (Agnico Eagle, 2016 or 2018) are provided in Table 12-2. Primary effect pathways are those pathways likely to result in a measurable change to measurement indicators that could contribute to residual effects on a VC relative to the Baseline Case or guideline values. Any change in quantitative impact predictions for Meadowbank site operations as a result of the Whale Tail Pit Expansion Project is described in the PEAMP evaluation sections below.

Table 12-1 Summary of FEIS VECs, potential impacts, and references for impact predictions for the Meadowbank project (as in Cumberland, 2005).

VEC	Summary of Potential Impacts	Reference (in Cumberland, 2005)
Surface water quantity	Reduced water level and flow in receiving lakes	FEIS, Section 4.21.2.3 FEIS App B, Table B4
Surface water quality	Contamination of receiving lakes	FEIS, Section 4.21.2.3 FEIS App B, Table B5 FEIS App E FEIS - WQ
Fish populations	Direct impacts through blasting. Indirect impacts through habitat changes.	FEIS, Section 4.21.2.7 FEIS App B, Table B13
Fish habitat	Direct impacts through habitat destruction or alteration. Indirect impacts through introduction of contaminants.	FEIS, Section 4.21.2.7 FEIS App B, Table B14
Vegetation (wildlife habitat)	Removal of plant cover, abrasion/grading, salt, dust, grey water release	FEIS, Section 4.21.2.4 FEIS App B, Table B6
Ungulates	Habitat loss, mortality	FEIS, Section 4.21.2.5 FEIS App B, Table B7
Predatory mammals	Habitat loss, mortality	FEIS, Section 4.21.2.5 FEIS App B, Table B8
Small mammals	Habitat loss, mortality	FEIS, Table 4.24 FEIS App B, Table B9
Raptors	Habitat loss, mortality	FEIS, Section 4.21.2.6 FEIS App B, Table B10
Waterfowl	Habitat loss, ingestion of contaminants, mortality	FEIS, Section 4.21.2.6 FEIS App B, Table B11
Other breeding birds	Habitat loss, mortality	FEIS, Section 4.21.2.6 FEIS App B, Table B12
Air Quality	Contamination of aquatic environment by dust. Contamination of terrestrial environment by dust. Poor air quality. Odours may attract scavengers. Production of greenhouse gases, other gaseous contaminants and particulate matter.	FEIS, Section 4.21.2.2 FEIS App B, Table B2
Noise	General disturbance of wildlife as a result of regular noises (behavioural changes, displacement). Reduced habitat effectiveness.	FEIS, Section 4.21.2.2 FEIS App B, Table B3

VEC	Summary of Potential Impacts	Reference (in Cumberland, 2005)
Permafrost	Thaw instability. Changes in permafrost depth in various areas (increase/decrease). Ice entrapment in tailings/reclaim.	FEIS, Section 4.21.2.1 FEIS App B, Table B1
Traditional Ways of Life (personal and community)	Reduced access to land. Reduction in traditional activities including harvesting. Undervaluing traditional ways and loss of knowledge.	FEIS Section 4.21.4.4 FEIS App B, Table B15
Employment, Training, and Business Opportunities	Financial expenditures of $23 million annually for 10 years. Employment of at least 60 workers. Goods and services contracts for local businesses. Overall increased economic activity, including indirect and induced effects. Increased capacity of local labour force to participate in formal economy. Increase in interest of school on part of youth. Increased individual, family, and community wellness.	FEIS Section 4.21.4.3 FEIS App B, Table B15
Wellness (personal and community)	Poor financial decision making. Increased income disparity. Increased public health and safety risks. Stress from rotational employment. Increased traffic accidents and emergencies. Disturbance by project activities.	FEIS Section 4.21.4.5 FEIS App B, Table B15
Infrastructure and social services	Shortage of housing and other infrastructure. Increased demand for social services.	FEIS Section 4.21.4.6 FEIS App B, Table B15
Sites of heritage significance	Potential degradation of historically significant sites.	FEIS Section 4.21.4.7 FEIS App B, Table B15
Contributions to economy of Nunavut and Canada	$92M annually during operations phase.	FEIS Section 4.21.4.8

Table 12-2 Summary of FEIS Addendum VCs and primary effects pathways (potential impacts) assessed in the FEIS Addendum for the Whale Tail project (Agnico Eagle, 2018). In some cases (where indicated), pathways were carried over from the Whale Tail Pit FEIS (Agnico Eagle, 2016) and were not re-assessed in the FEIS Addendum. *Reference in Agnico Eagle (2018) unless indicated.

VC	Primary Effect Pathways (Volume 3, Appendix 3-C)	Reference*
Surface Water Quantity	Project footprint, which will physically alter watershed areas and drainage patterns, may change downstream discharge, water levels, and channel/bank stability in streams, and affect water quality, fish habitat, and fish	Section 6.3.3.1
	Dewatering of lakes may change discharges, water levels, and channel/bank stability in receiving and downstream waterbodies, and affect water quality, fish and fish habitat	
	Alteration of watershed flow paths may change flows, water levels, and channel/bank stability in diverted and receiving waterbodies, and affect water quantity, water quality, fish and fish habitat	
Water Quality	Project footprint, which will physically alter watershed areas and drainage patterns, rates and quantities of diverted non-contact	Section 6.2.3

VC	Primary Effect Pathways (Volume 3, Appendix 3-C)	Reference*
	water to new watersheds, change downstream flows through flooding and dewatering, water levels, channel/bank stability in streams, and disturb lakes and may affect water quality and sediment quality	
	Water management activities (dams, drainage, diversion, discharge, and dewatering) that will alter natural drainage paths and create a reservoir may cause a change in mercury cycling and bioaccumulation	
	Activities from construction activities and mining operations (e.g., equipment, vehicles, buildings, open-pit mining, blasting) can create fugitive dust emissions and subsequent dust deposition may cause a change in water quality	
	Activities from construction activities and mining operations (e.g., equipment, vehicles, buildings, open-pit mining, blasting) can alter air and dust emissions (including Sulphur dioxide, nitrogen oxides, and particulate matter) and subsequent deposition may cause a change in water quality	
	Release of treated mine effluent (including sources from sewage, WRSF pond, and attenuation pond contact) may cause changes to surface water quality and sediment quality (i.e., nutrient and metal concentrations) in Mammoth Lake in operations and closure.	
	Dewatering of waterbodies may change flows, water levels, channel/bank stability, and water quality (e.g., suspended sediments, nutrients, metals) in receiving and downstream waterbodies.	
Hydrogeology & Groundwater	(No primary pathways were identified)	NA
Fish and Fish Habitat	The construction of the Northeast, Whale Tail, and Mammoth dikes, Whale Tail, and IVR Pit and WRSF for the Expansion Project, dewatering of the diked area in Lake A17 (Whale Tail Lake) and Lake A16 (Mammoth Lake), (and dewatering and use of Lake A53 as the IVR Attenuation Pond for the Expansion Project, will result in the direct loss or alteration of fish habitat.	Section 6.5.4.2.2
	The construction of the North-East, Whale Tail, and Mammoth dikes will alter access to tributary streams and lakes (i.e., habitat connectivity) in the LSA, and may result in habitat loss for Lake Trout, Arctic Char, and Round Whitefish.	FEIS Volume 6, Section 6.5.3.2.2 (Agnico Eagle, 2016)
	During the construction and operations of the Whale Tail, Mammoth, and WRSF dikes, water diversions will result in a reduction of water levels in Lake A16 (Mammoth Lake) and downstream locations, affecting fish and fish habitat.	Fish and Fish Habitat Section 6.5.4.2.2. and Surface Water Hydrology Section 6.3.3.1.2.2
	Water diversions for the Whale Tail and Northeast dikes during construction and operations will flood tributary lakes and streams, and will result in the alteration of habitat	FEIS Volume 6, Section 6.5.3.2.2 (Agnico Eagle, 2016) Whale Tail Pit Fish Habitat Offsetting Plan, Table B-2
	The dewatering of the diked area in Lake A17 (Whale Tail Lake) and Lake A16 (Mammoth Lake), and smaller waterbodies in the northeast area for the Expansion Project, will result in the removal and subsequent mortality of fish from the area during the proposed fish-out	Section 6.5.4.2.2
	Release of treated mine effluent (including sources from sewage, WRSF pond, and attenuation pond contact) may cause changes to surface water quality and sediment quality (i.e., nutrient and metal concentrations) in receiving environment lakes in operations and	FEIS Volume 6, Section 6.4.3.3 (water & sediment) and Section 6.5.3.3.2 (lower trophic

VC	Primary Effect Pathways (Volume 3, Appendix 3-C)	Reference*
	closure.	levels & fish) (Agnico Eagle, 2016) and Section 6.5.4.3
Terrestrial Wildlife and Birds	**Ungulates and Upland Birds:** Sensory disturbance from vehicles, on-site equipment, human presence and vibrations, can change the amount of different quality habitats, and alter wildlife movement and behaviour	Section 5.5.3
	Ungulates and Upland Birds: Direct loss and fragmentation of wildlife habitat from the Project footprint	
	Ungulates: Barriers to migration, which may affect population connectivity and distribution	
	Upland and Waterbirds: Destruction of nests and flooding from construction activities including increased flows or water levels can increase risk of mortality to individual birds, which can affect population sizes	
Noise	Noise emissions from vehicles on the haul road can increase ambient noise levels.	Section 4.4.3
	Noise emissions from mining equipment can increase ambient noise levels. Blasting can result in ground vibration and increase ambient noise levels.	
Air Quality and Climate	**Air Quality**: Vehicle emissions and fugitive dust from traffic on the haul road can affect air quality	Section 4.4.3
	Air Quality: Blasting, stationary and mobile combustion sources, and fugitive dust from mining activities in the Whale Tail Pit can affect air quality.	Section 4.4.3
	Climate: Additional 3 years of processing and use of supporting infrastructure at the Meadowbank mine site and the existing AWAR for delivery of materials can produce greenhouse gas emissions that contribute to climate change	Whale Tail Site: FEIS Addendum Section 4.2.3.1 Meadowbank Mill: FEIS Section 4.2.3.1 (Agnico Eagle, 2016)
Vegetation, Terrain, Permafrost & Soils	**Vegetation:** Physical loss of plants and vegetation communities due to project footprint or alteration of drainage patterns.	Section 5.4.3
	Vegetation: Dewatering of lakes and diversion of water may change downstream flows and water levels, affecting permafrost, soils, vegetation, and wildlife habitat	
	Vegetation: Air emissions, dust deposition, or chemical contamination on terrain, soils, and vegetation can potentially change the quality and/or chemical properties of soil and affecting vegetation. Dust deposition may cover vegetation and lead to physical and/or physiological damage.	
	Soil: Physical loss or alteration of terrain and soil from the Project footprint , impacting vegetation and available wildlife habitat.	Section 5.3.3.1
	Soil: Soil disturbance, stockpiling and transport can change physical, biological, and chemical properties of soils. Site clearing, contouring, excavation and decommissioning can cause admixing, compaction, and soil erosion and change soil quality.	
	Terrain and Soil: Physical changes, including degradation to the permafrost, terrain and soils in the area of the mine site footprint and supporting infrastructure (i.e., haul roads)	
	Terrain and Permafrost: Open Pit mining result in physical loss or permanent alteration of terrain, soils, and permafrost within the mined out areas. Permafrost degradation and retreat due to excavation of open pits and potential groundwater inflows to the open pit during operations if depth extends below the base of permafrost.	

VC	Primary Effect Pathways (Volume 3, Appendix 3-C)	Reference*
	Permafrost: Underground mining resulting in physical loss or permanent alteration of permafrost within the mined out areas. Permafrost degradation and retreat due to excavation of the mined out areas coupled with the inflow of groundwater to the underground operations, as the proposed underground operation will extend below the permafrost.	
Heritage Sites	(No primary pathways identified)	NA
Traditional Land Use	**Wildlife Harvesting**: Project activities may affect continued opportunities for traditional wildlife harvesting	FEIS Section 7.3.3.2 (Agnico Eagle, 2016)
	Fishing: Project activities Primary may affect continued opportunities for traditional fishing	Section 7.3.2.1.2
	Plant Gathering: Project activities may affect continued opportunities for traditional plant harvesting	FEIS Section 7.3.3.2 (Agnico Eagle, 2016)
	Culturally Important Sites: Project activities may affect continued opportunities for the use of culturally important sites	FEIS Section 7.3.3.2 (Agnico Eagle, 2016)
	Marine Resource Harvesting: Project activities may affect continued opportunities for traditional marine resource harvesting	Section 7.3.2.1.5
Socio-Economics	The Project will contribute to territorial economic activity via expenditures, procurement and Gross Domestic Product contributions	Appendix 7-B, Section 7-B-1.4.2
	The Project will contribute to government revenues through the payment of taxes and royalties	
	The Project will contribute to local business development through procurement and contacting	
	The Project will result in direct, indirect and induced employment opportunities	Appendix 7-B, Section 7-B-1.4.3
	The Project will result in direct, indirect and induced incomes	
	The Project will provide training opportunities for its workforce	
	The Project will contribute to community education	
	Project incomes may enhance individual and community wellness by providing access to education, nutritious food, and recreation, and by reducing poverty	Appendix 7-B, Section 7-B-1.4.4
	The Project may enhance individual and community wellness by continuing community contributions and the IIBA	
	The Project will continue existing individual and family wellness programming (e.g., EFAP)	
	The Project may improve health and safety awareness amongst employees, their families, and their communities	
	The Project may result in accidental injury or emergencies	
	Project incomes may adversely affect family and community cohesion through social ills (e.g., substance abuse, sexual misconduct, family violence, crime)	
	Project incomes may exacerbate income inequality, social disparity, and, potentially, related conflict in families and crime in communities	
	Project rotational employment may adversely affect family and community cohesion related to extended time away from family and community	
	Population growth and demographic change	Appendix 7-B, Section 7-B-1.4.5
	Change in demand for and availability of housing	
	Change in demand for and capacity of services and infrastructure	

12.4 MEADOWBANK PEAMP EVALUATION

For each VC, the completed PEAMP evaluation is presented in Sections 12.4.1 – 12.4.6, below, according to the six categories of assessment included in the FEIS (Aquatic Environment, Wildlife and Terrestrial Environment, Noise Quality, Air Quality, Permafrost, and Socio-Economics).

12.4.1 Aquatic Environment

Key mine development activities that could result in changes to the aquatic receiving environment include: East Dike construction (2008), Bay-Goose Dike construction (2009-10), Vault Dike construction (2013), dewatering of lakes and impoundments (2009-2011, 2013, 2016), effluent discharge (2012 to present), and dust-generating activities (e.g., roads, tailings storage, rock crushing, blasting, hauling; generally 2008 to present, though blasting ceased in 2019).

Within the FEIS, impacts to the aquatic environment potentially caused by these activities are described for water quantity, water quality, and fish/fish habitat. Predicted and measured residual impacts for each of these VCs are described below.

12.4.1.1 *Water Quantity*

12.4.1.1.1 Parts 1 & 2: Summary of Predicted and Measured Residual Impacts

A summary of predictions for impacts to surface water quantity (Cumberland, 2005; Table B4.2) and the assessed accuracy of these predictions in 2018 - 2021 (measured impacts) is provided in Table 12-3. Cells are highlighted in grey when measured impacts exceed predictions for the current year. A historical trend analysis and discussion are provided for those observations in Section 12.4.1.1.2. Future results will be added to that section to ensure historical trends can be observed, even when predicted impacts are not exceeded in a given year.

Table 12-3 Predicted and measured impacts to water quantity during the Operations period. Measured impacts exceeding or potentially exceeding predictions are shaded grey and further discussed in Section 12.4.1.1.2.

Potential Impact	Potential Cause(s)	Proposed Monitoring	Actual Monitoring	Predicted Impact	Measured Impact			
					2018	2019	2020	2021
Altered (reduced) water levels in Third Portage Lake	Potentially high seepage rates (from lakes into pits); Water diverted from Second Portage Lake drainage into TPL	Monitor pit seepage rates Monitor discharge volumes of non-contact water	Third Portage Lake levels monitored	No change in lake level (FEIS modeled range = 133.82 – 134.19 masl)	133.55 – 133.86 masl	133.46 – 133.74 masl	133.63 – 133.75 masl	133.68 – 133.84 masl
					FEIS prediction exceeded but no change from baseline - see discussion, Section 12.4.1.1.2			
	Freshwater consumption (Third Portage Lake)	Monitor freshwater use	Freshwater use monitored	FEIS: 0.53 M m^3/yr (Year 5 – 8) NWB Water License 2AM-MEA1530 Part E, Item 1: 4,935,000 m^3	1,027,159 m^3	2,229,589 m^3	2,182,836 m^3	1,113,897 m^3
	Discharge from Portage Attenuation Pond	Monitor discharge volumes and timing	Discharge volumes monitored	458,400 m^3/yr (max)	No discharge	No discharge	No discharge	No discharge
Altered water levels in Second Portage Lake	Potentially high seepage rates (from lakes into pits); Non-contact water diverted from Second Portage Lake drainage	Monitor pit seepage rates Monitor discharge volumes of non-contact water	Lake levels monitored	Minor effect on lake level (baseline = 133.1 masl)	132.86 – 133.10 masl	132.75 – 133.07 masl	132.84 – 133.17 masl	133.00 – 133.35 masl
					FEIS prediction not well defined – see discussion, Section 12.4.1.1.2			
Increased water levels in Wally Lake	Discharge from Vault Attenuation Pond	Monitor discharge rates	Monitored discharge rates and lake levels	Minimal increase in water levels. Total average annual discharge: ~456,450 m^3	No discharge; 139.25 - 139.66 masl	No discharge; 139.34 – 139.65 masl	No discharge; 139.31 – 139.64 masl	No discharge; 139.32 – 139.78 masl
					FEIS prediction not well defined – see discussion, Section 12.4.1.1.2			
Altered water levels in Turn Lake	Discharge from Phaser Lake for water management purposes during mining of Vault Pit	Monitor outflows at Turn Lake	Turn Lake water levels (2019+)	No significant impact	-	No discharge; 139.00 – 139.36 masl	No discharge; 139.01 – 139.31 masl	No discharge; 139.54 – 139.64 masl
					FEIS prediction not well defined – see discussion, Section 12.4.1.1.2			

12.4.1.1.2 Parts 3 & 4: Discussion

Where impacts are exceeded or potentially exceeded based on monitoring results (as identified in Parts 1 & 2, above), a discussion is provided here.

12.4.1.1.2.1 Changes in Lake Levels

FEIS Prediction:

Third Portage Lake - no change in lake levels (modeled range = 133.82 – 134.19 masl)

Second Portage Lake – minor change in lake levels (not quantitative)

Wally Lake – minor change in lake levels (not quantitative)

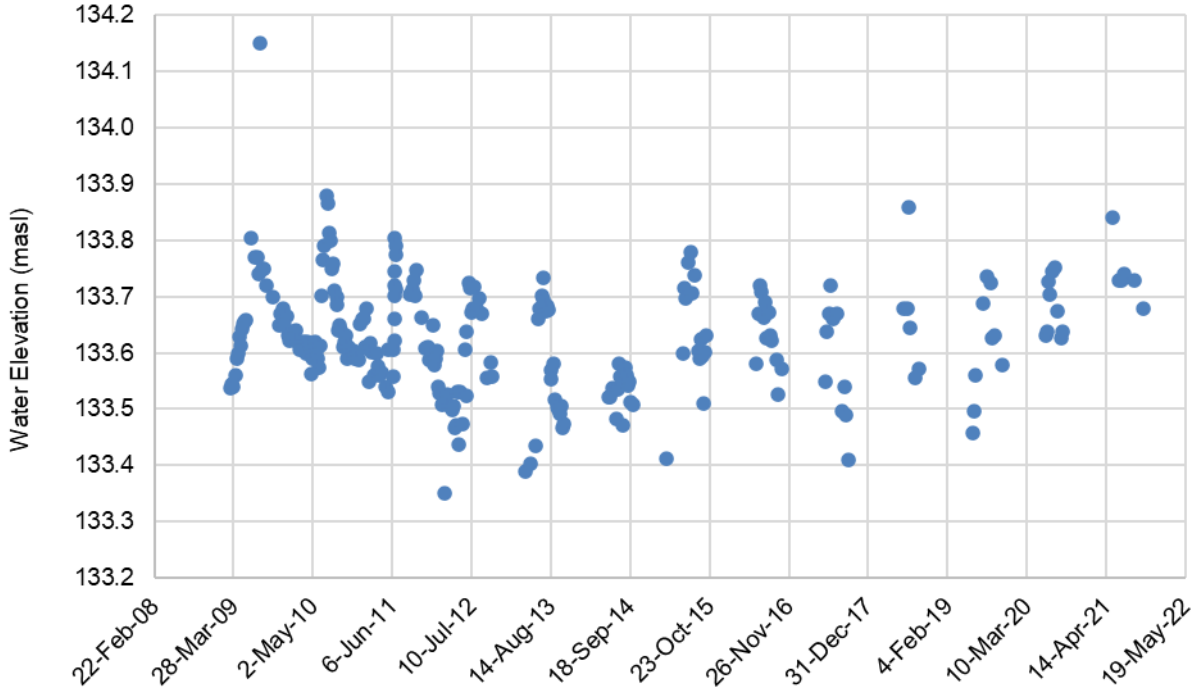
Turn Lake – no significant impact (not quantitative)

Discussion:

Third Portage Lake

Water usage predictions were made during the FEIS to predict potential impacts to water levels in Third Portage Lake, Second Portage Lake, and Wally Lake. Modeling predicted the natural range of water levels in Third Portage Lake to be 133.82 – 134.19 masl, and the impact assessment indicated that this range would not be exceeded (Physical Environment Impact Assessment Report, 2005). Although these values accounted for 1-in-100 yr precipitation or drought events, prior to operation, water levels were already below this range when monitoring began (prior to any significant freshwater consumption or discharge) on March 14th, 2009 (133.54 masl). Pumping rates of freshwater from Third Portage Lake have remained well within license limits, and water levels do not appear to have changed significantly since monitoring began (2009) (see Figure 45). Therefore, the Project does not appear to be having a significant impact on water quantity, rather baseline water levels may not have been well defined in the initial impact assessment.

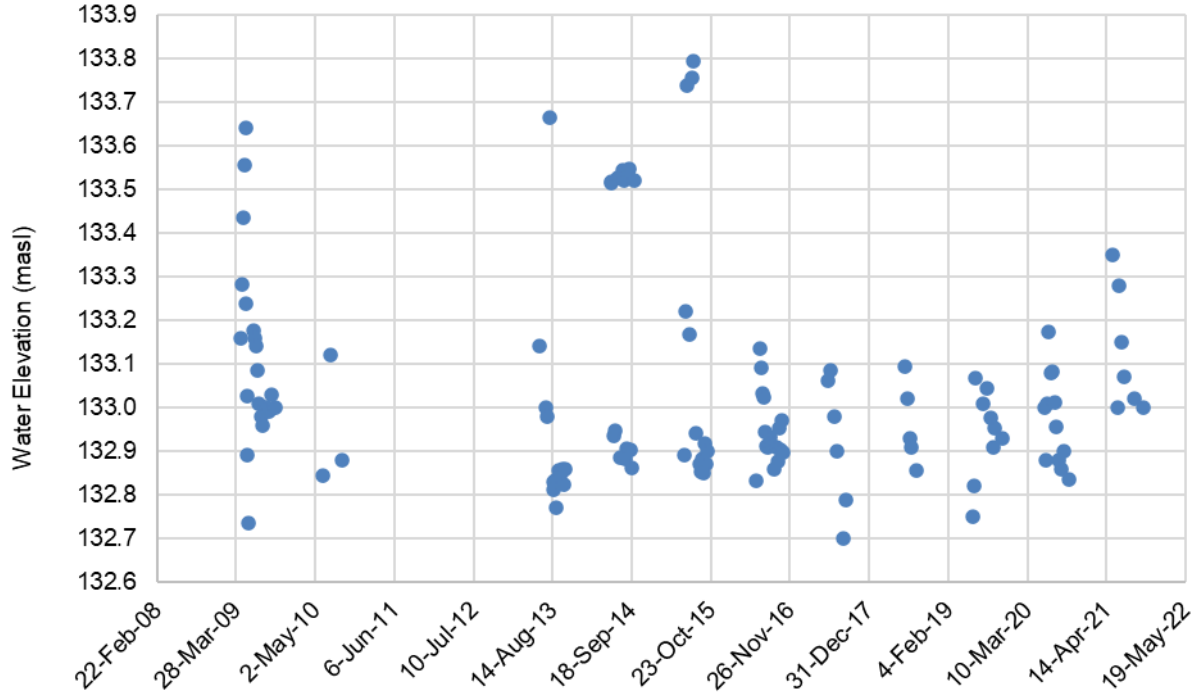
Figure 45 Measured water levels in Third Portage Lake (2009 – 2021)



Second Portage Lake

For Second Portage Lake, the FEIS predicted a “minor” effect on water levels. Since that prediction is not quantitative, historical measurements are reviewed here to identify any apparent trends that might arise. Although only one measurement of baseline water levels in Second Portage Lake was reported from 2005 in the FEIS (133.1 masl), making comparisons difficult, measured water levels since 2009 (when monitoring began) appear to be within this range (Figure 46).

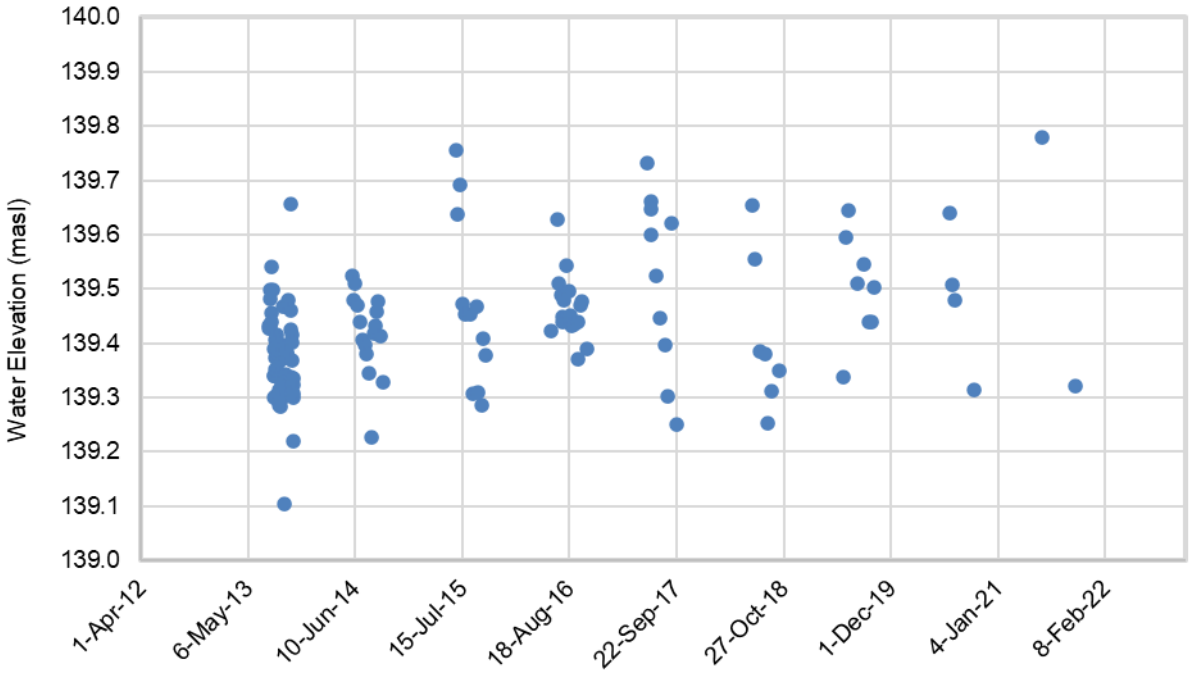
Figure 46 Measured water levels in Second Portage Lake (2013-2021)



Wally Lake

For Wally Lake, the FEIS predicted a “minimal” increase in water levels. Since that prediction is not quantitative, historical measurements are reviewed here to identify any apparent trends that might arise. No baseline measurements are available for Wally Lake, but since monitoring was required to begin in 2013, no clear upward or downward trends are observed (Figure 47).

Figure 47 Measured water levels in Wally Lake (2013-2021)



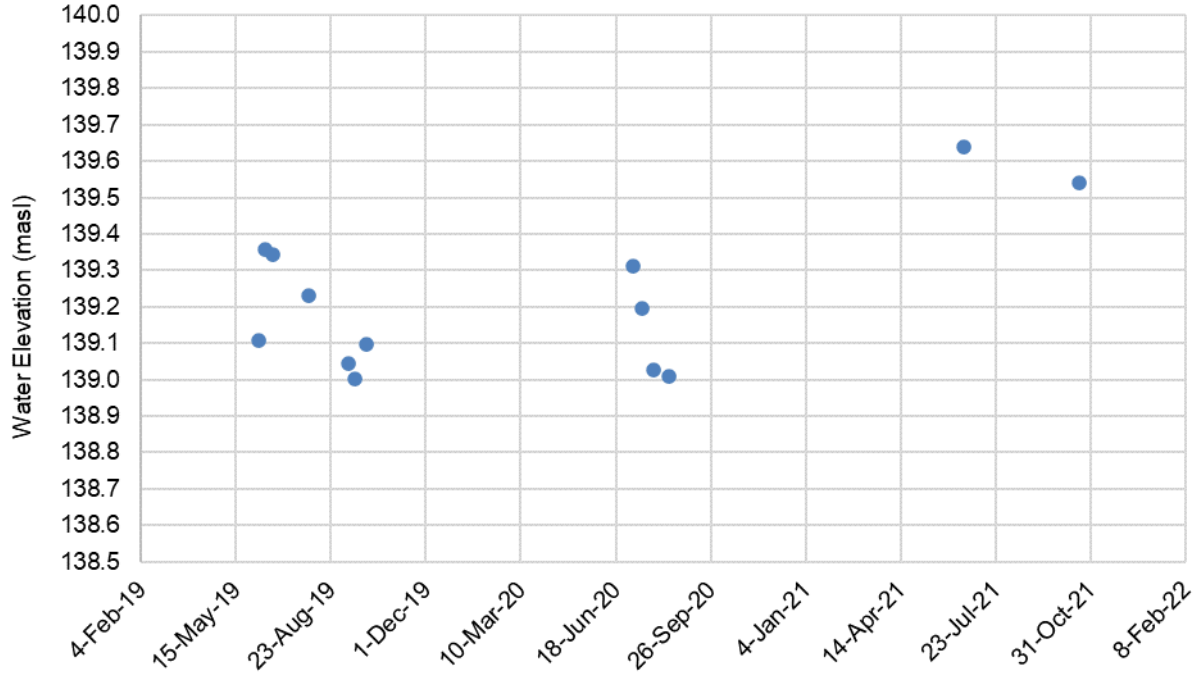
Turn Lake

In the original site FEIS (Cumberland, 2005) water management plans called for discharge from Phaser Lake to Turn Lake during mining of the Vault Pit. No significant impacts on water levels in Turn Lake were anticipated, but monitoring of outflows was recommended. However, in 2015, an FEIS Addendum was submitted to NWB as part of the permitting process for the Vault Pit expansion into Phaser Lake. Under that mine and water management plan, discharge to Turn Lake was no longer required, eliminating the potential residual impact of that activity and requirements for monitoring in Turn Lake.

However, in 2019, following recommendation from CIRNAC regarding the 2018 Annual Report, Turn Lake water level monitoring in the next open water season was completed, reported and compared to predictions.

No baseline water levels were provided in the 2005 FEIS or 2015 FEIS Addendum for Turn Lake so 2019 was the first year for which measurements are available (Figure 48). Similar water levels were observed in 2021.

Figure 48 Measured water levels in Turn Lake (2019-2021)



12.4.1.1.3 Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management

Effectiveness of Monitoring

Although FEIS predictions for changes to surface water quantity were rarely quantitative, the monitoring programs being implemented at the Meadowbank site are able to measure changes in receiving environment water levels. Monitoring programs are therefore considered effective.

Effectiveness of Mitigation

A summary of the FEIS-planned mitigation measures for surface water quantity along with a commentary on implementation in 2021 is provided in Table 12-4. Mitigation measures related to water quality and fish and fish habitat are provided in Section 12.4.1.2 and 12.4.1.3, respectively.

Since no exceedances of FEIS predictions or updated license limits occurred, existing mitigation measures are considered to be effective as designed.

Table 12-4 Mitigation measures described in the FEIS to reduce impacts of the project to water quantity and commentary on current implementation

Planned Mitigation Measure (FEIS, Section 4.24.2.5)	Implementation (2021)
Reducing the intake of fresh water from the neighbouring lakes by recycling and reusing water where practicable	**Yes** - Meadowbank continues to recycle reclaim water for mill usage.

Adaptive Management

Since no exceedances of FEIS predictions or updated license limits occurred, existing mitigation measures are considered to be effective as designed, and no adaptive management measures are proposed for 2022.

12.4.1.2 *Water Quality*

12.4.1.2.1 Parts 1 & 2: Summary of Predicted and Measured Residual Impacts

Aspects of the mine that were identified in the FEIS as potentially leading to significant impacts to water quality during operations (Cumberland, 2005; Table B5.2) are summarized Table 12-3, along with results of the monitoring programs aimed at assessing these impacts. This assessment focuses on comparing current measured effects with predicted impacts described in the Physical Environment Impact Assessment Report (2005) for receiving environment water quality. Associated monitoring programs are the CREMP and effluent monitoring under the MDMER.

The 2021 CREMP report (Appendix 33) provides a comprehensive assessment of water quality monitoring for the receiving environment, with analysis of inter-annual trends, and a comparison to site-specific trigger values and FEIS predictions. Those results are summarized and referenced here. Complete results of effluent monitoring under the MDMER are provided in Section 8.3 above.

Overall, the FEIS predicted a “low” impact on the receiving environment water quality, which was designated by <1x change in CCME Water Quality Guidelines (CWQG), and no exceedances of MDMER/NWB Water License criteria. Monitoring results are compared to those predictions in Table 12-5 below. If exceedances occurred, cells are highlighted in grey and a discussion is provided in Section 12.4.1.2.2.

In addition, annual Meadowbank CREMP water chemistry data were compared to the maximum whole-lake average water quality modelling predictions for Third Portage, Second Portage, and Wally Lakes made in the FEIS (see 2021 CREMP report; Appendix 33). Exceedances of these model predictions are noted in Table 12-5, and a full discussion is provided in Section 12.4.1.2.2.

Table 12-5 Predicted and measured impacts to water quality. Measured impacts exceeding or potentially exceeding predictions are shaded grey and further discussed in Section 12.4.1.2.2. Potential impacts as described in Cumberland, 2005; Table B5.2 and the Physical Environment Impact Assessment Report (2005) for receiving environment water quality

Potential Impact	Potential Cause(s)	Proposed Monitoring	Actual Monitoring	Predicted Impact	Measured Impact			
					2018	2019	2020	2021
Impaired Wally Lake water quality	Vault attenuation pond effluent discharge; dike leaching	Effluent and receiving environment monitoring	Receiving environment: CREMP water quality monitoring	CREMP results <CWQG except arsenic and cadmium.	CREMP results all <CWQG			
				Measured concentrations within model predictions	Some exceedances of specific model predictions but still "low" significance of impact - see discussion Section 12.4.1.2.2			
			Effluent monitored under MDMER, NWB Water License	Effluent: <MDMER	No effluent discharged.			
Impaired Second Portage Lake water quality	Portage Attenuation pond effluent discharge; dike leaching (East Dike seepage)	Effluent and receiving environment monitoring	Receiving environment: CREMP water quality monitoring	CREMP results <CWQG except cadmium	CREMP results all <CWQG			
				Measured concentrations within model predictions	Some exceedances of specific model predictions but still "low" significance of impact - see discussion Section 12.4.1.2.2			
			Effluent monitored under MDMER, NWB Water License	<MDMER, NWB Water License	All effluent <MDMER and NWB Criteria			Two marginal exceedances (17.5 and 16 mg/L) of MDMER max. monthly avg. for TSS (15 mg/L) – see Section 12.4.1.2.2
Impaired Third Portage Lake water quality	Portage Attenuation pond effluent; dike leaching	Effluent and receiving environment monitoring	Receiving environment: CREMP water quality monitoring No effluent monitoring required.	CREMP results <CWQG except cadmium	CREMP results all <CWQG			
				Measured concentrations within model predictions	Some exceedances of specific model predictions but still "low" significance of impact - see discussion Section 12.4.1.2.2			

12.4.1.2.2 Parts 3 & 4: Discussion

Where impacts are exceeded or potentially exceeded based on monitoring results (as identified in Parts 1 & 2, above), a discussion is provided here.

12.4.1.2.2.1 FEIS Model Predictions for Water Quality

FEIS Prediction: Concentrations <CCME water quality guidelines; "low" magnitude of effects.

Discussion: As described in the 2018 - 2021 CREMP Reports, a number of measured parameters have exceeded FEIS water quality model predictions when these individual values are compared directly. However, the difference in spatial focus (i.e., the CREMP at the basin scale and the water quality model at the whole-lake scale) warrants caution interpreting any differences. To that end, the assessment criteria outlined in the FEIS for defining the predicted magnitude of impacts to water quality was used to provide the appropriate context for interpreting measured water quality results in comparison to FEIS water quality model predictions as follows:

- **Negligible**: water quality concentrations are similar to baseline
- **Low**: concentrations are < 1x the CCME Water quality guideline (WQG)
- **Medium**: concentrations are between 1 and 10-times the CCME guidelines
- **High**: concentrations are less than MDMER but greater than 10-times the CCME guidelines
- **Very High**: concentrations exceed MDMER standards

Where CREMP monitoring results have exceeded FEIS water quality model predictions but did not exceed CCME water quality guidelines, CREMP thresholds, or otherwise determined adverse effects levels (as detailed below), they were still considered to have a "low" magnitude of impact, consistent with general FEIS predictions. Beginning in 2020, annual means have been formally screened against FEIS predictions, rather than comparisons for all individual monthly samples.

Similar to previous years, parameters with annual means exceeding concentrations predicted in the FEIS water quality model in 2021 were: ionic compounds (calcium and magnesium), hardness, and total alkalinity. Concentrations for these parameters in 2021 along with FEIS predictions are shown in Table 4-6 of the 2021 CREMP Report (Appendix 33), and results are further discussed with historical figures, below.

Measured values of these parameters (calcium, magnesium, hardness, total alkalinity) also regularly exceeded FEIS predictions from 2018 - 2020. Historical results for these constituents are shown in Figures 49 - 52 below, from the 2021 CREMP Report (Appendix 33). These water quality constituents do not have CCME guidelines and therefore the magnitude of significance was not explicitly predicted in the FEIS. A thorough review of the literature (2019 CREMP Report, Appendix J) suggests that the observed concentrations of these parameters are well below levels of concern for aquatic life. Therefore, following the intent of the FEIS magnitude ratings, these constituents would be considered consistent with a "low" magnitude of impact, because measured values regularly exceed baseline concentrations but are below concentrations associated with adverse effects.

Additional historical exceedances of FEIS predictions include annual means for chloride, fluoride, and sulphate, and individual samples of ammonia, nitrate, and total phosphorus for Third Portage Lake, Second Portage Lake, and Wally Lake in 2020. These same parameters had occasional exceedances in 2018 and 2019. For chloride, fluoride, and sulphate, historical results are shown in Figures 53 - 55, from the 2021 CREMP Report. For these parameters, results (annual means) did not exceed CREMP triggers (95^{th} percentile of baseline) indicating current concentrations are representative of pre-development conditions so these constituents are also considered to represent a “low” magnitude of impact. Consistent with the 2021 CREMP methods for FEIS comparison, the isolated exceedances for ammonia, nitrate, and total phosphorus are not explored further, because mean annual concentrations were below FEIS predictions. Historical results for these parameters are provided in the 2021 CREMP Report.

Most metals have been measured at concentrations less than the FEIS model’s predicted concentrations except for silicon (all three lakes, 2018 - 2021), strontium (Third Portage Lake, 2018 - 2020) and isolated instances of aluminum, copper, iron, manganese (2018 and 2019), silver (2018) and chromium (2019). As discussed in the 2019 -2021 CREMP reports, silicon and strontium are not suitable for evaluating the accuracy of the FEIS predictions, and are therefore both excluded from the FEIS assessment. Consistent with the 2021 CREMP methods for FEIS comparison, the isolated instances of exceedances for other metals are not explored further, because mean annual concentrations were below FEIS predictions.

Based on these analyses, overall, CREMP water quality results were determined to be consistent with the “low” significance (i.e., <1x CCME WQG) rating applied to model predictions in the FEIS.

Historical results for all other water quality parameters measured under the CREMP are provided in the 2021 CREMP Report (Appendix 33).

Figure 49 Total calcium (mg/L) in water samples from Meadowbank study lakes since 2006. Note: The red dashed line = CREMP trigger value and blue dashed line = FEIS screening prediction.

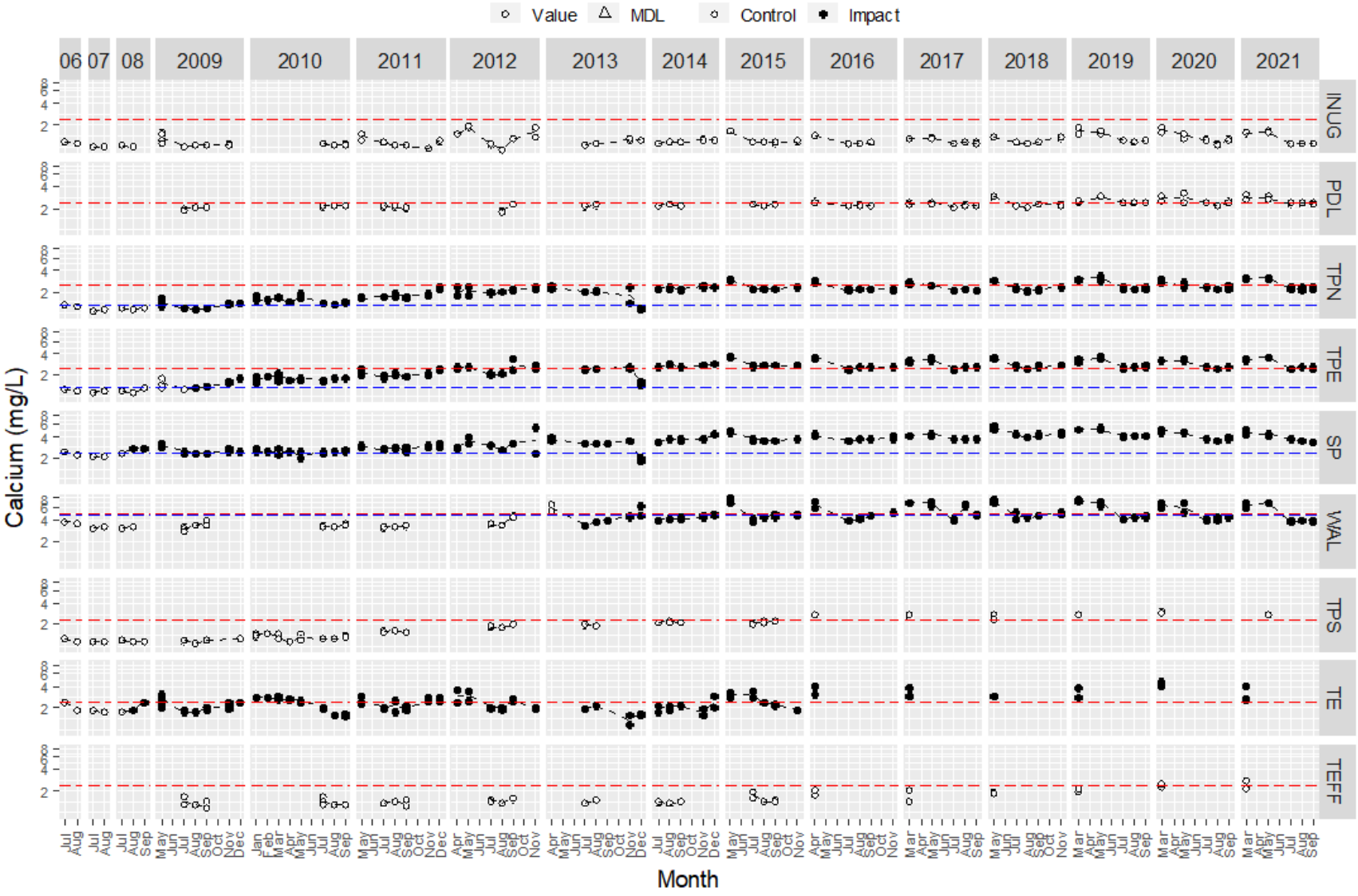


Figure 50 Total magnesium (mg/L) in water samples from Meadowbank study lakes since 2006. Note: The red dashed line = CREMP trigger value and blue dashed line = FEIS screening prediction.

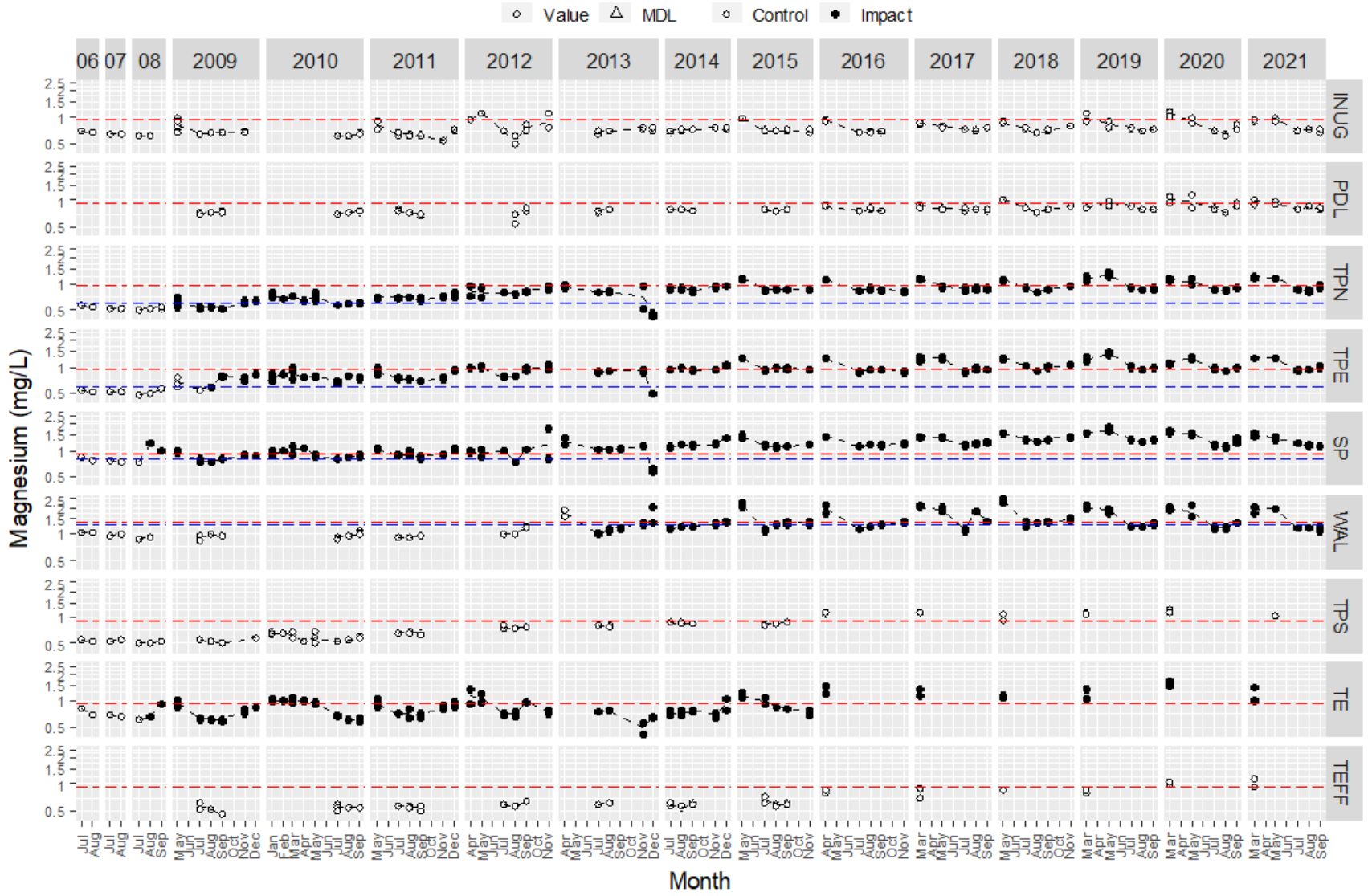


Figure 51 Laboratory-measured hardness (mg/L) in water samples from Meadowbank study lakes since 2006. Note: The red dashed line = CREMP trigger value and blue dashed line = FEIS screening prediction.

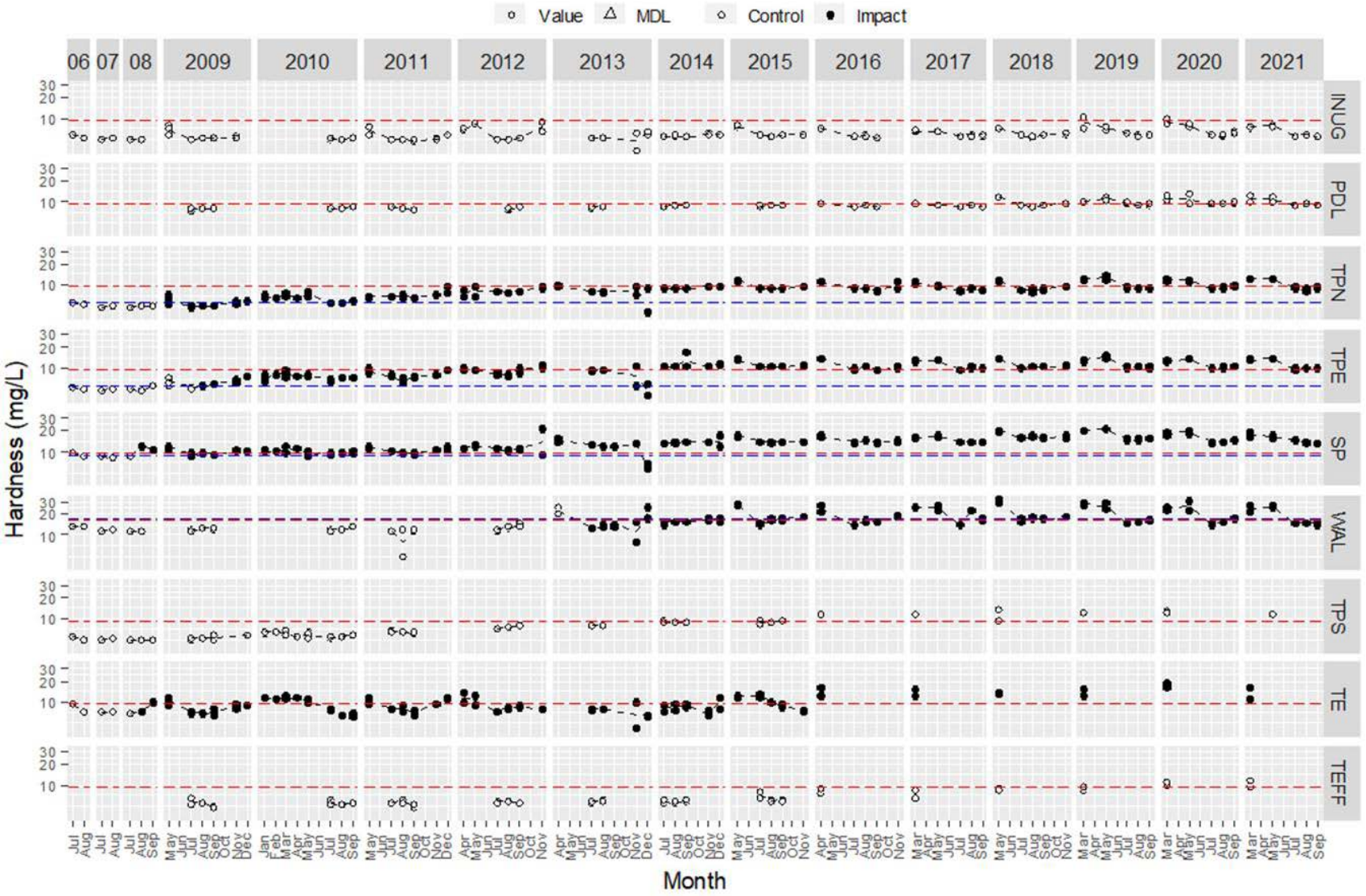


Figure 52 Total alkalinity (mg/L) in water samples from Meadowbank study lakes since 2006. Note: The red dashed line = CREMP trigger value and blue dashed line = FEIS screening prediction.

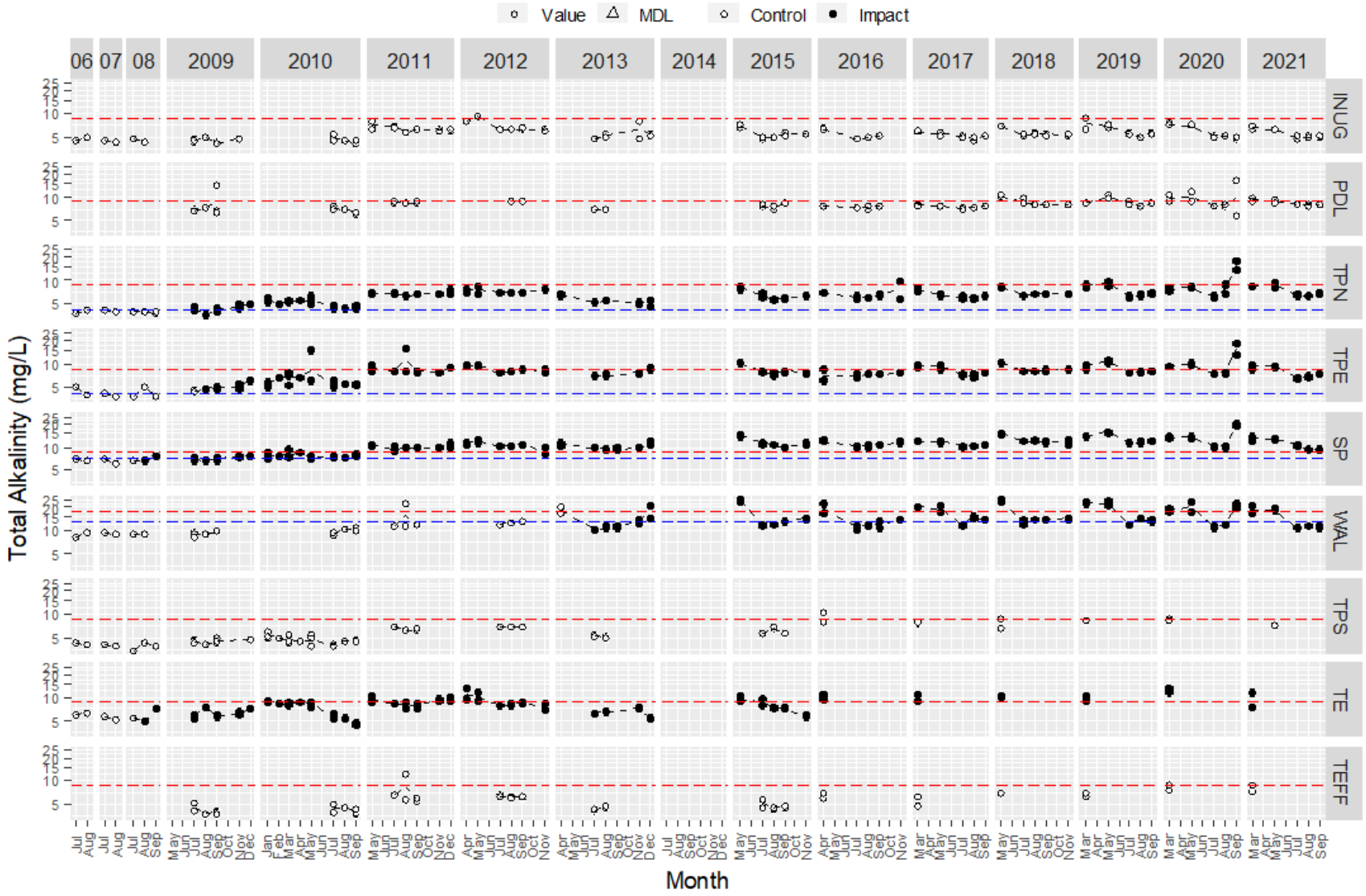


Figure 53 Chloride (mg/L) in water samples from Meadowbank study lakes since 2006. Note: The red dashed line = CREMP trigger value and blue dashed line = FEIS screening prediction

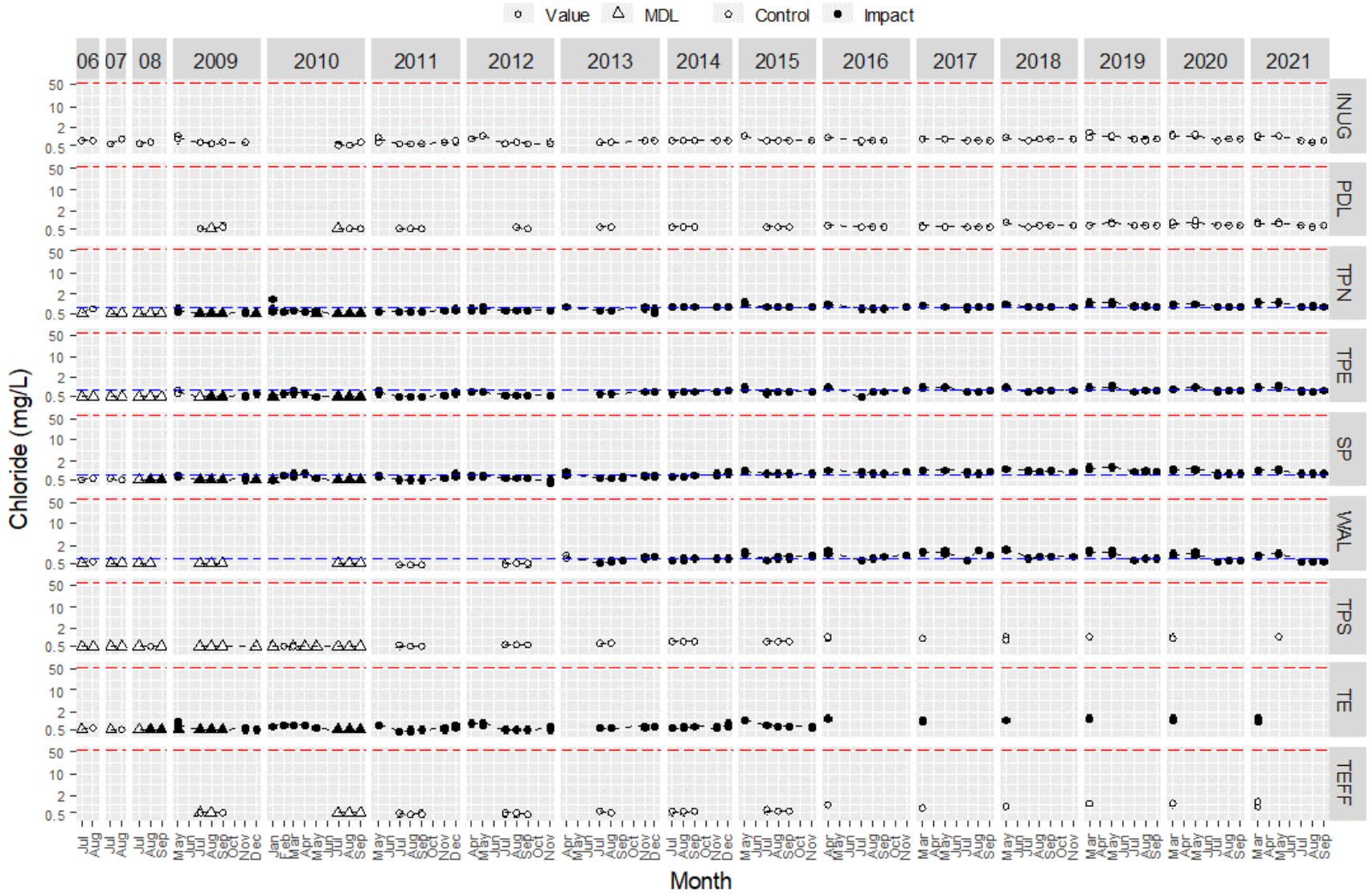


Figure 54 Fluoride (mg/L) in water samples from Meadowbank study lakes since 2006. Note: The red dashed line = CREMP trigger value and blue dashed line = FEIS screening value

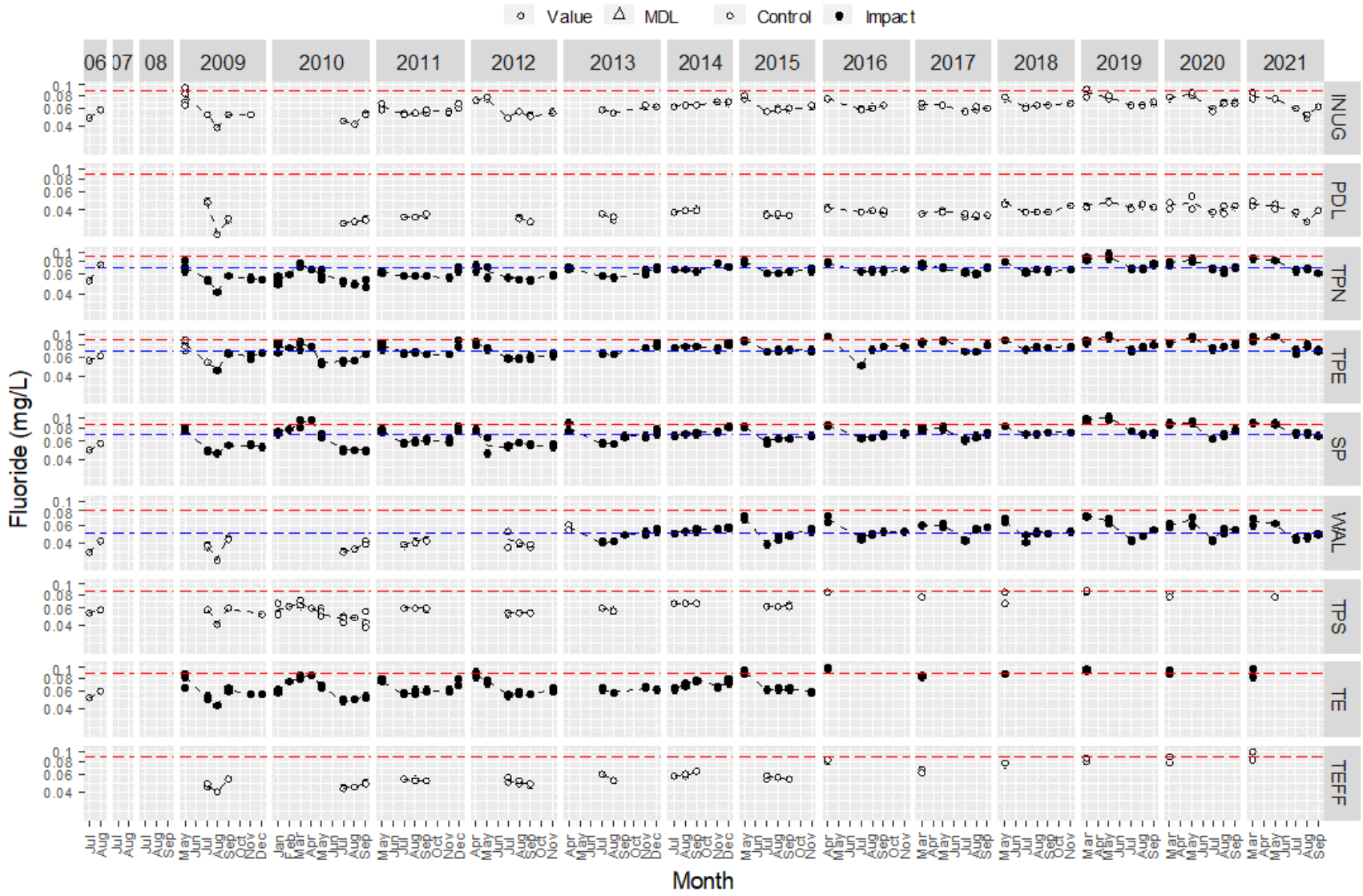
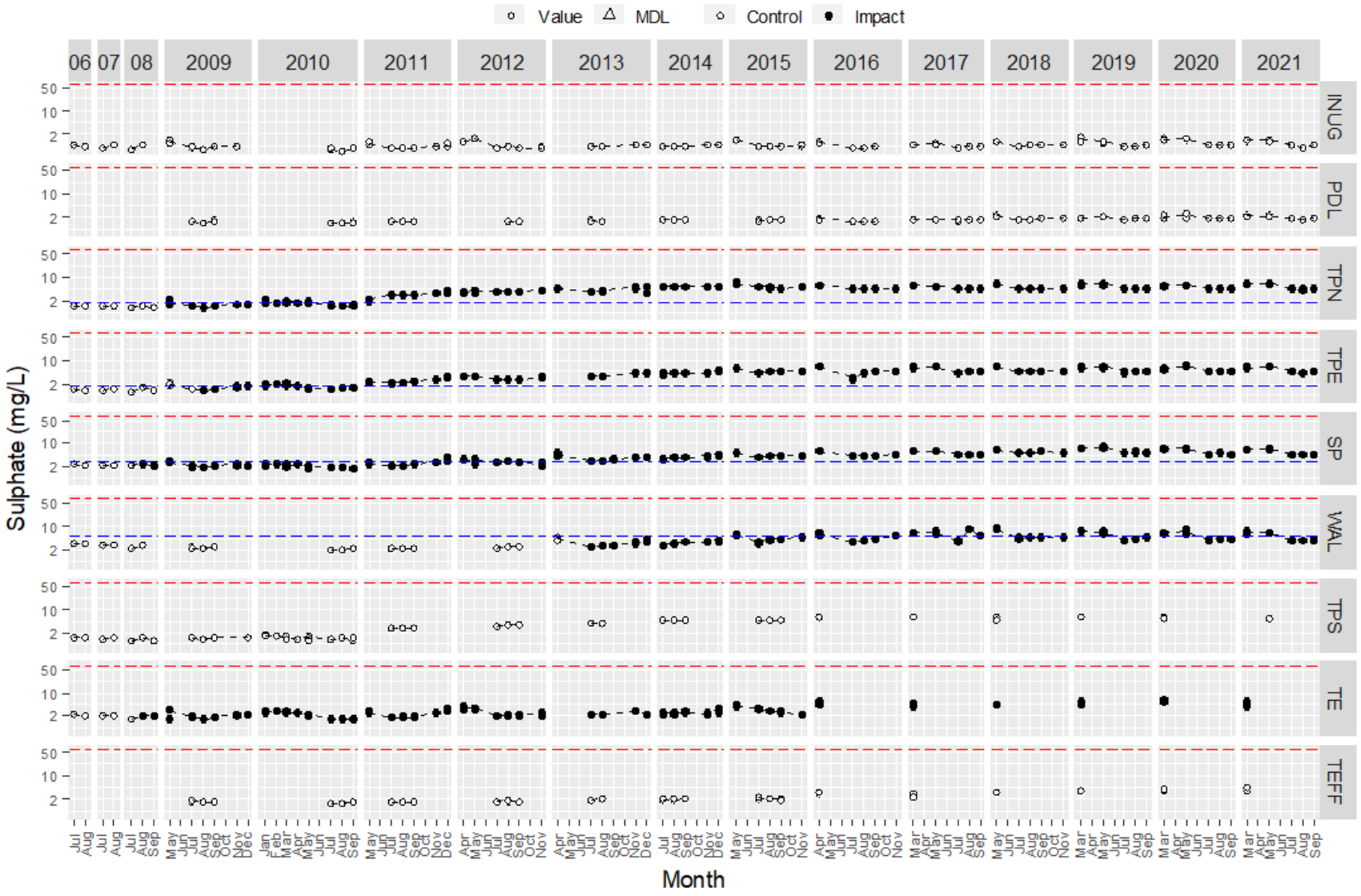


Figure 55 Sulphate (mg/L) in water samples from Meadowbank study lakes since 2006. Note: The red dashed line = CREMP trigger value and blue dashed line = FEIS screening value



12.4.1.2.2.2 MDMER Criteria for TSS

Effluent discharge for the Meadowbank site in 2021 only consisted of East Dike seepage discharge (station ST-8/ST-MMER-3) to Second Portage Lake. Discharge occurred January 1st to April 5th, April 26th to May 6th, and December 9th to December 31st. Due to increased TSS levels in April and May, the discharge to Second Portage Lake was stopped. All water was diverted to the pits, as done in the past. Agnico Eagle continued to monitor TSS and restarted the discharge to Second Portage Lake on December 9th.

There were two exceedance of the TSS MDMER/Water License limit:

- In April 2021, two weekly effluent samples were collected at ST-8/ST-MMER-3 during the month. The TSS results did not exceed the maximum allowable grab sample concentration (30 mg/L), however the maximum monthly average concentration (15 mg/L) permitted by the Water License, Part F, Item 7 and MDMER was exceeded at 17.5 mg/L. Agnico Eagle did not suspect the April 29th result to be at the grab concentration limit set out in the Water License/MDMER as the internal result for this day was determined to be at 10 mg/L and thus Agnico Eagle did not suspect any potential non-compliance to the maximum allowable monthly mean concentration. The ECCC inspector was advised on May 20th, 2021.

- In May 2021, two weekly effluent samples were collected at ST-8/ST-MMER-3 during the month. The TSS results did not exceed the maximum allowable grab sample concentration (30 mg/L), however the maximum monthly average concentration (15 mg/L) permitted by the Water License, Part F, Item 7 and MDMER was exceeded at 16 mg/L. Historically, the East Discharge effluent has been stopped prior to freshet each spring to prevent any TSS exceedances. As a precautionary measure, the East Dike Discharge was stopped on May 6th, 2021. An exceedance notification was submitted to ECCC on May 20th, 2021.

Based on the infrequency of MDMER TSS exceedances (2021 is the first instance in the 4 years of this PEAMP format) and no exceedances of TSS triggers in the receiving environment (CREMP), this incident is not viewed as a significant departure from impact predictions.

12.4.1.2.3 Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management

Effectiveness of Monitoring

Based on the results in Table 12-5, current monitoring programs are able to address all FEIS impacts for which monitoring was recommended (i.e. monitoring is considered effective).

Effectiveness of Mitigation

A summary of the FEIS-planned mitigation measures for surface water quality, along with a commentary on implementation in 2021 is provided in Table 12-6. Mitigation measures related to water quantity, and fish and fish habitat are provided in Section 12.4.1.1 and 12.4.1.3, respectively, though some overlap may occur.

Table 12-6 Mitigation measures described in the FEIS to reduce impacts of the project to water quality, and commentary on current implementation

Planned Mitigation Measure (FEIS, Section 4.24.2.5)	Implementation (2021)
Implementing measures to avoid the contact of clean runoff water with areas affected by the mine or mining activities	**Yes** - Management of non-contact water occurs through use of established diversion ditches, which are monitored according to NWB Water License requirements.
Collecting, transporting, and treating mine water, camp sewage, and runoff water that comes into contact with project activities, as necessary	**Yes** - A comprehensive management program for site contact water and sewage is ongoing as described in Section 8.5.3. Monitoring occurs according to NWB Water License requirements.
Managing potentially acid-generating or metal-leaching materials	**Yes** – Waste rock analysis and management according to acid-generating and metal-leaching potential is described in Section 5.1.
Monitoring quality of discharges	**Yes** – Minesite effluent is monitored according to NWB/MDMER criteria, as described in Section 8.3.
Adjusting management practices if monitoring results indicate discharge quality does not meet discharge criteria	**Yes** – In cases where discharge criteria are not met, discharge is ceased until results are within acceptable limits. E.g. Section 8.3.1.
Winter culvert installation	**N/A** – no new construction in 2021
Sediment control (e.g. use of geotextile for Baker Lake marine barge landing facility)	**Yes -** deployment of sediment control measure
Use of riprap to stabilize shorelines around culverts and anchor pipes	**N/A** – no new construction in 2021
Treatment of effluent discharge	**Yes** – Minesite effluent is monitored according to NWB/MDMER criteria, as described in Section 8.3. No treatment required for TSS prior to release for East Dike discharge
Discharge only during open water, not under ice (Attenuation Pond discharge to Third Portage Lake)	**N/A** - Attenuation pond discharge is no longer occurring

Adaptive Management

FEIS Water Quality Model Prediction Exceedances: Historically and in 2021, a number of water quality parameters without regulatory guidelines exceeded CREMP trigger values. As an adaptive management measure described in the 2018 PEAMP, a more detailed assessment of the significance of changes in these water quality parameters was conducted in the 2019 CREMP Report (Appendix 35 of the 2019 Annual Report to the NIRB). In general, it was found that these parameters all represent essential elements, and adverse effects are more commonly associated with deficiency, rather than enrichment. The 2019 CREMP analysis therefore supported the ongoing assertion that water quality results continue to represent a “low” magnitude of impact and no exceedance of overall FEIS predictions is occurring. As an additional adaptive management measure, Agnico Eagle committed in 2018 to developing CREMP triggers for those elements which are exceeding FEIS water quality model predictions (e.g. silicon in 2018), but for which no CCME guidelines or CREMP triggers already exist. This task was completed and is described in the 2019 CREMP report. No supplemental mitigation is planned at this time.

MDMER TSS Exceedances: As discussed above, current management for effluent includes onsite TSS testing to inform the need to stop discharge prior to receiving results from the analytical laboratory. As a further proactive management measure, effluent discharge is stopped prior to freshet to prevent TSS release to the receiving environment. Since exceedances in 2021 were marginal, and since EEM toxicity testing did not indicate any potential for sublethal or acute effects (Section 8.3.1), and since CREMP triggers for TSS were not exceeded in Meadowbank lakes (2021 CREMP Report - Appendix 33), no changes to management actions related to East Dike effluent discharge are planned.

12.4.1.3 *Fish and Fish Habitat*

12.4.1.3.1 Parts 1 & 2: Summary of Predicted and Measured Residual Impacts

In addition to water quality and quantity, monitoring programs were developed to address the impacts of mining activities to fish and fish habitat. These are primarily guided by Fish Habitat Offsetting Plans and No Net Loss Plans (NNLP) and associated aquatics monitoring (e.g. CREMP, Habitat Compensation Monitoring Plan, Blast Monitoring Plan). Results of these programs are summarized in relation to FEIS predictions for impacts to fish and fish habitat (Cumberland, 2005; Table B13.2) in Table 12-7, below.

Table 12-7 Predicted and measured impacts to fish and fish habitat. Measured impacts exceeding or potentially exceeding predictions are shaded grey and further discussed in Section 12.4.1.3.2. Potential impacts according to Cumberland, 2005; Table B13.2. NM indicates not required to be measured

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted	Predicted Impact in FEIS	Measured Impacts			
					2018	2019	2020	2021
Loss/impairment of fish habitat	Construction of temporary and permanent in-water features (e.g. TSF, dikes, pits).	Monitoring of compensation features per NNLP (targeted studies under AEMP for dike "pore water" (interstitial water) quality, periphyton growth, fish use).	Structure, interstitial water quality, periphyton growth, fish use under HCMP	Dikes will provide a medium for lower trophic growth; habitat for non-spawning life functions except Goose Island dike where spawning may occur.	NM	Compensation features appear to be functioning as intended (continuing periphyton growth, fish presence around dikes). Interstitial water quality not assessed in 2019.	NM	Compensation features appear to be functioning as intended (water quality <CCME; continuing periphyton growth; fish presence around dikes).
	Construction of barge facility in Baker Lake	Annual monitoring of shoreline stability and integrity (proposed 2016)	CREMP monitoring at Baker Lake barge dock	Negligible impact	No impacts of barge activity on water quality, sediment quality, phytoplankton, benthic invertebrates observed to date.			
Reduced fish egg survival	Metals and particulates from dike leachate, effluent, and road dust. Blasting	Dike leachate: Targeted studies under AEMP ("pore water" (interstitial water) sampling during year 1 Effluent: Water quality monitoring under MDMER. Dust: Whole-lake water quality under CREMP Blasting: Blast monitoring	Dike leachate: Interstitial water quality under HCMP Effluent: MDMER monitoring Dust: Whole-lake water quality under CREMP Blasting: Blast monitoring	Dike leachate: Dissolved metals may reduce fish egg survival and larval development during overwinter incubation. Effluent: <MDMER regulations Dust (whole-lake water quality under CREMP): negligible ecological effect, <CWQG for aquatic life (CCME) except cadmium (TPL),	Dike leachate: NM Effluent: < MDMER Dust: CREMP results <CWQG Blasting: No exceedances of DFO overpressure guideline (50 kPa); no exceedances of PPV guideline (13 mm/s)		Dike leachate: NM Effluent: < MDMER Dust: CREMP results <CWQG Blasting: NM - mining operations ceased in 2019	Dike leachate (interstitial water quality): <CCME Effluent: <MDMER except April & May (marginal exceedance for TSS) – Section 12.4.1.2.2.2 above Dust: CREMP results <CWQG Blasting: NM - mining operations ceased in 2019

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted	Predicted Impact in FEIS	Measured Impacts			
					2018	2019	2020	2021
				and arsenic and cadmium (Wally Lake) Blasting: Most blasts will not exceed DFO overpressure guideline (50 kPa); no exceedances of PPV guideline (13 mm/s)				
Mortality of fish and fish eggs	Blasting	Blast monitoring	Blast monitoring	Most blasts will not exceed DFO overpressure guideline (50 kPa); no exceedances of PPV guideline (13 mm/s)	No exceedances of DFO overpressure guideline (50 kPa); no exceedances of PPV guideline (13 mm/s)		NM - mining operations ceased in 2019	
	Worker fishing in project area, despite no-fishing policy; increased fishing in area due to AWAR	Worker fishing: Staff interviews AWAR fishing: Creel survey	Worker fishing: None AWAR fishing: None - creel survey updates in development	Unknown	Worker fishing: Not assessed AWAR fishing: N/A			Worker fishing: Not assessed AWAR fishing: No increase in fishing pressure due to AWAR or WTHR
	Accidental spills (e.g. fuel)	Event-based monitoring; spill emergency response plan	Spill Contingency Plan: All spills reported to Environment Department; monitoring spills during site inspections	Not defined	*Impacts not defined in FEIS so not suitable for PEAMP evaluation. See Section 7 for spills reporting.*			
Fish stress, behavioral changes, avoidance	Increased concentrations of dissolved metals and TSS from dust and effluent	Dust: Whole-lake water quality monitoring under CREMP	Dust: Whole-lake water quality under CREMP	Dust (whole-lake water quality under CREMP): negligible ecological effect;	Dust: CREMP results <CWQG, no exceedance of TSS trigger. Effluent: < MDMER			Dust: CREMP results <CWQG, no mine-related exceedance of TSS trigger (June exceedance in Baker

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted	Predicted Impact in FEIS	Measured Impacts			
					2018	2019	2020	2021
	discharge	Effluent: Monitoring under MDMER program	Effluent: MDMER monitoring	<CWQG for aquatic life (CCME) except cadmium (TPL), and arsenic and cadmium (Wally Lake) Effluent: < MDMER criteria				Lake determined unlikely to be mine-related – see 2021 CREMP Report (Appendix 33). Effluent: <MDMER except April & May (marginal exceedance for TSS) – discussed in Section 12.4.1.2.2.2 above
Impaired lower trophic levels (incl. loss of phytoplankton, periphyton and benthos)	Leaching of metals (from dikes)	Targeted studies under AEMP ("pore water" sampling; periphyton sampling) during year 1	Interstitial water quality under HCMP	Dike faces will provide a medium for periphyton growth	NM	Not sampled in 2019	NM	Dike leachate (interstitial water quality): <CWQG
	Sedimentation through dust/particulate dispersion (road dust, wind dispersal, terrain disturbance) and effluent discharge	Water quality monitoring through CREMP	CREMP (water quality, sediment, and lower trophic level monitoring)	Negligible ecological effect; CREMP results <CWQG for aquatic life (CCME) except cadmium (TPL), and arsenic and cadmium (Wally Lake)	CREMP results <CWQG, no mine-related impairment of phytoplankton, benthic invertebrate communities. Some exceedances of CREMP sediment threshold for Cr, as in previous years. See discussion, Section 12.4.1.3.2.			
		Effluent MDMER monitoring	Effluent MDMER monitoring	Settling of TSS and altered sediment chemistry may impact benthos.	Effluent < MDMER			Effluent: <MDMER except April & May (marginal exceedance for TSS) – Section 12.4.1.2.2.2 above
Increased fish biomass	Release of nutrients in treated sewage	Nutrients, chlorophyll a, and phytoplankton monitoring through CREMP in TPL	Nutrients, chlorophyll a, and phytoplankton monitoring	Increase in nitrogen concentrations; change in phytoplankton	*NM - Treated sewage is now disposed of in TSF, so potential for impact is removed.*			

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted	Predicted Impact in FEIS	Measured Impacts			
					2018	2019	2020	2021
			through CREMP in TPL	species in TPL				
Impaired fish passage along AWAR streams	Culvert installation	AWAR Fish Monitoring Report: (targeted monitoring study under AEMP - hoopnets at culvert crossings only; 1 year minimum)	Hoopnet and flow monitoring under AWAR Fisheries Monitoring Plan (complete in 2011 after 5 years)	Negligible residual impact on fish and their movements within streams and channels	Program complete in 2011. No impairment of fish passage was observed.			

12.4.1.3.2 Parts 3 & 4: Discussion

Where impacts are exceeded or potentially exceeded based on monitoring results (as identified in Parts 1 & 2, above), a discussion is provided here.

12.4.1.3.2.1 Exceedance of CREMP sediment thresholds

FEIS Prediction: Sedimentation through dust/particulate dispersion (road dust, wind dispersal, terrain disturbance) and effluent discharge would result in negligible ecological effect on lower trophic levels.

Discussion: Historical CREMP results have indicated mine-related increases in chromium in sediment for one receiving environment location (TPE). As a result, targeted studies assessing the ecological significance (potential for impact to lower trophic levels) of chromium increases in TPE occurred in 2015, 2018, and 2019. At the conclusion of the 2019 studies, results were determined to clearly demonstrate that the increase in sediment chromium at TPE is not adversely affecting the benthos at TPE (i.e. there is negligible ecological effect on lower trophic levels, and FEIS predictions are not being exceeded). No further targeted studies are planned at this time other than annual monitoring of the benthos community as part of the routine CREMP, along with annual sediment grab samples and a sediment coring program every 3 years**.** A complete description of the chromium investigation is provided in the 2019 CREMP Report.

For reference, historical results for chromium in sediment at TPE and benthic invertebrate abundance are shown in Figures 56 and 57, from the 2021 CREMP report. Chromium concentrations in four of five grab samples collected from the TPE location exceeded the trigger value in 2021, but results were lower than means reported in 2017-2020 indicating that concentrations remain stable.

Figure 56 Total chromium (mg/kg) in sediment samples (grabs and cores) from Meadowbank project lakes since 2006. The red dashed line – CREMP trigger value.

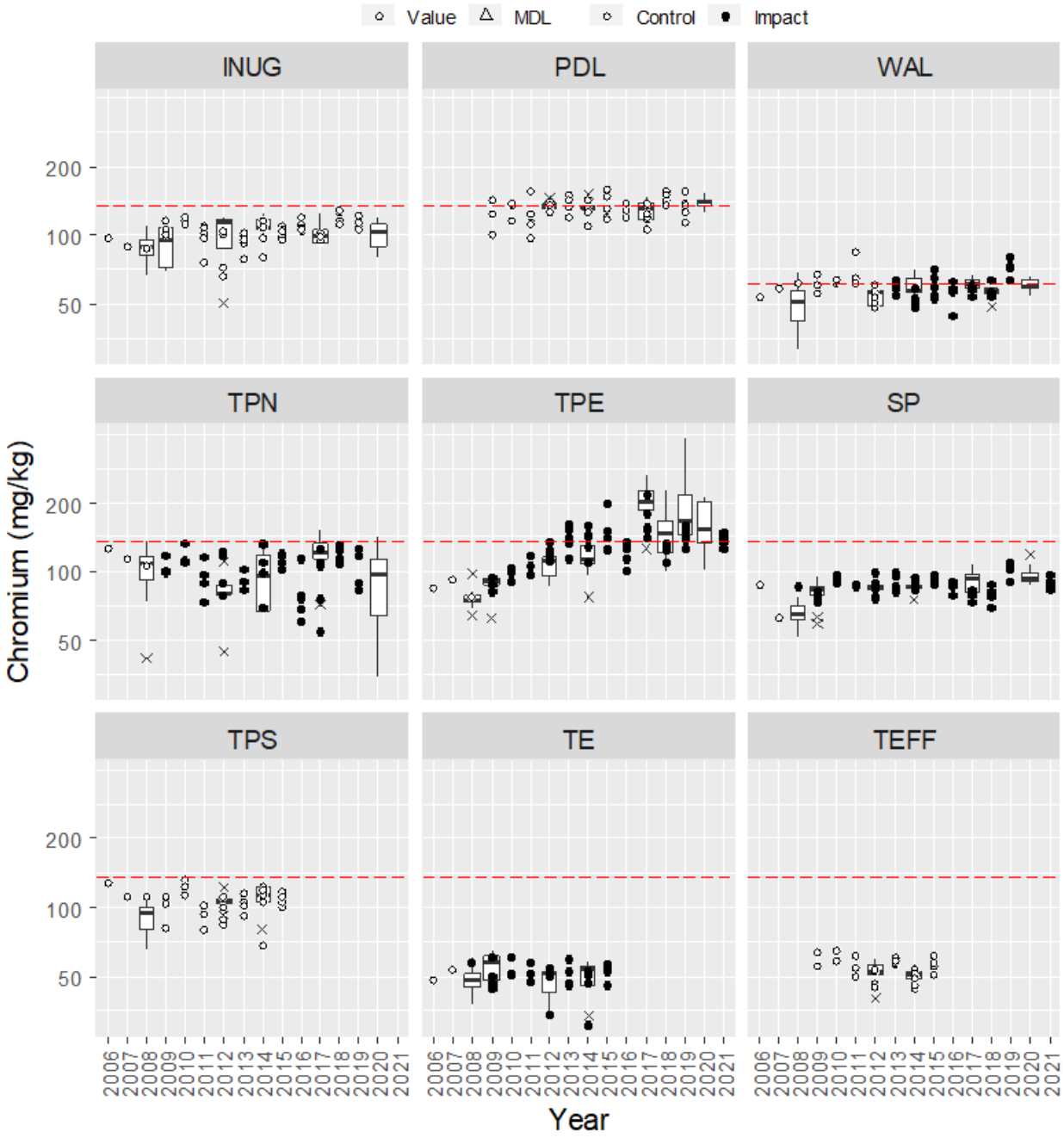
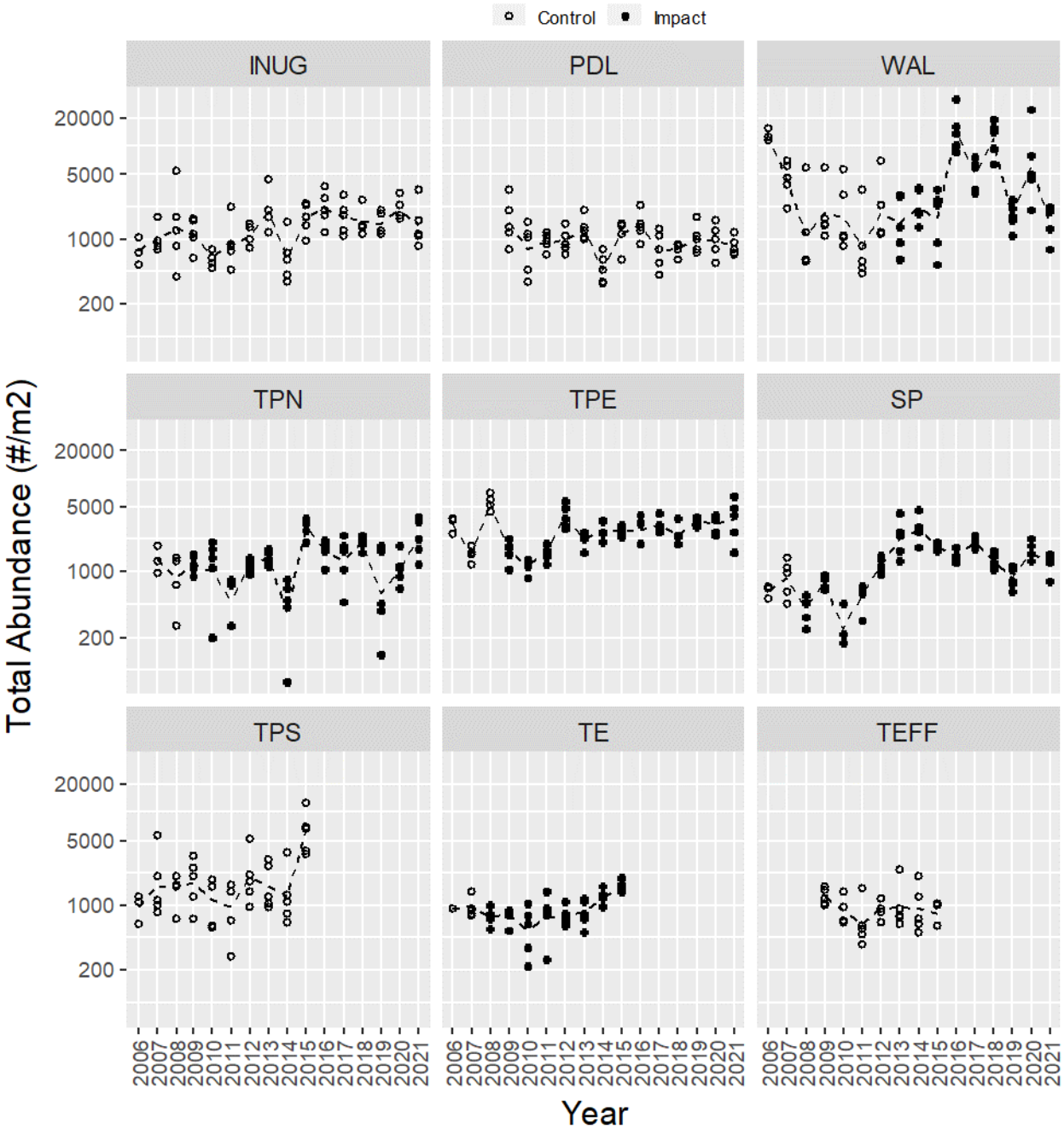


Figure 57 Benthic invertebrate total abundance (#/m^2) from Meadowbank project lakes since 2006.



12.4.1.3.3 Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management

Effectiveness of Monitoring

In 2021, monitoring was able to address all potential causes of impacts identified in the FEIS (i.e. monitoring was considered effective), except worker fishing.

While the FEIS proposed staff interviews to assess any fishing being conducted despite a strict no-fishing policy onsite, in practice it has become clear that interviews are not required. To the best of knowledge, no cases of fishing by workers in contravention to the policy have ever been observed or reported. Despite the lack of formal monitoring, it is clear that this is not a significant source of potential impacts to area fish populations.

Effectiveness of Mitigation

A summary of the FEIS-planned mitigation measures related to fish and fish habitat, along with a commentary on implementation in 2021 is provided in Table 12-8. Mitigation measured specifically related to water quantity and water quality are provided in Sections 12.4.1.1.3 and 12.4.1.2.3, respectively, though some overlap may occur.

Table 12-8 Mitigation measures described in the FEIS to reduce impacts of the project to fish and fish habitat, and commentary on current implementation

Planned Mitigation Measure (FEIS, Section 4.24.2.5)	Implementation (2021)
Winter culvert installation	**N/A –** item not constructed in 2021
Sediment control (e.g. use of geotextile for Baker Lake marine barge landing facility)	**Yes –** deployment of sediment control measures
Use of properly sized screens for freshwater intake	**N/A –** item not constructed in 2021
Use of riprap to stabilize shorelines around culverts and anchor pipes	**N/A –** item not constructed in 2021
Modification of the external surface of containment dikes	**Yes** - As described in the 2006 NNLP, dike faces below the water surface are constructed from low metal leaching iron formation rock. Dikes are capped with ultramafic rock above the water surface to minimize the potential for metals leaching.
Enhancement and improvement of connecting channels between lakes to enhance fish movement	No longer planned under updated DFO Fisheries Act Authorization NU-03-0191.3 (2013)
Treatment of effluent discharge	**Yes** – mine site effluent is monitored according to NWB/MDMER criteria, as described in Section 8.3. No treatment required for TSS prior to release for East Dike discharge
Discharge only during open water, not under ice (Attenuation Pond discharge to Third Portage Lake)	**N/A** - Attenuation pond discharge is no longer occurring
Construction of fish habitat compensation features (according to DFO Fisheries Act Authorization NU-03-0191.3, 2013)	**Yes** – construction of fish habitat compensation features as described in this document is ongoing. Monitoring is described in Section 8.8

Adaptive Management

Based on these results, no specific adaptive management actions are planned for 2022.

12.4.2 Vegetation, Terrestrial Wildlife, and Birds

12.4.2.1 *Parts 1 & 2: Summary of Predicted and Measured Residual Impacts*

The 2021 Wildlife Monitoring Summary Report (Appendix 47) provides a complete assessment of wildlife monitoring programs including a comparison to monitoring thresholds detailed in the Terrestrial Ecosystem Management Plan (TEMP Version 7; 2019) and FEIS impact predictions (Cumberland, 2005), where available. Results are summarized here in the PEAMP format.

For each terrestrial VC, a summary of predicted impacts and the accuracy of those predictions (observed impacts) as determined through various monitoring programs conducted under the TEMP is provided in Table 12-9. Thresholds for the implementation of adaptive management, as developed in the Terrestrial Ecosystem Management Plan (TEMP Version 7; 2019) were used in this comparison because most impact predictions in the Terrestrial Ecosystem Impact Assessment of the FEIS (Cumberland, 2005) were qualitative only. The 2019 TEMP thresholds were developed in consultation with the Terrestrial Advisory Group (TAG), and represent quantitative measurement endpoints that trigger management action.

In the 2018 TEMP (Version 5), a Caribou Management Decision Tree replaced most thresholds previously associated with caribou monitoring through various TEMP programs. An objective of the decision chart approach is to reduce sensory disturbance to Caribou approaching the project. The objective is not linked to an impact prediction as the monitoring is in place to trigger mitigation rather than to test a threshold. Quantitative thresholds are still in place for most other potential impacts – habitat loss, project- and vehicle-related mortalities, hunting by Baker Lake residents, disturbance of nesting raptors and waterfowl, and exposure to contaminated water or vegetation.

Overall, no Terrestrial Ecosystem Monitoring Program thresholds were exceeded for the Meadowbank site and AWAR in 2021.

Table 12-9 Predicted and measured impacts to terrestrial VECs, according to the Wildlife Monitoring Summary Report (Appendix 47). Measured impacts exceeding or potentially exceeding impact predictions/thresholds are shaded grey and further discussed in Section 12.4.2.2. NM = not required to be measured in the identified year. NA = no threshold or impact no longer assessed. *Potential impact and associated monitoring identified in the TEMP (2019), but not the original Meadowbank FEIS. ^Threshold for Meadowbank Complex (Meadowbank + Whale Tail sites combined).

Potential Impact	Potential Cause(s)	Proposed Monitoring	Current Monitoring	Threshold/ Prediction	Measured Impact			
					2018	2019	2020	2021
VEGETATION (WILDLIFE HABITAT)								
Habitat Loss	Mine site footprint, pits, roads, water management and collection systems	Pit and mine-site ground surveys, Mapping, GIS Analysis	Pit and mine-site ground surveys, Mapping, GIS Analysis	Predicted/Permitted Area + threshold over prediction: Mine Site – 867/1532 ha + 5% AWAR/Vault Haul Road – 455/348 ha + 5%	Mine Site - 1,129 ha AWAR – 173 ha	NM (next assessed in 2021)		Mine Site - 1130 ha AWAR – 180 ha
Habitat Degradation by Contamination	Dust from roads, TSF, airstrip	Vegetation and Soil Samples (SLRA)	Vegetation and Soil Samples (SLRA)	No excess mine-related risk (or measured concentrations <screening values)	NM	NM (next assessed in 2020)	NM (2020 assessment postponed to 2021)	No excess mine-related risk (or measured concentrations <screening values)
UNGULATES								
Sensory Disturbance	Avoidance due to noise and activity (roads, airstrip, mine site)	Pit and mine-site ground surveys, Satellite-collaring	Satellite-collaring data; Road surveys; Pit and mine-site ground surveys; Remote cameras	No threshold beginning in 2019 – Caribou Management Decision Tree in place	Potential exceedance of threshold (avoidance of habitat will not occur more than 500 m from site; 1000 m from AWAR) See discussion, Section 12.4.2.2.	NA (no threshold)		
Project-related	Mine-related	Pit and mine-	Pit and	Two (2) Caribou or	None	None	None	None

Potential Impact	Potential Cause(s)	Proposed Monitoring	Current Monitoring	Threshold/ Prediction	Measured Impact			
					2018	2019	2020	2021
Mortality	activities (e.g., falling into pits, tailing, sludge or other means)	site ground surveys	mine-site ground surveys	Muskoxen mortalities per year^				
Vehicle Collisions	Vehicular collisions	Pit and mine-site ground surveys, Incidence reports	Pit and mine-site ground surveys, Incidence reports	Two (2) Caribou or Muskoxen mortalities per year^	None	None	1 caribou mortality from assumed vehicle strike	None
Habitat Loss and Degradation	Mine site footprint, pits, roads, water management and collection systems	Pit and mine-site ground surveys, Mapping, GIS Analysis	Pit and mine-site ground surveys, Mapping, GIS Analysis	High Suitability Habitat Predicted/Permitted Area + threshold over prediction: Growing – 240/531 ha + 10% Winter – 191/407 ha + 10%	Growing – 372 ha (70%) Winter – 280 ha (68.8%)	NM (next assessed in 2021)		Growing – 372 ha (70%) Winter – 280 ha (68.8%)
Hunting by Baker Lake Residents	Improved access to hunting along the AWAR	Hunter Harvest Study	Hunter Harvest Study	< 20% increase of historical harvest activities within the RSA; no significant impact to herds	NM	64% of harvest in RSA in 2019 compared to 67% baseline	Threshold not exceeded	
Exposure to Contaminated Water or Vegetation	Consumption of contaminated dust deposited on vegetation	Vegetation and Soil Samples (SLRA)	Vegetation and Soil Samples (SLRA)	No excess mine-related risk (or measured concentrations <screening values)	NM	NM (next assessed in 2020)	NM (2020 assessment postponed to 2021)	No excess mine-related risk (or measured concentrations <screening values)
PREDATORY MAMMALS								
Project-related Mortality	Mine-related mortality (falling into pits, TSF or other means)	Pit and mine-site ground surveys, Incidence reports	Pit and mine-site ground surveys, Road	Destruction of two (2) problem Grizzly Bear, Wolverine, or Wolf per year^	One wolverine dispatched	One wolverine dispatched at Amaruq Camp	Two wolverine dispatched	One wolverine dispatched

Potential Impact	Potential Cause(s)	Proposed Monitoring	Current Monitoring	Threshold/ Prediction	Measured Impact			
					2018	2019	2020	2021
			Surveys, Incidence reports, Height-of-Land Surveys					
	Vehicular collisions	Pit and mine-site ground surveys, Incidence reports	Road surveys; Security surveys	Two mortalities of Grizzly Bear, Wolverine, or Wolf per year due to vehicle collisions^	-	None	None	None
Sensory Disturbance to Denning Predators*	Blasting, vehicles, and ground personnel near active dens	Active den site surveys (WT FEIS)	Ground surveys, vehicle surveys, and Viewshed surveys. Active den sites identified during baseline studies will also be monitored.	1 den failure	NA	NA (not conducted in 2019 - no potential for impacts identified)	No dens observed or monitored	
SMALL MAMMALS								
Project-related Mortality	Vehicular or air traffic collisions, falling into pits, TSF or other means	Pit and mine-site ground surveys, Road Surveys, Incidence reports	Pit and mine-site ground surveys, Road Surveys, Incidence reports	No threshold beginning in 2019	Two artic hare mortalities along the AWAR	NA (no threshold)		
Habitat Loss and Degradation	Mine site footprint, pits, roads, water management	Ground Surveys, Mapping, GIS Analysis	No monitoring as of 2018	No threshold beginning in 2018	NA (no threshold)			

Potential Impact	Potential Cause(s)	Proposed Monitoring	Current Monitoring	Threshold/ Prediction	Measured Impact			
					2018	2019	2020	2021
	and collection systems							
Exposure to Contaminated Water or Vegetation	Consumption of contaminated dust deposited on vegetation	Vegetation and Soil Samples (SLRA)	Vegetation and Soil Samples (SLRA)	No excess mine-related risk (or measured concentrations <screening values)	NM	NM (next assessed in 2020)	NM (2020 assessment postponed to 2021)	No excess mine-related risk (or measured concentrations <screening values)
RAPTORS								
Healthy Prey Populations	Mine Footprint, dust and exhaust, noise (road, airstrip, mine site, Baker Lake barge area)	Vegetation and Soil Samples; PRISM plot surveys; ELC habitat mapping	Vegetation and Soil Samples	Thresholds are qualitative, and can be achieved through management and maintenance of vegetation and healthy prey communities.	NA (no threshold)			
Disturbance of Nesting Raptors	Noise and Activity	Active Nest Monitoring	Pit and mine site ground surveys; Incidental wildlife reporting; Dedicated raptor nest surveys; Road surveys	One nest failure per year^	Threshold not exceeded			No confirmed mine-related nest failures
					Note - limited data on nesting success in 2018 – 2020. Further discussion provided in Section 12.4.2.3.			
Project-related Mortality	Vehicle collisions	Road/Ground Surveys, Incidence reports	Road surveys, Incidence reports	One mortality per year^	Threshold not exceeded	None	None	None
WATERBIRDS								
Disturbance of Nesting Waterfowl	Noise and Activity; dewatering	Waterfowl Nest Surveys	Waterbird Nest Surveys (ended	One nest failure per year^	Threshold not exceeded	Waterbird Nest Survey program ended 2019. Replaced for the Whale Tail site with Migratory Bird		Threshold not exceeded

Potential Impact	Potential Cause(s)	Proposed Monitoring	Current Monitoring	Threshold/ Prediction	Measured Impact			
					2018	2019	2020	2021
			2019); Pit and mine site ground surveys			Protection Plan (Section 12.5.2) Threshold for nest failure not exceeded in pit and mine site ground surveys.		
Habitat Loss and Degradation	Mine site footprint, pits, roads, water management and collection systems	Ground Surveys, Mapping, GIS Analysis	Ground Surveys, Mapping, GIS Analysis	High Suitability Habitat Predicted/Permitted Area + threshold over prediction: Mine Site – 518/417 ha + 10%	NM	NM (next assessed in 2021)		Mine Site - 274 ha
Exposure to Contaminated Water or Vegetation	Mine site dust; Secondary containment structures and tailings storage facilities	Vegetation and Soil Samples (SLRA)	Vegetation and Soil Samples (SLRA)	No excess mine-related risk (or measured concentrations <screening values)	NM	NM (next assessed in 2020)	NM (2020 assessment postponed to 2021)	No excess mine-related risk (or measured concentrations <screening values)
Project-related Mortality	Vehicle collisions	Road Surveys, Incidence reports	Road Surveys, Incidence reports	One mortality per year due to vehicle collision^	Threshold not exceeded	None	None	None
Project-related Mortality	Mine site-related mortality	Pit and mine-site ground surveys	Pit and mine-site ground surveys	One mortality per year due to mine activity other than vehicle collisions^	Two Long-tailed ducks found dead onsite. See Section 12.4.2.2.	None	None	None
OTHER BREEDING BIRDS								
Project-related Mortality	Vehicle/ bird collisions	Pit and mine-site ground surveys, Incidence reports	Pit and mine-site ground surveys, Road Surveys, Incidence	No threshold beginning in 2019	Threshold not exceeded (50 mortalities)	NA (no threshold)		

Potential Impact	Potential Cause(s)	Proposed Monitoring	Current Monitoring	Threshold/ Prediction	Measured Impact			
					2018	2019	2020	2021
			reports					
Habitat Loss and Degradation	Mine site footprint, pits, roads, water management and collection systems	Pit and mine-site ground surveys, Mapping, GIS Analysis	Pit and mine-site ground surveys, Mapping, GIS Analysis	High Suitability Habitat Predicted/Permitted Area + threshold over prediction: Mine Site – 322/736 ha + 10%	-	NM (next assessed in 2021)		594 ha
Exposure to Contaminated Water or Vegetation	Mine site dust	Vegetation and Soil Samples (SLRA)	Vegetation and Soil Samples (SLRA)	No excess mine-related risk (or measured concentrations <screening values)	NM	NM (next assessed in 2020)	NM (2020 assessment postponed to 2021)	No excess mine-related risk (or measured concentrations <screening values)
Changes in Breeding Bird Populations	Mine Footprint, dewatering dust and exhaust, noise (road, airstrip, mine site, Baker Lake barge area)	Breeding Bird Prism Plots and Transects	Suspended in 2015.	For PRISM plots, threshold was > 20% from control plots.	NA	Analytical report to be completed for CWS in 2020 to determine ongoing monitoring requirements.	Analytical report provided to CWS in 2020. Response pending.	NA – Agnico Eagle /ECCC agreement for PRISM and BBS to begin in 2022. There will be no threshold.

12.4.2.2 *Parts 3 & 4: Discussion*

Where impacts are exceeded based on monitoring results (as identified in Parts 1 & 2, above), a discussion is provided here. In 2021, no thresholds were exceeded. The discussions below are retained from previous years.

1. Sensory Disturbance of Ungulates (2018)

TEMP Threshold (2018): Avoidance of habitat will not occur more than 500 m from site; 1000 m from AWAR (threshold replaced with Caribou Management Decision Tree in TEMP Version 5, June 2018).

***Discussion*:** In 2018, review of caribou data also lead to a TAG project to explore the link between caribou road crossings and road closures. Most 2018 Caribou activity was observed during the spring migration requiring numerous road closures and restrictions along the Meadowbank AWAR and the haul roads. Although 2017 collar data showed fewer road-related effects, 2015 and 2016 collar data also observed that the AWAR appeared to be altering natural movement patterns of collared Caribou. Results of this study were presented to the TAG in 2019, and the goal is to incorporate them into monitoring and management plans moving forward.

Through discussions with the TAG, the Caribou Management Decision Tree replaced most thresholds related to caribou in Version 5 of the TEMP (June, 2018). As a result, caribou monitoring results are no longer compared to the 500 m/1000 m avoidance threshold. Decisions and outcomes resulting from the use of the decision tree approach will be analyzed and discussed in TAG meetings annually to determine whether adjustments to the program need to be made. In this way, Caribou monitoring endpoints assessed through TEMP programs are linked directly to management actions rather than a single threshold of impacts.

2. Project-Related Mortality of Waterbirds (2018)

TEMP Threshold (ongoing): No more than 1 mortality/year.

Discussion: Since onsite waterbird mortality occurred beyond FEIS thresholds in 2018 (death of two ducks after apparently flying into a building), an assessment of historical trends for this component was conducted (see Table 12-10). Based on this data, there is no clear trend towards increasing mortalities of waterbirds on the Meadowbank site. Since the threshold of one mortality per year has only been exceeded twice in ten years (two mortalities each time), and on average, annual mortalities do not exceed the threshold, these results do not represent a significant departure from impact predictions.

Table 12-10 Historical waterbird mortalities at the Meadowbank site. The annual threshold is one mortality

Year	Waterbird Mortalities	Cause/Notes
2011	0	-
2012	0	-
2013	0	-
2014	0	-
2015	2	Dead duck found outside a building. Dead Canada Goose found in the tailings pond.
2016	1	Dead juvenile Merganser duck was caught in gill nets during the Phaser Lake fish-out program.

Year	Waterbird Mortalities	Cause/Notes
2017	0	-
2018	2	Two ducks killed after apparently flying into a building.
2019	0	-
2020	0	-
2021	0	-

12.4.2.3 *Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management*

Effectiveness of Monitoring

As indicated in Table 12-9, some monitoring requirements have been eliminated in the TEMP since the FEIS was developed, in consultation with regulators (e.g. habitat loss for small mammals, waterbird surveys outside of the Whale Tail flood zone).

Based on the results in Table 12-9, current TEMP monitoring programs are able to address most other FEIS impacts for which monitoring was recommended (i.e. monitoring is considered effective), with the exception of individual raptor nesting success. Monitoring programs are in place to assess impacts to raptors, but the structure of the monitoring and mitigation program and small number of nests observed in recent years do not allow analysts to confirm specifically whether potential nest failures are mine-related. Although compliance with the existing raptor TEMP threshold has been difficult to assess, management and mitigation approaches are enacted to protect nesting raptors according to the 'Peregrine Falcon Management and Protection Plan on the Meadowbank Gold Project Site' (see Appendix E of the 2019 TEMP). Further, Agnico Eagle has engaged Arctic Raptors beginning in 2021[11] to conduct a more complete analysis of mine-related impacts on raptors, including statistical analysis of nest occupancy (population). Through this analysis in 2021, there is no evidence of mine-related disturbance for rough-legged hawk occupancy (population size). The peregrine falcon population has declined marginally, but this may be the result of inconsistent monitoring within and among seasons. Updates to the TEMP and additional raptor surveys are planned in 2022 that will facilitate evaluation of project-related nest failures, population impacts, and success of mitigation.

Effectiveness of Mitigation

FEIS-planned mitigation measures to limit impacts of the Project on terrestrial wildlife were originally described in the Terrestrial Ecosystem Management Plan (Version 1, October 2005), a component of the Project FEIS (Cumberland, 2005). This plan was most recently updated in June, 2019 (Version 7), and a mitigation audit is a component of this plan. The audit is to be undertaken annually, with results summarized in the annual Wildlife Monitoring Summary report, and focuses specifically on mitigation listed in Section 2 of the June 2019 TEMP.

The audit evaluates:

- What mitigation has been implemented;

[11] Arctic Raptors has been conducting surveys on the Meadowbank site since 2015, but generally only once per year, which does not allow statistical determination of nest success or occupancy. Surveys moving forward are planned for twice per year.

- Which mitigation is perceived to be, or shown to be successful;
- If new mitigation has been implemented in response to new issues; and
- If some mitigation is redundant.

Refer to the 2021 Wildlife Monitoring Summary Report in Appendix 47.

However, in the context of the PEAMP evaluation, mitigation is considered effective if impact predictions (or in this case, TEMP thresholds) are not being exceeded. Therefore, since no TEMP thresholds were exceeded for the Meadowbank site in 2021, mitigation is considered effective.

Adaptive Management

Although no TEMP thresholds were exceeded in 2021, several management recommendations are planned to be implemented in 2022 along with continued implementation of all TEMP monitoring and management programs. As described in the 2021 Wildlife Monitoring Summary Report (Appendix 47), new management recommendations in 2021 consist of:

- Caribou collaring
    - Future collar data analysis should be discussed with the TAG.
- Viewshed surveys
    - Analysis comparing the effectiveness of viewshed surveys and road surveys at detecting caribou approaching the WTHR has been requested by the GN, for completion in 2022.
- Remote camera program
    - The future of the remote camera program should be discussed with the TAG. This program is unlikely to contribute to adaptive management unless many more cameras are deployed to increase the number of caribou crossing event detections.
- Blast monitoring
    - Future analysis could determine the relationship between proportion of stress behaviours and PPL and PPV levels, when sample size allows. The time for behaviour to return to pre-blast levels should be assessed. Accurate locations of caribou groups should be recorded on all behaviour monitoring surveys.
- Hunter harvest surveys
    - Continue on annual basis, with meetings every 4 months in 2022, and an effort to bring in younger participants.
- Raptor monitoring

  - Starting in 2021, complete multiple population-level surveys per year to allow estimation of nest detection error.

  - Apply deterrents to quarries in early May, conduct regular monitoring, and erect signage to identify nesting raptors to limit disturbance.

- Breeding bird monitoring

  - The ECCC-Agnico Eagle agreement to conduct non-mine-related PRISM and BBS surveys over a 10 year period is near completion. Surveys will begin in 2022.

- Non-native plant monitoring

  - Surveys for the 14 non-native plant species identified by CESCC as well as others should continue to be completed annually. Mechanical control such as mowing and hand-pulling is recommended for any identified non-native plant. Chemical herbicides are not recommended.

  - Display of CESCC posters for non-native plant species is recommended.

  - A management plan for non-native plant species may be implemented if the non-endemic species continue to be observed or spread further within the Meadowbank Complex.

- Snow study

  - Caribou track depth information should be collected to facilitate comparison between snow conditions.

  - Pilot studies were conducted in 2020 and 2021. The 3-year monitoring program will begin in 2022.

- Caribou behaviour study

  - Additional data collection in fall and during convoys would bolster the sample size and improve the likelihood of detecting statistically significant effects.

12.4.3 Noise

12.4.3.1 *Parts 1 & 2: Summary of Predicted and Measured Residual Impacts*

While noise generation was predicted in the FEIS for many minesite components, a significant environmental effect of noise (disturbance of wildlife; reduced habitat effectiveness) requiring monitoring was determined in association with pit development, tailings handling and the mill (Cumberland, 2005; Table B3.2). Monitoring sites were established around the site and along access roads, as described in the current Noise Monitoring and Abatement Plan (V4, December, 2018).

Table 12-11, below, compares FEIS predictions for area sound levels (Cumberland, 2005 – Noise Impact Assessment) with the results of noise surveys (measured sound levels) conducted since 2018 when this

PEAMP evaluation process began. Since the potential impacts of Project-related noise were all identified as wildlife disturbance, the accuracy of these predictions is also monitored through the terrestrial environment monitoring programs, as discussed in Section 12.4.2.

No exceedances of FEIS predictions occurred in 2020 or 2021. Only one impact prediction was exceeded in 2018 & 2019 (monitoring station R5). A discussion and historical trend analysis of noise levels is provided in Section 12.4.3.2.

Table 12-11 Predicted and measured sound levels for the Meadowbank site. *Values estimated from sound level contour plots in Cumberland, 2005 – Noise Impact Assessment. **For the R5 location (all-weather access road station), predictions were made in the FEIS regarding the maximum 1-hr L_{eq} value only. Measured impacts exceeding or potentially exceeding predictions are shaded grey and further discussed in Section 12.4.3.2.

Project Component	Potential Impact	Proposed Monitoring	Monitoring Station	FEIS Predicted Value (dBA)*	Measured Value $L_{eq, 24\text{-}h}$ (dBA)			
					2018	2019	2020	2021
Portage Pit	Moderate and high noise levels from blasting, drilling, TSF berm construction and material handling will disturb wildlife and result in reduced habitat effectiveness	Monitor noise levels and behavioral responses of wildlife	R1	58-63	37.2	47.6	35.5	35.8
Goose Island Pit					43.4	NL	37.2	36.7
Vault Pit			R2	58-63	40.7	36.8	32.0	48.5
Borrow Pits					37.5	34.1	-	44.2
Tailings Facilities			R3	49-53	38.8	-	34.0	36.1
						38.9	39.4	37.4
Mine Plant & Facilities			R4	58-63	57.3	-	34.3	-
					36.7	-	32.1	34.0
			R5	All 1 hr L_{eqs} < 57**	All <57	All <57	All <57	-
					1/22 @ 58	1/32 @ 58	All <57	-

12.4.3.2 *Parts 3 & 4: Discussion*

Where impacts are exceeded or potentially exceeded based on monitoring results (as identified in Parts 1 & 2, above), a discussion is provided here.

12.4.3.2.1.1 Noise Levels at R5

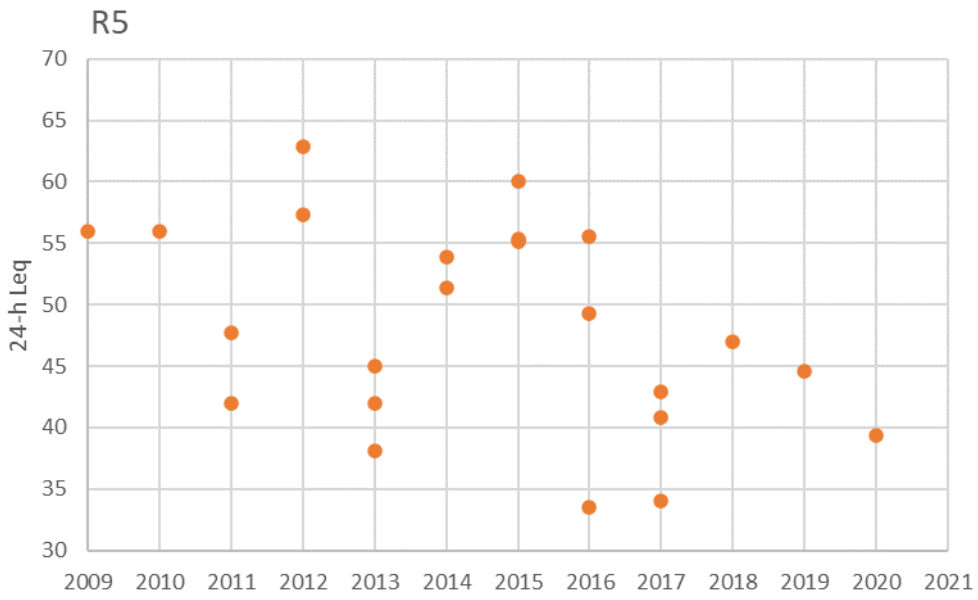
***FEIS Prediction*:** For station R5, FEIS predictions assumed that all one-hour L_{eq} values would not exceed 57 dBA.

***Discussion*:** In 2018 and 2019, this prediction was exceeded for one hour, with an L_{eq} of 58 dBA in both years (4-5pm hour, July 16th, 2018 and 11 am – 12 pm hour, August 8th, 2019). In both cases, the datasets were reviewed, and sound levels were generally well below 57 dBA during the monitoring period (L_{eq} daytime values of 49.5 dBA and 45.8 dBA, respectively). In 2018, two peaks above the predicted hourly L_{eq} value of 57 dBA occurred, lasting a total of 6 minutes. It is possible these were due to animal interference or a helicopter fly-over. Similarly in 2019, review of sound recordings indicated the exceedance occurred due to an aircraft flyover, lasting 2.5 min. Since the exceedances only occurred for single time-points and were not audibly different from the predicted value (<3 dBA difference), the events were not investigated further and no supplemental mitigation was planned. The prediction was not exceeded in 2020. In 2021, no data was available for R5 due to unacceptable weather conditions or technical difficulties (e.g. fallen noise meter) despite three monitoring attempts.

In the 2021 Noise Monitoring Report (Appendix 49) 24-h L_{eq} measurements since 2009 were reviewed for all monitoring stations to understand if any trends towards increasing noise levels above FEIS predictions are occurring for any location on site. Results for station R5 are shown in Figure 58. There is no clear trend towards increasing sound levels at any site. Although no predictions were made regarding the 24-h L_{eq} for R5, a decreasing trend is seen for noise levels at this station since 2012.

Complete results of noise monitoring in the current year are provided in Appendix 49.

Figure 58 Historical 24-h L_{eq} values for monitoring station R5 at the Meadowbank site. No valid surveys were obtained in 2021 despite three attempts, primarily due to unacceptable weather conditions.



12.4.3.3 *Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management*

Effectiveness of Monitoring

Based on the results in Table 12-11, current monitoring programs are able to address all FEIS impacts for which monitoring was recommended (i.e. monitoring is considered effective).

Effectiveness of Mitigation

FEIS-planned mitigation measures to limit impacts of the Project on area noise levels were originally described in the Air Quality and Noise Management Plan (October 2005). This Noise monitoring plan was most recently updated in December 2018. A summary of the mitigation measures in place to ensure impacts to area noise levels are minimized is provided in Table 12-12, with a commentary on implementation in 2021.

Since no consistent exceedances of FEIS predictions has occurred, existing mitigation measures are considered to be effective.

Table 12-12 Mitigation measures described in the Noise Abatement and Monitoring Plan (December, 2018) to reduce impacts of the project on area noise levels, and implementation in 2021. NA = not applicable.

Noise Source	Planned Mitigation Measure (Noise Abatement and Monitoring Plan, December 2018)	Implementation (2021)
Whale Tail Haul Road Construction and Widening	Operate construction equipment within specification and capacity (i.e. don't overload machines)	**NA**
	Adequate equipment maintenance	**NA**
	Avoid operating numerous pneumatic tools at the same time, and spread operation throughout working periods	**NA**
	Avoid prolonged idling	**NA**
	If blasting is required, preference for daytime blasting	**NA**
Road traffic (mine site, AWAR) and Haul Roads operation	During maintenance, check that noise abatement devices are in good order (e.g., brakes, exhaust mufflers, engine hoods)	**Yes –**Maintenance logs
	Enforce speed limits	**Yes –** ongoing
	Use shallow slopes for haul road	**Yes –** ongoing
	Educate truck drivers about the characteristics of diesel engines (i.e., that the flat torque characteristic allows ascending an incline in a higher gear, which is a less noisy operation)	**Yes –**SOP and best practices
	Keep road surfaces in good repair to reduce tire noise	**Yes –**Road maintenance
	Avoid prolonged idling	**Yes –**No Idling Policy
	Avoid trucking operation during night time on access road, when possible	**Yes –** when possible
Air traffic (Meadowbank)	Avoid low altitude flights (not lower than 610 m in sensitive bird/wildlife areas), except on take-off and landing	**Yes –** ongoing
	Restrict air traffic to daytime hours except for emergencies	**Yes –** ongoing
Impact equipment (pile drivers, jack hammers, drills, pneumatic tools)	Avoid operating numerous pneumatic tools at the same time, and spread operation throughout working periods	**Yes –**Best practices
Stationary equipment (compressors, generators, pumps)	Keep equipment in good condition	**Yes –**Preventive maintenance

Noise Source	Planned Mitigation Measure (Noise Abatement and Monitoring Plan, December 2018)	Implementation (2021)
Blasting	Use delays, both surface and down hole	**Yes –**Blast monitoring plan
	Preference for daytime blasting	**Yes –**Blast monitoring plan
	Blasting in depressed pits (normal production practice)	**Yes –**Blast monitoring plan
Outdoor material handling equipment (crushers, concrete mixers, cranes)	Place crushers in sheltered/enclosed locations if possible	Completed
	Maintain equipment in good working condition	**Yes –** ongoing
	Turn equipment off when not in use if practicable	**Yes –** ongoing
Earth moving equipment (trucks, loaders, dozers, scrapers)	Aim to restrict equipment age so only newer, more efficient machinery will operate onsite	**Yes –**Maintenance logs
	Operate equipment within specification and capacity (i.e., don't overload machines)	**Yes –**Maintenance logs
	Use noise abatement accessories such as sound hood and mufflers	**Yes –**Maintenance logs
Primary plant facilities (gyratory primary crusher, SAG mill, ball mill, power plant)	Provide building with walls absorbing noise	**Completed**
	Maintain equipment on a regular basis, replace worn parts, lubricate as required	**Yes –**Preventive maintenance
	Provide diesel plant units with efficient intakes and exhaust silencers	**Yes –**Preventive maintenance
	Use conveyor system with low noise output, paying particular attention to rollers	**Completed**
	Enclose conveyors where necessary	**Completed**
Utilities and services	Ensure that a rotating biological contactor treatment system operates quietly	**Completed**
	Dump solid waste behind barriers	**NA**

Adaptive Management

Since only minor departures from noise impact predictions have occurred historically, and there are no clear trends towards increasing noise levels around the Meadowbank site, no adaptive management actions are planned in 2022 based on this PEAMP analysis.

12.4.4 Air Quality

12.4.4.1 *Parts 1 & 2: Summary of Predicted and Measured Residual Impacts*

In order to estimate potential impacts of the Project on air quality, modeling exercises were conducted as a component of the original project FEIS to determine emission rates and dispersion of various criteria air contaminants from different sources (Air Quality Impact Assessment, Cumberland, 2005)[12].

This included modeling emissions of three size fractions of suspended particulates ($PM_{2.5}$, PM_{10} and TSP) originating from the TSF, WRSF, and ore stockpile, for 24h and annual averaging times. Deposition rates for dust from these sources were also calculated ($g/m^2/30d$). While maximum ground level concentrations

[12] As part of the FEIS for the Whale Tail Project (Agnico Eagle, 2016), qualitative assessments were performed for ongoing use of the Meadowbank mill and AWAR, but no quantitative changes to original FEIS predictions were included.

were described in the FEIS document for all size fractions, contour plots were only provided for TSP and deposition rates (Air Quality Impact Assessment, Cumberland, 2005).

In addition, modeling was conducted for criteria pollutants (CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$) emitted from the power plant and mobile sources for 1h, 24h and annual averaging times, and concentration contour plots were provided for these analyses.

The main monitoring program for air quality recommended in the FEIS was only static dustfall, which is being continuously monitored at four locations around the minesite. In addition, Agnico Eagle conducts monitoring of TSP, PM_{10}, $PM_{2.5}$ and NO_2, in accordance with the current Air Quality and Dustfall Monitoring Plan. Carbon monoxide and sulphur dioxide are not required to be monitored as part of the program developed by Agnico Eagle in consultation with regulatory agencies.

Based on available FEIS modelling results, the following predicted values were able to be compared to measured values: NO_2 (annual average), $PM_{2.5}$, and PM_{10}. Monitoring results for these parameters are considered adequately comparable to FEIS predictions, since modelling included all reasonably significant emission sources for these parameters. FEIS predictions for TSP and dust deposition (30 d rate) are not suitable for comparison to field measurements (i.e. monitoring results) since only emissions from three specific point sources were required to be modeled (TSF, WRSF, ore stockpile). For reference, all results for TSP and dustfall monitoring are provided in the 2021 Air Quality and Dustfall Monitoring Report (Appendix 50), along with comparisons to regulatory guidelines and historical measurements.

Even for those measured parameters which are comparable to FEIS predictions here (NO_2, $PM_{2.5}$, PM_{10}), it should still be noted that while field monitoring captures emissions from all mine-related sources, as well as background sources, the FEIS presents modeled outputs from combinations of specific sources as described above. Therefore, accuracy of these quantitative predictions cannot specifically be assessed through field monitoring. However, if measured concentrations or deposition rates are lower than predicted values, it can be concluded that FEIS predictions are not being exceeded. In some cases, as described below, measured or estimated background concentrations were able to be added to predicted values to improve the comparison.

The following specific methods were used:

- Modeled values for suspended particulates ($PM_{2.5}$ and PM_{10}) were obtained for the two monitoring locations (DF-1 and DF-2) from the FEIS Air Quality Impact Assessment Figures 6.2 – 6.24. PM_{10} values were derived from Figures 6.7 and 6.8, based on references in the text (Table 6.1), although these figures are labelled as SP. Model values for a TSF size of 960x560m were used in the comparison.

- A recent impact assessment for the Whale Tail Pit project at Meadowbank calculated background values for $PM_{2.5}$ of 6.7 and 3.6 µg/m^3 for 24-h and annual averaging times, respectively (Whale Tail Pit FEIS, Appendix 4-A). No background data was available for other size classes of suspended particulates, but these $PM_{2.5}$ values were added to predicted concentrations of $PM_{2.5}$ and PM_{10} for the comparison, since $PM_{2.5}$ forms a subset of PM_{10}.

-For NO_2, modeling results were only provided in the FEIS for the maximum predicted ground-level concentration, which occurred adjacent to the power plant. The closest NO_2 monitoring station (DF-2) is at a distance of approximately 1 km southwest (cross-wind) from this location.

Table 12-13 summarizes the predicted residual impacts to air quality and results of the FEIS-comparable monitoring conducted in 2018 - 2021.

Despite the generally conservative nature of these comparisons, no exceedances occurred for NO_2, $PM_{2.5}$, or PM_{10}.

GHG emissions are assessed collectively for the Meadowbank and Whale Tail sites in Section 12.5.4.

Table 12-13 Predicted and measured impacts to air quality for the Meadowbank site. Measured impacts exceeding or potentially exceeding predictions are shaded grey and further discussed in Section 12.4.4.2. Predicted impacts according to the Air Quality Impact Assessment, Cumberland, 2005. *Addition of background values described above in Section 12.4.4.1.

Project Component	Potential Impact	Proposed Monitoring (FEIS)	Monitoring Conducted	Max. Predicted Value (FEIS) + Est. Partial Background*	Measured Value			
					2018	2019	2020	2021
Dike construction	Generation of dust during placement of dike material	Static dustfall	N/A (no dikes constructed)	-	-	-	-	-
Dewatering	Generation of dust from exposed lake sediment	Static dustfall	Static dustfall, NO_2 (four locations) and suspended particulates (two locations) under Air Quality Monitoring Plan	NO_2 (ppb; annual avg.) = 4.97 $PM_{2.5}$ (µg/m^3; 24 h avg.): DF-1: 20+6.7 = 26.7 DF-2: 10+6.7 = 16.7 $PM_{2.5}$ (µg/m^3; annual avg.) DF-1: 1+3.6 = 4.6 DF-2: 0.5+3.6 = 4.1 PM_{10} (µg/m^3; 24 h avg.): DF-1: 20+6.7 = 26.7 DF-2: 40+6.7 = 46.7	NO_2 (ppb; annual avg.; DF-2) = 1.81 $PM_{2.5}$ (µg/m^3; 24 h avg.): DF-1: all < 26.7 DF-2: all < 16.7 $PM_{2.5}$ (µg/m^3; annual avg.) DF-1: 0.2 DF-2: 1.4 PM_{10} (µg/m^3; 24 h avg.): DF-1: all < 26.7 DF-2: all < 46.7	NO_2 (ppb; annual avg.; DF-2) = 1.47 $PM_{2.5}$ (µg/m^3; 24 h avg.): DF-1: all < 26.7 DF-2: all < 16.7 $PM_{2.5}$ (µg/m^3; annual avg.) DF-1: 0.5 DF-2: 1.5 PM_{10} (µg/m^3; 24 h avg.): DF-1: all < 26.7 DF-2: all < 46.7	NO_2 (ppb; annual avg.; DF-2) = 0.77 $PM_{2.5}$ (µg/m^3; 24 h avg.): DF-1: all < 26.7 DF-2: all < 16.7 $PM_{2.5}$ (µg/m^3; annual avg.) DF-1: 0.6 DF-2: 1.9 PM_{10} (µg/m^3; 24 h avg.): DF-1: 1 of 52 samples > 26.7 DF-2: all < 46.7	NO_2 (ppb; annual avg.; DF-2) = 1.27 $PM_{2.5}$ (µg/m^3; 24 h avg.): DF-1: all < 26.7 DF-2: all < 16.7 $PM_{2.5}$ (µg/m^3; annual avg.) DF-1: 0.5 DF-2: 1.9 PM_{10} (µg/m^3; 24 h avg.): DF-1: all < 26.7 DF-2: all < 46.7
Pits	Generation of dust and gases from blasting, excavation etc.	Static dustfall						
Waste Rock Facility and Tailings Storage Facility	Generation of dust from material deposited on waste rock pile or tailings	Static dustfall						
Onsite Roads and Traffic, Airstrip	Generation of dust and emissions from use of roads and airstrip	Static dustfall						
Mine Plant and	Release of pollutants	Report emissions	GHG emissions	Updated for Whale Tail	-	-	-	-

Project Component	Potential Impact	Proposed Monitoring (FEIS)	Monitoring Conducted	Max. Predicted Value (FEIS) + Est. Partial Background*	Measured Value			
					2018	2019	2020	2021
Facilities	from incineration		reported	Project – see Section 12.5.4				
All Weather Access Road	Generation of dust and emissions from frequent activity by service and vehicles accessing staging facility	Static dustfall	Static dustfall (52 locations)	< Vault Haul Road results	-	< Vault Haul Road results; See discussion, Section 12.4.4.2		

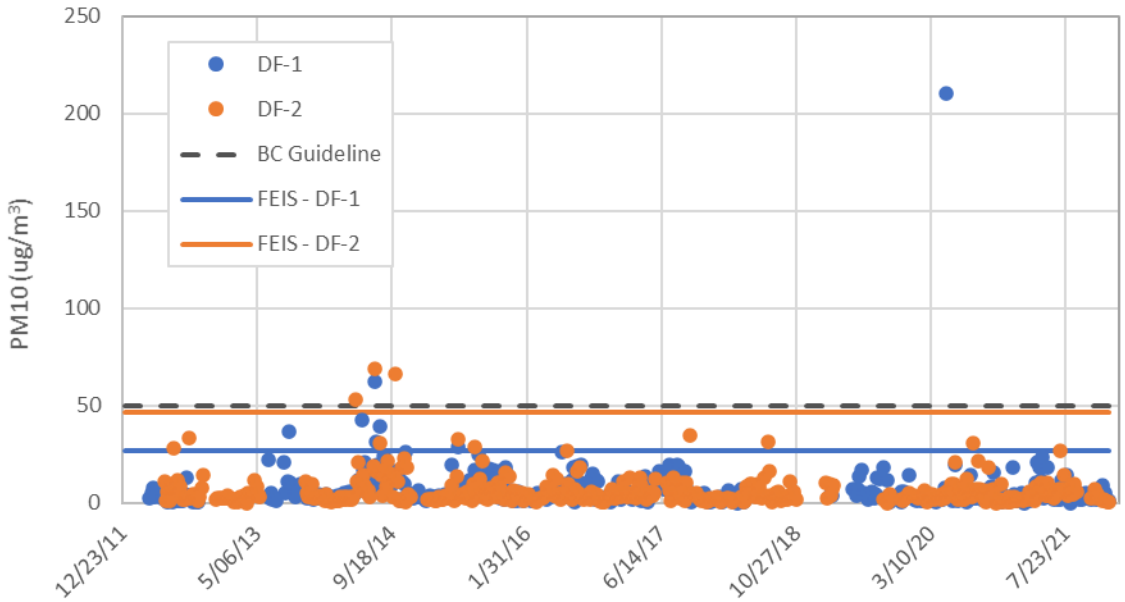
12.4.4.2 *Parts 3 & 4: Discussion*

If air quality impacts are exceeded or potentially exceeded based on monitoring results (as identified in Parts 1 & 2, above), a discussion is provided here. Where quantitative comparisons to field monitoring results were feasible, no regular exceedances of air quality impact predictions occurred in 2018 - 2021. However the isolated single exceedance for PM_{10} is discussed below, along with the comparison of Vault Haul Road and AWAR dustfall results.

12.4.4.2.1 PM_{10}

In 2020, one of 52 PM_{10} samples exceeded the prediction. However, the bulk of results indicate this was an isolated event, and no trends towards increasing air quality concerns are evident (Figure 59). No exceedances of FEIS predictions occurred in 2021.

Figure 59. 24-h average concentration of airborne particulate matter less than 10 microns (PM_{10}) at Meadowbank stations DF-1 and DF-2. Dashed line indicates the BC Air Quality Objective for this parameter.



12.4.4.2.2 AWAR Dustfall

In their *2018-2019 Annual Monitoring Report for the Meadowbank Gold Project and the Whale Tail Pit Project*, the NIRB requested a discussion of whether the predictions in the FEIS may have potentially underestimated the amount of dust produced on the mine site including along the all weather access road (AWAR). In the 2019 Annual Report, Agnico Eagle provided this review of FEIS modelling, and supplemental comparisons of dustfall results. While the full discussion is not re-visited here, the comparison of Vault Haul Road dustfall and AWAR dustfall is carried forward along with 2021 results.

Within the FEIS, air quality modeling was completed for the Vault Haul Road. That modeling indicated that the worst case level of air pollution (mainly due to fugitive dust) would be in the range of, or less than,

air quality objectives. Since traffic rates along the AWAR were predicted to be lower than the Vault Haul Road, air quality modeling was not specifically conducted for the AWAR - i.e., impacts of the AWAR on air quality were assumed to be lower than impacts of the Vault Haul Road.

To validate this assumption of the FEIS, dustfall monitoring results from the Vault Haul Road area were compared with those collected along the AWAR, to determine whether air quality impacts (as measured through this FEIS-recommended monitoring method) are similar.

Dustfall results for DF-4 (500 m west of the Vault Haul Road) and the most comparable location with respect to the AWAR (km 18 and 78; 300 m west of the road) are provided in Figure 60. The following differences in sample collection methods are kept in mind while interpreting this data:

-Samples collected along the Vault Haul Road are collected on a 2 m stand (ASTM method), while those collected historically (prior to 2020) along the AWAR are at ground level, due to logistical constraints. As described in the 2019 Air Quality and Dustfall Monitoring Report, results for ground level samples have always been higher than results for associated samples at 2-m height.

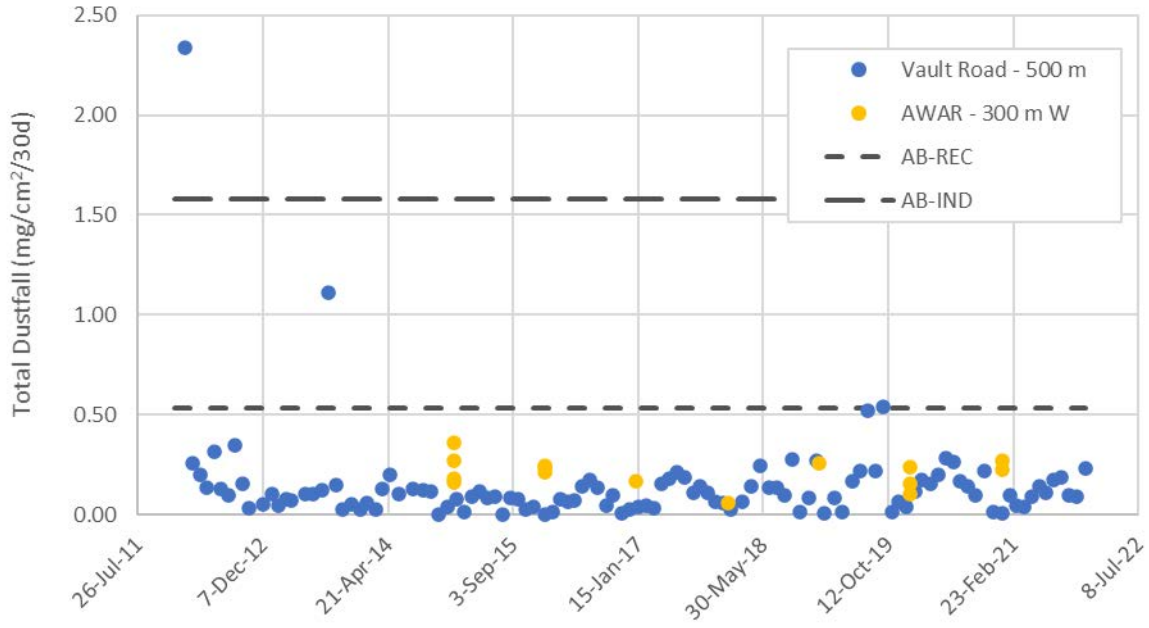
-Samples collected along the Vault Haul Road are at a distance of approximately 500 m from the road, while those used in this comparison for the AWAR are at a distance of 300 m. No samples have been collected at 500 m from the AWAR, and results at 300 m are expected to provide a conservatively high comparison.

-Results for the AWAR are only available for the summer season, when higher traffic rates and dry road conditions prevail. Results used in historical comparisons are from the August sampling event only. These results can therefore be considered peak values, and averages based on these are likely inflated compared to the true annual average (as calculated for the Vault Haul Road dataset).

-AWAR samples provided here are collected in locations where dust suppression is not applied, whereas the Vault Haul Road is watered near-continuously in the snow-free season.

Despite these differences which generally result in a very conservative comparison of dustfall rates between the Vault Haul Road location and AWAR samples, dustfall rates in both locations are historically similar. While the AWAR dataset for this purpose is limited, these results suggests that the FEIS assumption of lower air quality impacts along the AWAR as compared to the Vault Haul Road were accurate.

Figure 60 30-d rates of total dustfall measured at monitoring station DF-4 (500 m west of the Vault Haul Road) and along the AWAR (km 18, 78; 300 m west). Alberta Environment dustfall guidelines for recreational areas (AB-Rec) and industrial areas (AB-Ind) are shown.



12.4.4.3 *Effectiveness of Monitoring and Mitigation, and Adaptive Management*

Effectiveness of Monitoring

As described in Section 12.4.4.1, only a subset of FEIS air quality predictions are readily comparable to monitoring results. However, air quality monitoring at the Meadowbank site is well suited to understanding ambient air quality at the site in relation to regulatory criteria, and is therefore considered effective as designed in plans approved at the FEIS stage of the Project. A complete analysis of air quality monitoring results in comparison to regulatory criteria is provided in the 2021 Air Quality and Dustfall Monitoring Report (Appendix 50).

Effectiveness of Mitigation

A summary of the planned mitigation measures for air quality (per Air Quality and Noise Management Plan, 2005) is provided in Table 12-14, along with a commentary on current implementation.

As described in the Air Quality and Dustfall Monitoring Report (Appendix 50), monitoring thresholds were established within the Air Quality and Dustfall Monitoring Plan (March, 2020) to confirm effectiveness of existing mitigation. For the Meadowbank site, thresholds relate to dustfall measurements for onsite and AWAR locations. In 2021, the onsite dustfall threshold was exceeded in one of 59 samples, and in one AWAR dustfall sample. Based on analysis of each situation (as further described in the Air Quality and Dustfall Monitoring Report, Appendix 50), these were determined to be isolated events and no changes in mitigation are planned based on these results.

Table 12-14 Mitigation measures described in the Air Quality and Noise Management Plan (October, 2005) to reduce impacts of the project on area air quality, and commentary on current implementation.

Emission Source	Planned Mitigation Measure (Air Quality and Noise Management Plan, 2005)	Implementation (2021)
Plant Production Facilities	Select the diesel power plant engines with low NOx emissions to prevent ozone formation and with low hydrocarbon emissions to lower GHG emissions	**N/A**
	Use low sulphur content diesel fuel to mitigate SO2 emissions	**Yes -** Use of summer fuel
	Collect and vent any process emissions (flotation, CIP circuit, carbon treatment, gold refining, and cyanide detoxification) into the atmosphere	**Yes -** All process enclosed in the mill facility except leach tank
	Design all stacks using good engineering practice (including accessible sampling ports and Adequate height) to ensure the required dispersion to meet ambient air quality objectives	**Yes -** Design to meet engineering practice
	Implement fleet maintenance program to ensure that all diesel-powered equipment will operate efficiently, thereby reducing air emissions	**Yes-** Preventive maintenance per manufacture recommendation
	Install dust filters at the primary crusher building and at fine grinding facilities (SAG mill and ball mill) and provide dust suppression equipment (dust covers, sonic sprays, etc.)	**Yes -** Filter installed at major dust generating equipment
	Install enclosure of feed conveyor to avoid fugitive emissions during windy weather	**Yes -** All conveyer are enclosed
	Provide crushed ore stockpile enclosure to limit any dust to indoor environment	**Yes -** Enclosed in a dome
Transportation	Impose vehicle speed limit on Vault haul road to mitigate fugitive dust and reduce engine emissions	**Yes** - Speed limit enforcement on Vault Haul Road and AWAR
	Apply dust suppressants (water, calcium chloride) to haul and service roads during dry weather to mitigate fugitive dust	**Yes -** Dust suppressant applied on mine site and roads
	To reduce vehicle emissions, do not let motors idle, except when necessary	**Yes -** No idle policy implemented. Application of the policy followed by Environment Department. Reminder of the policy sent as needed to all employees.
	Upgrade road-surfacing materials using local coarse rocky aggregates	**Yes -** Mine site road surfaced with NPAG waste rock material
Blasting & Waste Disposal	Limit blasting to calm days or use delay blasting technique; natural mitigation to take place when mining pits are from 85 to 175 m below the ground level; ore and waste to be coarse run-of-mine muck not prone to generating excessive dust	**N/A -** Blasting follow the approved Blast Monitoring Program. No blast in 2021 at the Meadowbank site
	Cover dewatered tailings with non-potentially acid-generating (non-PAG) aggregates to control wind erosion	**N/A -** No cover added in 2021
Miscellaneous	Provide pressure valves to control fuel vapour fugitive emissions from the storage tanks	**Yes -** Installed at all locations
	Use water spray instead of pneumatic flushing while cleaning equipment and working areas when temperature is above the freezing point	All machine cleaning is done inside shop (wash bay)
	Use site-generated mineral material (dirt, aggregate, etc.) to cover disposed solid waste at the waste dump	**Yes -** Waste dump is located in the Portage Waste Rock Facility and is covered with waste rock created by mining activities
	Select waste incinerator with build-in emission control system (secondary combustion chamber, catalytic	**Yes -** Construction of the incinerator included a secondary combustion

Emission Source	Planned Mitigation Measure (Air Quality and Noise Management Plan, 2005)	Implementation (2021)
	converter, etc.) and install a stack to disperse emissions to concentrations below ambient air quality objectives	chamber.
	Apply vegetation cover on stripped areas and long-term stockpiles	**N/A -** Natural revegetation to occur during the reclamation phase. Revegetation option to be considered in the final Closure Plan.

Adaptive Management

Since no exceedances of impact predictions occurred and the vast majority of measured results met established thresholds for adaptive management, no changes to monitoring or mitigation related to air quality are planned for 2022 based on this PEAMP analysis.

12.4.5 Permafrost

12.4.5.1 *Parts 1 & 2: Summary of Predicted and Measured Residual Impacts*

A summary of predicted residual impacts to permafrost (after mitigation), as described in the FEIS (Cumberland, 2005; Table B1.2), and results of monitoring being conducted to assess the accuracy of these predictions is provided in Table 12-15 below. A complete description of monitoring results is provided in the 2021 Geotechnical Inspection Report (Appendix 9), which reviewed instrument data collected between September 2020 and August 2021.

In general, degradation of permafrost was predicted in association with the construction of mine buildings, and development of permafrost was predicted in association with dikes, TSF, and WRSF construction. Predictions are typically related to closure-phase impacts. Therefore, results of monitoring to date are presented here to demonstrate progress, but validity of the prediction (i.e. whether or not the prediction is supported by the monitoring data) cannot be determined at this time.

Table 12-15 Predicted and measured impacts to permafrost for the Meadowbank site. Predicted impacts according to Cumberland, 2005, Table B1.2. Measured impacts according to the 2021 Geotechnical Inspection Report (Appendix 9)

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted	Predicted Impact in FEIS	Measured Impacts			
					2018	2019	2020	2021
Permafrost aggradation and stabilization of new active layer in dikes	Dike design	Monitor ground temperatures; monitor slopes; monitor sub-permafrost pore pressures (tailings dike)	Ground temperature monitoring (thermistors)	Net increase in permafrost distribution and/or decrease in ground temperatures.	East Dike, Bay-Goose Dike, South Camp Dike: similar to historical trends, partially frozen foundations. Vault Dike: frozen foundation Central Dike: similar to historical trends, partially frozen foundation SD1&2: frozen foundations; SD3,4,5: partially frozen foundations; Stormwater Dike: partially frozen foundation		East Dike, Bay-Goose Dike, South Camp Dike: similar to historical trends, partially frozen foundations with cooling trends at edges of seepage zones. Vault Dike: frozen foundation Central Dike: similar to historical trends, partially frozen foundation SD1&2, 4&5: frozen foundations; SD3: partially frozen foundations; Stormwater Dike: partially frozen foundation	
Permafrost changes in Second Portage Lake (2PL) NW arm area	Dewatering, reclaim and attenuation pond filling, and tailings deposition	Representative monitoring of ground temperatures; assessment of anticipated ice entrapment (i.e. ground ice development)	Thermistor monitoring in TSF (thermistors NC-T1, NC-T2, NC-17-01 through 08)	Net increase in permafrost distribution and/or decrease in ground temperatures	Thermistors indicate tailings are not completely frozen.	Thermistors indicate tailings are not completely frozen. Freezeback and progression of freezing front is occurring in the North Cell in section not entirely frozen. Data are showing quicker freezeback than anticipated		
Permafrost changes in Third Portage Lake (TPL) north central shoreline and Portage Pit area	Portage pit development	Assessment of suspected ground ice development in conjunction with permafrost aggradation. Assessment of ground ice content of select shoreline polygons.	None	Net increase in permafrost distribution and/or decrease in ground temperatures	General increase in permafrost aggradation due to structures; permafrost is developed in part of the Portage Pit and Goose Pit walls, under the Goose Dike.			
Permafrost changes in waste rock area	Construction of waste rock facility	Internal and foundation temperatures to be monitored	Thermistor monitoring of internal and foundation temperatures	Fall, winter and spring placement will continue to bury the natural ground surface and permafrost will aggrade into the waste rock where a new and temporary active layer will form. Placement of lifts on natural ground in the summer may continue to cause temporary and localized deepening of the active layer, warming of near surface permafrost and possible subsidence,	Frozen ground conditions under the Portage RSF for all thermistor locations. Rockfill temperature below 0 °C for at least 10m above ground surface for all instruments. Decreasing trends in active zone depth are recorded at most thermistor locations. Temperature trends in the structure are becoming more consistent with predicted temperature over time.			

Potential Impact	Potential Cause(s)	Proposed Monitoring	Monitoring Conducted	Predicted Impact in FEIS	Measured Impacts			
					2018	2019	2020	2021
				particularly in low lying areas.				
Potential settlement of buildings	Loss of permafrost under heated structures	Ground temperature measurements where there is a need to monitor foundation temperatures	None	Net decrease in permafrost distribution and/or increase in ground temperatures	No ground temperature measurements have been undertaken at or near buildings on site. To date there has been no observed thawing of foundations.			
Permafrost changes below pipelines	Stabilization of permafrost temperature and active layer thickness	Monitor pipeline alignment for potential permafrost degradation	None	Minor any undifferentiated net gain or loss of permafrost	No ground temperature measurements but no observations of thawing due to pipelines.			

12.4.5.2 *Parts 3 & 4: Discussion*

Permafrost conditions continue to be monitored, but since final impact predictions relate to the closure/post-closure phase, no commentary on potential exceedances is made at this time.

Nevertheless, to help demonstrate the current status towards achieving these predictions, historical trends for all thermal monitoring results are provided in Appendix 24 of the 2021 Annual Report.

12.4.5.3 *Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management*

Effectiveness of Monitoring

Based on Table 12-15, all FEIS predictions for which monitoring was recommended are being addressed through current programs. Monitoring is therefore considered effective.

Effectiveness of Mitigation

A summary of the planned mitigation measures for permafrost during the current operations phase of the project (FEIS Physical Environment Impact Assessment Report (2005), Table C.2) along with implementation in 2021 is provided in Table 12-16. Mitigation measures proposed for operations-phase components which have already occurred (e.g. dewatering) or those associated with design-phase planning are not included.

Table 12-16 Mitigation measures described in the FEIS, Appendix B (October, 2005) to reduce impacts of the project on permafrost, and commentary on current implementation

Project Component	Planned Mitigation Measure (FEIS Section 4.24.2.4)	Implementation (2021)
Waste Rock Storage	Schedule placement of waste rock on thaw-sensitive polygons during winter months, possibly in conjunction with proactive measures to enhance ground chilling prior to placement (e.g. snow removal and/or compaction); use flatter side slopes	**Yes -** Annual geotechnical inspection completed by third party Annual revision of the Waste Rock and Tailings Management Plan
Tailings Storage Facility	Management of ice entrapment	**Yes -** Follow up done on ice entrapment and best practices
Ditches (roads, airstrip, contact water)	Silt fences as required to manage sediment loss; rock aprons as required to slow the rate of thaw penetration and stabilize the underlying soils	**N/A -** Silt fences not required as of yet
Freshwater intake & pipeline	Use insulated pipe with heat tracing; elevate pipeline across thaw sensitive terrain	**Yes -** Insulated pipe and elevated (freshwater line)
Discharge facilities & pipeline	Use insulated pipe with heat tracing; elevate pipeline across thaw sensitive terrain	**Yes -** Insulated pipe and elevated
Non-contact diversion facilities	Silt fences as required to manage sediment loss; rock aprons as required to slow the rate of thaw penetration and stabilize the underlying soils	**N/A -** Silt fences not required as of yet
Vault access road culverts (Turn Lake)	Maintenance, as required, to restore smooth grade where thaw settlement is a problem; avoid culverts in areas susceptible to thaw settlement	**N/A -** No maintenance as yet required

Adaptive Management

No changes to permafrost monitoring or management programs are planned in 2022, based on this PEAMP analysis.

12.4.6 Socio-Economic

A comprehensive assessment of socio-economic indicators, comparison to FEIS predictions, and review of management/mitigation measures is provided in the 2021 Socio-Economic Monitoring Report (Appendix 59) and summarized here in the PEAMP format. Since, in many cases, is it not possible to distinguish impacts of the Meadowbank project from those of the Whale Tail project, the PEAMP evaluation is combined for this sector.

12.4.6.1 *Parts 1 & 2: Summary of Predicted and Measured Residual Impacts*

Based on results of the 2021 Socio-Economic Monitoring Report (SEMR), the accuracy of Project impacts as predicted in the FEIS documents (Cumberland, 2005 - Table B15.2; Golder, 2018) is assessed for each identified valued socio-economic component in Table 12-17, below. For each metric assessed, 2021 results are presented along with the overall trend since the Project construction phase. When specific impact predictions are not being met, further discussion is provided in Section 12.4.6.2.

As described in the 2021 SEMR, COVID-19 has been a major factor in movement of a number of indicators for 2020-2021.

Table 12-17 Summary of FEIS predictions for VSECs, observed trends, and interpretation of monitoring results in comparison to FEIS predictions (Cumberland, 2006; Golder, 2018). Measured impacts that are trending in a negative manner outside of predictions are further discussed in Section 12.4.6.2. Plus symbol (+) indicates a result that is measured outside of impact predictions in a manner that is considered positive – these results are not discussed further here, but explained in detail in the corresponding section of the 2021 SEMR.

Sector and Overarching FEIS Prediction	Metric	MBK / WT Trends			2021 Overview	Specific FEIS Prediction	Accuracy of the FEIS Prediction
		Pre-dev	Post-dev	Last year			
1. Employment	Error! Reference source not found. Error! Reference source not found.						
MEADOWBANK: "The potential impacts of employment are likely to take some time to gain full momentum, and overall are considered of high magnitude, positive, long term and of high significance, specifically to those individuals and their families who are able to benefit" (Cumberland Resources, 2006, p. 120) **WHALE TAIL:** "The Expansion Project will create direct, indirect and induced employment opportunities." (Golder Associates, 2018, p. 9)	Project employment (permanent, temporary & contractor)	N/A	↑	↑	Employment at Meadowbank / Whale Tail grew by 12% in 2021 to 2,070. Contractors account for 42% of Meadowbank / Whale Tail employment.	MEADOWBANK "It is expected that the construction phase workforce will average 160 and peak at 310, and the operation phase workforce is estimated at 370." (Cumberland Resources, 2006, p. 119) WHALE TAIL "Direct average operational employment is expected to be 1,166 positions." (Golder Associates, 2018, p. 9)	MEADOWBANK – Prediction exceeded (+) WHALE TAIL – Prediction exceeded (+)
	1.2 Project Inuit employment (Agnico Eagle and contractors)						
	Project employment (Inuit & non-Inuit)				Inuit employment at Meadowbank / Whale Tail remined relatively stable in 2021 at 240 FTEs (loss of one FTE over 2020 levels). Inuit employment as a proportion of total was 22% in 2021, representing a decrease from 25% in 2020.	MEADOWBANK – none WHALE TAIL (inc. contractors) "25% of direct construction positions will be sourced locally, and are expected to be filled by the existing Meadowbank Mine workforce" (Golder Associates, 2016, pp. 7-51) "The Expansion Project serves to extend employment opportunities for the Approved Project workforce, and adds a projected 99 opportunities for Nunavummiut" (Golder Associates, 2018, p. 19)	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – Prediction is not supported
	Inuit FTEs	N/A	→	↓			
	Inuit FTE rate	N/A	→	↓			
	Project contractor employment (Inuit & non-Inuit)				At Meadowbank / Whale Tail, Inuit contractor employment decreased by 2 FTEs to 17 FTEs in 2021. Inuit FTE for contractors was 2% in 2021, down from 3% in 2020.		
	Inuit FTEs	N/A	→	↓			
	Inuit FTE rate	N/A	→	↓			
	1.3 Project employment by Kivalliq community						
	Error! Reference source not found. (Inuit & non-Inuit)	N/A	↑	↓	While generally trending upward, the number of Kivalliq-based employees decreased in both 2020 (-8%) and	MEADOWBANK – none WHALE TAIL	MEADOWBANK – TBD (cannot be determined at

					2021 (-13%), reaching 258 at Meadowbank / Whale Tail in 2021. In 2021, 56% of Meadowbank / Whale Tail's Kivalliq-based employees were from Baker Lake, for a total of 145.	"The FEIS estimates 217 positions will be filled by employees from Baker Lake." (Golder Associates, 2016, pp. 7-53)	this time) WHALE TAIL – Prediction not supported
	Project contractor employment by Kivalliq community (Inuit & non-Inuit)	N/A	N/A	N/A	In 2021, a total of 52 contractor employees were hired from Kivalliq communities: 47 contractors were hired from Baker Lake and 4 from Rankin Inlet.		
	1.4 Employee turnover						
	Agnico Eagle Inuit turnover by reason	N/A	N/A	↓	Resignation / voluntary departures accounted for the majority (31 or 89%) of reasons for turnover among Agnico Eagle Inuit employee in 2021. In 2021, there were 35 departures in total, compared to 66 in 2020. Inuit turnover rates at Meadowbank / Whale Tail increased slightly in 2021 to 18% from 17% in 2020. Turnover rates for non-Inuit employees also increased slightly, from 9% in 2020 to 11% in 2021. By community, turnover rates dropped for some communities, while increased for others, without a detectable trend.	MEADOWBANK – none WHALE TAIL – none	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be determined at this time)
	Error! Reference source not found. (Inuit & non-Inuit)						
	Inuit rates	N/A	→	↑			
	Non-Inuit rates	N/A	→	↑			
	Turnover rate by Kivalliq community	N/A	→	→			
2. Gender	**2.1 Gender-specific initiatives**						
None	Overview and assessment of gender-specific initiatives	N/A	/	/	Agnico Eagle is continuing to develop its policy and programs to encourage greater gender equality. At present, eight programs are active, two are under development, and four more programs are under consideration.	MEADOWBANK – none WHALE TAIL – none	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be determined at this time)
	2.2 Project employment by gender						
	Project and contractor employment	N/A	↑	↑	There were 178 Agnico female FTEs at Meadowbank / Whale Tail in 2021, up from 173 in 2020.	MEADOWBANK – none WHALE TAIL – none	MEADOWBANK – TBD (cannot be determined at

	(gender; Inuit & non-Inuit) – FTE				There were 60 female contractor FTEs at Meadowbank / Whale Tail in 2021, up from 51 in 2020.		this time) WHALE TAIL – TBD (cannot be determined at this time)
	Project and contractor employment (gender; Inuit & non-Inuit) – rate	N/A	➔	➔	The proportion of Agnico female employment at Meadowbank / Whale Tail in 2021 was 16%, down from 18% in 2020. The proportion at contractor female employment at Meadowbank / Whale Tail in 2021 was unchanged at 7%.		
	2.3 Project employment by gender and skill level						
	Agnico Eagle female employment by skill level	N/A	N/A	➔	For Meadowbank / Whale Tail, 49 female employees were in management & professional roles (compared to 50 in 2020), 18 in skilled positions (as in 2020), 59 in semi-skilled positions (compared to 52 in 2020), and 51 in unskilled positions (compared to 53 in 2020).	MEADOWBANK – none WHALE TAIL – none	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be determined at this time)
	Proportion of skills levels held by female employees	N/A	N/A	➔	In 2021, female employees held 44% of all unskilled jobs (up from 42% in 2020). In all other categories, females held less than one-fifth of the available positions in 2021:18% for management and professional (compared to 19% in 2020), 12% for semi-skilled (as in 2020), and 8% for skilled (as in 2020).		
3. Income	Error! Reference source not found. Error! Reference source not found.						
MEADOWBANK: "The potential impacts of increased income are considered of high magnitude, positive, long-term and of high significance, particularly to those individuals and their families who are able to benefit. It is expected that overall community effects, moderate in	**Error! Reference source not found.**	N/A	↑	↑	Total income paid to Meadowbank /Whale Tail Inuit employees (excluding contractors) in 2021 was $19.1M, (compared to $18.6M in 2020).	MEADOWBANK "Direct project wages paid to people in Kivalliq Region, primarily Baker Lake, could exceed $4M annually" WHALE TAIL "During operations, the Expansion Project is projected to generate $421.1 million (cumulatively) in direct labour income in Nunavut, and $509.3 million in total territorial labour income." (Golder Associates, 2018, p. 12)	MEADOWBANK – Prediction exceeded WHALE TAIL – Prediction is not supported

significance, are likely to be most experienced in Baker Lake, as most direct employment will occur here." (Cumberland Resources Ltd., 2006, p. 121) **WHALE TAIL:** "The Expansion Project will generate direct, indirect and induced incomes." (Golder Associates, 2018, p. 12)	**3.2** Error! Reference source not found.						
	Error! Reference source not found.	→	↑	N/A	Baker Lake and Rankin Inlet have had the highest median incomes in the Kivalliq region up to 2017, but more recent data is unavailable.	MEADOWBANK The Meadowbank FEIS makes no specific predictions regarding changes in the median income of Kivalliq communities but does predict that Baker Lake will experience the most positive effects of increased income. WHALE TAIL – none	MEADOWBANK – Prediction supported WHALE TAIL – Prediction supported
4. Education and Training	**4.1 Investment in education-based initiatives**						
MEADOWBANK: "The potential impacts of education and training are considered of medium magnitude, positive, long term and of high significance, specifically to those individuals and their families who are able to benefit." (Cumberland Resources Ltd., 2006, p. 121) **WHALE TAIL:** "The Project will provide training opportunities for its workforce… The project will contribute to community education" (Golder Associates, 2016, pp. 3-C-38)	Agnico Eagle investments in education-based initiatives	N/A	/	↓	In 2021, Agnico Eagle made $155,000 in contributions to education-based initiatives, down from $195,000 in 2020 due to COVID-19.	MEADOWBANK "Cumberland and KIA will address the need for a broader based project education and training initiatives [sic] to assist those who wish to develop skills that will position them for project employment." (Cumberland Resources Ltd., 2006, p. 121) WHALE TAIL "The Project will provide workforce training and support community education" (Golder Associates, 2016, pp. 7-55)	MEADOWBANK – Prediction supported WHALE TAIL – Prediction supported
	Enrolment in Agnico Eagle summer student program (Inuit & non-Inuit)	/	/	↓	In 2021, the Inuit Summer Employment program was offered only in the communities and not at the mine site to accommodate the COVID-19 situation. Advertisement was done in March and April, but Agnico received few applications. A summer employment position was provided to (1) one person at the Rankin Inlet office with the Community Relations team.		

	4.2 Error! Reference source not found.						
	Error! Reference source not found.	↑	↑	NA	In 2017, graduation rates in the Kivalliq region were at an all-time high, being consistently higher than those in the other two regions (since 2010). However, in 2018, there was a general decrease in graduation rates in Nunavut. More recent data on secondary school graduations is not available.	MEADOWBANK – none WHALE TAIL – none	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be determined at this time)
	4.3 Error! Reference source not found.						
	Agnico Eagle investments in mine training and education initiatives	N/A	→	↓	In 2021 (as in 2020), there were no investments in externally-delivered mine training and education programs, but Agnico Eagle spent 90% of the $3.6M allocated as per the IIBA. There was a decrease in specific training provided at Meadowbank /Whale Tail, from 23 hours in 2020 to 19 in 2021 for Inuit employees, and from 14 hours in 2020 to 11 in 2021 for non-Inuit employees. There was a decrease in participation in skills programs, from 16 participants in 2020 to 6 participants in 2021, due to COVID-19. There were 7 active Inuit apprentices at in 2021, down from 10 in 2020.	MEADOWBANK "Cumberland and KIA will address the need for broader based project education and training initiatives to assist those who wish to develop skills that will position them for project employment." (Cumberland Resources Ltd., 2006, p. 121) WHALE TAIL "The Project will continue the workforce training programs in place at Meadowbank Mine" (Golder Associates, 2016, pp. 7-55)	MEADOWABNK – Prediction supported WHALE TAIL – Prediction supported
	Average specific training hours (Inuit & non-Inuit)	N/A	↓	↓			
	Error! Reference source not found.	N/A	↓	↓			
	Inuit Participation in pre-apprenticeship and apprenticeship programs by type	N/A	/	↓			
	4.4 Error! Reference source not found.						
	Agnico Eagle employees by skill level (Inuit & non-Inuit)	N/A	↑	↓	In 2021, the number of Inuit employees in unskilled roles decreased to 152 from 174 in 2020, and in semi-skilled roles to 129 from 141 in 2020. Numbers in skilled and management roles remained consistent, but Inuit employees continue to be underrepresented.	MEADOWBANK – none WHALE TAIL "As Nunavummiut employees achieve further training and education, it is expected that they will be better poised to advance to more skilled positions as they arise, thereby increasing representation of Nunavut residents in the skilled, professional and management employment	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – Prediction not supported

						categories" (Golder Associates, 2016, pp. 7-55)	
	4.5 Trade certificates / apprenticeships in Nunavut						
	Trade certificates / apprenticeships by community	N/A	N/A	N/A	At the time of this report, data on trade certificates / apprenticeships by Kivalliq community was not available.	MEADOWBANK – none WHALE TAIL – none	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL– TBD (cannot be determined at this time)
5. Contracting and Business Opportunities	Error! Reference source not found. Error! Reference source not found.						
MEADOWBANK: "The potential impacts of employment are likely to take some time to gain full momentum, and overall are considered of high magnitude, positive, long term and of high significance, specifically to those individuals and their families who are able to benefit." (Cumberland Resources Ltd., 2006, p. 121) **WHALE TAIL:** The Project will generate "continued local economic activity" (Golder Associates, 2016, p. 68) and is expected to have "high positive impacts…" (Golder Associates, 2016, p. 68) on local procurement.	**Error! Reference source not found.**				Meadowbank / Whale Tail procurement from NTI registered businesses increased in 2021 to $477M (from $360M in 2020) NTI expenditures, as a proportion of total spend, decreased slightly in 2021 to 69% (from 71% in 2020).	MEADOWBANK "With continuing preferential contracting, local business participation in the project is expected to grow with time." (Cumberland Resources Ltd., 2006, p. 7) WHALE TAIL "…about $271 million procured from Nunavut-registered companies. Of this, roughly 84% ($223 million) will be through Kivalliq-registered businesses… [of which] …67% is expected to accrue to those in Rankin Inlet, with 32% accruing to those in Baker Lake." (Golder Associates, 2018, p. 19)	MEADOWBANK – Prediction supported WHALE TAIL – Prediction exceeded (+)
	NTI expenditures	N/A	↑	↑			
	Proportion NTI	N/A	↑	↓			
	Error! Reference source not found.	N/A	→	↑	Procurement from NTI-registered businesses (across all Projects) located in Baker Lake increased to $45M in 2021 (from $38M in 2020). Expenditures in Rankin Inlet increased significantly in 2021 to $567M (from $351M in 2020).		
	Contract expenditures on Nunavut-based businesses				Meadowbank / Whale Tail contract expenditures on Nunavut-based businesses (including NTI-registered businesses) increased to $509M in 2021, up from $376M in 2020. As a proportion of total expenditures, this decreased slightly from 74% in 2020 to 73% in 2021		
	Nunavut-based expenditures	N/A	↑	↑			
	Proportion Nunavut-	N/A	↑	→			

	based						
	Project contract expenditures on Nunavut-based businesses by business location	N/A	🡻	🡹	Meadowbank / Whale Tail contract expenditures at Baker Lake businesses increased to $31M in 2021 from $24M in 2020.		
6. Health and Safety	Error! Reference source not found. Error! Reference source not found.						
MEADOWBANK: "Health and safety of workers and the population at large is subject to legislation and perhaps more importantly to best practices. Health and safety training also has applications in personal life – workers often not only use new health and safety training on-the-job, but also at home in the course of daily tasks." (Cumberland Resources Ltd., 2006, p. 126) **WHALE TAIL:** "The Expansion Project may improve worker and public health and safety." (Golder Associates, 2018, p. 13)	Average mandatory training hours provided to Agnico Eagle employees (Inuit & non-Inuit)	N/A	→	🡹	Mandatory training hours at Meadowbank / Whale Tail increased from 2 hours in 2020 to 12 hours in 2021 for Inuit employees, and from 17 hours in 2020 to 21 hours in 2021 for non-Inuit employees.	MEADOWBANK – none WHALE TAIL "The Expansion Project may improve worker and public health and safety." (Golder Associates, 2018, p. 13)	MEADOWBANK – Prediction supported WHALE TAIL – Prediction supported
	6.2 Health and safety on-site						
	Visits by project employees to Agnico Eagle clinic for work-related and other reasons	N/A	🡹	🡻	Visits by Agnico Eagle employees to Meadowbank / Whale Tail on-site clinics declined from 4.2 in 2020 to 2.3 in 2201 for non-work-related visits, and from 1.3 in 2020 to 0.8 in 2021 for work-related visits.	MEADOWBANK – none WHALE TAIL "The Expansion Project has the potential to result in accidents and emergencies." (Golder Associates, 2018, p. 13)	MEADOWBANK – N/A WHALE TAIL – Prediction supported
7. Population Demographics	**7.1 Employee Migration**						
MEADOWBANK: "The potential impacts of migration are complex and are likely	**Error! Reference source not found.**				At Meadowbank / Whale Tail, the number of Inuit employees residing outside Nunavut has increased modestly since 2015, rising from 21	MEADOWBANK The Meadowbank FEIS suggests that in-migration of Southerners to Baker Lake would be the primary concern.	MEADOWBANK – Prediction is not supported
	Total Inuit employees	N/A	→	🡹			

to have both positive and negative components, but of low magnitude. Any effects of migration are long term but are likely to be low significance. It is not likely that migration to any other community than Baker Lake would be significant." (Cumberland Resources Ltd., 2006, p. 126) **WHALE TAIL:** "Expansion Project employment opportunities could spur migration to Baker Lake and Rankin Inlet…dependant [sic] on scale of speculative migration." (Golder Associates, 2018, p. 18)	*Proportion of Inuit employees residing outside Nunavut*	N/A	➔	↑	in 2020 to 28 in 2021, and accounting for 10% of the Inuit workforce in 2021.	WHALE TAIL "Project is not expected to generate employment-driven migration." (Golder Associates, 2016, 3-C-38)	WHALE TAIL – Prediction supported
	Project contractor Inuit employees residing outside Nunavut				This is a new indicator for this VSEC, and therefore no 2021 data is available. First data will be available in 2022.		
	Total Inuit contractors	N/A	N/A	**N/A**			
	Proportion of Inuit contractors residing outside Nunavut	N/A	N/A	**N/A**			
	Error! Reference source not found. Error! Reference source not found.						
	Population estimates in Kivalliq communities (Inuit & non-Inuit)				Despite the annual variation in the population numbers, the ratio of Inuit to non-Inuit employees in Rankin Inlet and Baker Lake remained relatively stable from 2001 to 2016 (the last year for which data is available). Based on available and current data, there is no indication of mining-induced in-migration.	MEADOWBANK "It is not likely that migration to any other community than Baker Lake would be significant," but does not provide any specific predictions on changes to populations in Kivalliq communities. (Cumberland Resources, 2006, p. 126) WHALE TAIL "No Project employment-driven migration or population change is anticipated." (Golder Associates, 2016, 3-C-38)	MEADOWBANK – Prediction supported WHALE TAIL – Prediction supported
	Estimates in communities	➔	➔	➔			
	Annual percent change	↑	↑	➔			
8. Community Infrastructure and Services	Error! Reference source not found. Error! Reference source not found.						
MEADOWBANK: "The impacts on social services and infrastructure, of low to medium magnitude, are considered largely positive in the medium term and of moderate	**Error! Reference source not found.**	**/**	**/**	/	Data on Kivalliq community health centre visits has not been available since 2016. In 2021, 20 Meadowbank / Whale Tail employees were referred to community health care centres,	MEADOWBANK "Increased employment and business opportunities will result in increased income, a measure of economic security, capacity building that will contribute to employability over the long term, and improved self-image of employees and their families. This	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be determined at
	Employees referred to community health care centre for personal or work-related reasons	N/A	N/A	↓			

significance. There is some potential for closure to have a negative impact on social service delivery." (Cumberland Resources Ltd., 2006, p. 128) **WHALE TAIL:** "Project-induced migration can increase demand on physical infrastructure…[but] no Project employment-driven migration or population change is anticipated." (Golder Associates, 2016, p.3-C-39)	**Error! Reference source not found.**	N/A	↓	↑	compared to 13 in 2020. Incidents requiring use of GN health services increased at Meadowbank / Whale Tail from 4 in 2020 to 14 in 2021.	could result in reducing dependence on government social services." (Cumberland Resources Ltd., 2006, p. 128) WHALE TAIL "Project-induced in-migration could increase demand for services and infrastructure in Baker Lake and Rankin Inlet … [including] healthcare services." (Golder Associates, 2018, p. 17)	this time)
	Error! Reference source not found. Error! Reference source not found.						
	Estimates of use of public physical infrastructure directly related to Project (airports, port, meeting facilities, roads)	N/A	/	↑	In 2021, there was limited use of Baker Lake Airport to access commercial, 9 vessels were received in Baker Lake for 182,000 m3, and the use of the Meadowbank AWAR increased from 2,223 times in 2020 to 3,079 times in 2021.	MEADOWBANK "The impacts on social services and infrastructure, of low to medium magnitude, are considered largely positive in the medium term and of moderate significance. There is some potential for closure to have a negative impact on social service delivery." (Cumberland Resources Ltd., 2006, p. 128) WHALE TAIL "Project-induced in-migration could increase demand for services and infrastructure in Baker Lake and Rankin Inlet." (Golder Associates, 2018, p. 17)	MEADOWBANK – Prediction is not supported WHALE TAIL – TBD (cannot be determined at this time)
	8.3 Social assistance						
	Per capita social assistance expenditures by Kivalliq community	↓	/	N/A	Per capita social assistance expenditures declined in all Kivalliq communities in 2018 (the latest year for which data is available) following an increase across communities starting in 2012. No new data is available since 2018. The percentage of households receiving social assistance has been steady or declining across the region over 2010-2017, with a slight increase in some communities in	MEADOWBANK "The impacts on social services and infrastructure, of low to medium magnitude, are considered largely positive in the medium term and of moderate significance. There is some potential for closure to have a negative impact on social service delivery." (Cumberland Resources Ltd., 2006, p. 128) WHALE TAIL – none	MEADOWBANK – Prediction is not supported WHALE TAIL – TBD (cannot be determined at this time)
	Percentage of households receiving social assistance by Kivalliq community	↓	↓	N/A			

					2018. No new data is available since 2018.		
9. Individual and Community Wellness	**9.1 Agnico Eagle's Programs**						
MEADOWBANK: "Individual and community wellness is intimately associated with potential impacts on traditional ways of life as discussed above. In addition, however, individual decisions on the use of increased income, household management in relation to rotational employment, migration, public health and safety, disturbance particularly during the construction phase, and Cumberland's support for community initiatives are being negotiated in the IIBA are [sic] the other drivers that have the potential to effect [sic] individual and community wellness." (Cumberland Resources Ltd., 2006, p. 123) **WHALE TAIL:** "Project incomes may adversely affect family and community cohesion through social ills (e.g., substance abuse, sexual	Agnico Eagle wellness programs offerings & utilization by project employees and community members	N/A	N/A	N/A	Agnico Eagle continues to provide individual and family wellness planning, financial investments to support mental health and prenatal nutrition, and vaccination campaigns.	MEADOWBANK – none WHALE TAIL "The Project will continue existing individual and family wellness programming (e.g., Employee Family Assistance Program)." (Golder Associates, 2016, p. 3-C-38)	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – Prediction is supported
	9.2 Error! Reference source not found.						
	Self-reported effect of project on health & wellness	N/A	N/A	N/A	This survey was not conducted in 2020 or 2021.	MEADOWBANK – none WHALE TAIL – none	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be determined at this time)
	9.3 Criminal violations						
	Criminal violations per hundred people by community	/	/	↓	In 2020, the latest year for which data is available, crime rates across the Kivalliq region averaged 28 violations per 100 people, a slight decrease from 31 in 2019, while still remaining at high levels. By category, mischief, disturbing the peace, and assault tend to be more common in Rankin Inlet, Baker Lake and Chesterfield Inlet.	MEADOWBANK – none WHALE TAIL "Project incomes may exacerbate …crime in communities." (Golder Associates, 2016, p. 3-C-38)	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – Prediction supported
	Criminal violations per hundred people by type and community						
	Baker Lake	→	/	↓			
	Rankin Inlet	→	/	↑			
	Chesterfield Inlet	↑	/	↑			
	9.4 Error! Reference source not found.						
	Kivalliq community health centre visits by reason	↓	↑	N/A	Data for this indicator has not been available since 2016.	MEADOWBANK "The potential public health and safety impacts of the project, of unknown magnitude, are negative, and, because there is such high impact at	MEADOWBANK – Prediction not supported WHALE TAIL –

misconduct, family violence, crime);" Incomes may also "exacerbate income inequality, social disparity, and, potentially, related conflict in families and crime in communities." (Golder Associates, 2016, 3-C-38). "Project rotational employment may adversely affect family and community cohesion related to extended time away from family and community." (Golder Associates, 2016, 3-C-38) "Expansion Project-induced in-migration could increase demand for housing in Baker Lake and Rankin Inlet… dependant on scale of speculative migration." (Golder Associates, 2018, p. 18)						the individual level in the event that a risk is realized, the effects must be considered long term and of high significance." (Cumberland Resources Ltd., 2006, p. 126) WHALE TAIL "Project-induced migration can increase demand for social and healthcare services…[but] no Project employment-driven migration or population change is anticipated." (Golder Associates, 2016, pp. 3-C-39)	TBD (cannot be determined at this time)
	9.5 Housing						
	Error! Reference source not found.	/	/	↑	In 2021, 1,006 people were on a public housing waitlist in the Kivalliq region, representing a 28% increase over 2020 demand.	MEADOWBANK – none WHALE TAIL "Project-induced migration can increase demand for housing and associated crowding...[but] no Project employment-driven migration or population change is anticipated" (Golder Associates, 2016, pp. 3-C-39)	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be determined at this time)
	Housing needs by community as a percentage of housing stock	/	/	↑	In 2021, Kivalliq communities with the highest needs are Rankin Inlet, Coral Harbour, Arviat, Whale Cove, Naujaat and Baker Lake (all rated as 'critical need'), and Chesterfield Inlet (rated as 'serious').		
	Number of people in core housing need by type and community	N/A	N/A	N/A	While the rate of unaffordable housing is low in Kivalliq communities, as of 2016 on average, 40% of households in the region lives in unsuitable housing, while 35% lives in inadequate housing.		
	Self-reported home ownership aspirations by community	N/A	N/A	N/A	This is a new indicator for this VSEC, and therefore no 2021 data is available. First data will be available in 2022.		
	9.6 Food security						
	Self-reported concerns on food availability by community	N/A	N/A	N/A	This survey was not conducted in 2020 or 2021.	MEADOWBANK – none WHALE TAIL "Project incomes may enhance individual and community wellness by providing access to… nutritious food." (Golder Associates, 2016, p. 3-C-38)	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be
	Cost of the Revised Northern Food Basket (RNFB)	/	/	↑	There was an overall increase in the cost of the RNFB in 2021, in line with the high inflation experienced overall		

					in Canada. Annual changes range from a decrease of 2% in Chesterfield Inlet to a rise of 13% in Coral Harbour over 2020 costs.		determined at this time)
	Agnico Eagle investments in food security initiatives	N/A	N/A	N/A	In 2021, Agnico Eagle contributed $214,000 to community-based organizations that support food security issues. In response to the COVID-19 pandemic, Agnico Eagle provided $185,000 (in-kind and monetary) to the communities of the Kivalliq Region for food-related support during 2021.		
	9.7 Suicide						
	Error! Reference source not found.	/	➔	🡻	The Kivalliq region had the lowest suicide rate in Nunavut, but only marginally, and despite a drop in 2020 (the latest year for which data is available), suicide rates remain at crisis levels, being 6 times the rate of suicide in Canada in 2020.	MEADOWBANK – none WHALE TAIL – none	MEADOWBANK – N/A WHALE TAIL – N/A
10. Culture and Traditional Lifestyle	**10.1** Error! Reference source not found.						
MEADOWBANK: "There is potential for both negative and positive impacts, of any magnitude, on traditional ways of life, which could be of high significance. Any net impact, since it would be an impact of cultural change, would be long term and continue beyond the life of the project. The impact would be experienced primarily in Baker Lake." (Cumberland Resources Ltd., 2006,	Self-reported effect of project on overall communities and on cultural and traditional activities	N/A	N/A	/	No survey was conducted in 2020 or 2021.	MEADOWBANK – none WHALE TAIL – none	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be determined at this time)
	10.2 Culture and traditional lifestyle						
	Population identifying Inuktitut as their mother tongue, by Kivalliq community	N/A	N/A	🡻	Recent information on the proportion of total population identifying Inuktitut as their mother tongue by community is not available. The number of Agnico Inuit employees at Meadowbank / Whale Tail with Inuktitut as a first language	MEADOWBANK "The project will not significantly restrict access to, or productivity of lands used for traditional activity." (Cumberland Resources Ltd., 2006, p. 122) WHALE TAIL	MEADOWBANK – Prediction supported WHALE TAIL – TBD (cannot be determined at this time)
	Number of Agnico employees identifying Inuktitut	N/A	N/A	N/A			

p. 123) WHALE TAIL: "Project activities may affect continued opportunities for traditional wildlife harvesting… fishing…plant harvesting…the use of culturally important sites… [and it may] change access to traditional use area." (Golder Associates, 2016, pp. 3-C-33-37)	as their first language				fell from 202 (57%) in 2019 to 177 (44%) in 2020 (the latest year for which data is available.	"Project activities may affect continued opportunities for traditional wildlife harvesting… fishing…plant harvesting…the use of culturally important sites… [and it may] change access to traditional use areas" (Golder Associates, 2016, pp. p. 3-C-33-37)	
	Self-reported effect of project on use of Inuktitut	N/A	↑	↑	No survey was conducted in 2020 or 2021.		
	Use of AWAR by community	N/A	N/A	N/A	There was an increase in usage of the Meadowbank AWAR in 2021 to 3,079 from 2,223 uses in 2020.		
	Number of consultations with Elder's Advisory Committee on integrating Inuit knowledge	N/A	N/A	N/A	In 2021, Agnico Eagle developed a Kivalliq Inuit Elders' Advisory Committee comprised of 21 Elders from Baker Lake, Chesterfield Inlet, Rankin Inlet, Whale Cove and Arviat to integrate Inuit Qaujimajatuqangit (IQ), Inuit Societal Values (ISV) and community knowledge into exploration, planning, workforce, wellness and operational plans. Two in-person meetings took place in 2021.		
	Agnico Eagle investments to support community and traditional activities	N/A	N/A	↓	In 2021, due to the COVID-19 pandemic and restrictions, only Nunavut Day was celebrated.		
	10.3 Error! Reference source not found.						
	Country food kitchen usage	N/A	→	↓	Country food kitchens were not used in 2021 due to COVID-19. Due to the COVID-19 pandemic and restrictions on large gatherings, no country food nights/events were hosted.	MEADOWBANK – none WHALE TAIL – none	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be determined at this time)
	Country food night events attendance	N/A	/	↓			
11. Nunavut Economy	**11.1** Error! Reference source not found.						
MEADOWBANK: "The economic impacts on the economy of Nunavut, of high magnitude, are positive	**Error! Reference source not found.**	↑	↑	↑	In 2021, payments from taxes, royalties, and IIBA commitments to the NTI and KIA increased by 23% over 2020 totals to $154M across all projects. Largest increases were	MEADOWBANK – none WHALE TAIL "The Project will contribute to government revenues through the	MEADOWBANK – TBD (cannot be determined at this time)

over the medium term and of high significance, particularly during the construction phase." (Cumberland Resources Ltd., 2006, p. 129) **WHALE TAIL:** "The Project will contribute to territorial economic activity via expenditures, procurement and Gross Domestic Product contributions." It will also "contribute to government revenues through the payment of taxes and royalties." Both contributions "will be large relative to [the] territorial economy." (Golder Associates, 2016, 3-C-38)					noted from the Meadowbank/Whale Tail payroll taxes (from $41M in 2020 to $48M in 2021).	payment of taxes and royalties, [which will be] …large relative to [the] territorial economy." (Golder Associates, 2016, p. 3-C-38)	WHALE TAIL – Prediction supported
	11.2 Error! Reference source not found.						
	Error! Reference source not found.	↓	→	↑	In 2020, the trade deficit was $653M, the lowest levels on record since 2002 (compared to the average of $1,076M from 2010 to 2017). Information for 2021 was not available at the time of PEAMP preparation.	MEADOWBANK – none WHALE TAIL – none	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be determined at this time)
	11.3 Nunavut GDP						
	Nunavut GDP (all industries), Nunavut GDP (mining, quarrying and oil & gas)	↑	↑	↑	Nunavut's GDP has been trending upwards since 2010. In 2020, mining accounted for approximately $1,039M or 33% of total GDP ($3,164M). Information for 2021 was not available at the time of PEAMP preparation.	MEADOWBANK – "The results indicate that during the construction phase, the project would contribute $120.3 M to the GDP of Nunavut … During the operations phase, the annual contribution to GDP would be $35.5M…" (Cumberland Resources, 2006, p. 119) WHALE TAIL "During operations, the Expansion Project will represent a contribution to the territorial economy, with total annual GDP contributions of $100 million to $120 million annually." (Golder Associates, 2018, p. 7)	MEADOWBANK – TBD (cannot be determined at this time) WHALE TAIL – TBD (cannot be determined at this time)
	Error! Reference source not found.	N/A	/	↓	The lost time and light duty accident frequency rate (incidents per 200,000 person-hours worked) at Meadowbank / Whale Tail declined from 1.97 in 2020 to 1.71 in 2021.		

12.4.6.2 *Parts 3 & 4: Discussion*

For each metric with a specific FEIS prediction that is not supported (as identified in Table 12-17), a trend analysis and discussion is provided here from the 2021 Socio-Economic Monitoring Report (Appendix 59). That report further provides trend analyses and discussions for every metric assessed in Table 12-17, above.

12.4.6.2.1 Project Inuit Employment (Agnico Eagle and Contractors)

A complete discussion of this issue is provided in Section 1.2 of the 2021 SEMR (Appendix 59), as summarized below.

FEIS Prediction:

> MEADOWBANK – none
>
> WHALE TAIL (including contractors) -
>
> > 25% of direct construction positions will be sourced locally, and are expected to be filled by the existing Meadowbank Mine workforce (Golder Associates, 2016, pp. 7-51)
> >
> > Operational employment is expected to be 931 positions… of these nearly half (392 or 42%) are expected to be filled by Nunavummiut (Golder Associates, 2016, pp. 7-52)
> >
> > "The Expansion Project serves to extend employment opportunities for the Approved Project workforce, and adds a projected 99 opportunities for Nunavummiut" (Golder Associates, 2018, p. 19)

Discussion: Trends in Agnico Eagle and contractor employment numbers are provided in Figures 61 and 62. At Meadowbank / Whale Tail, Inuit FTEs comprised 22% of the total in 2021, down from 25% in 2020 and 29% in 2019, and being significantly lower than the 42% predicted. Meadowbank/Whale Tail contractors hired 17 Inuit FTEs in 2021, down from 19 in 2020 and 37 in 2019. The primary reason for this decline from 2019 is assumed to be due to the impact of COVID-19 restrictions. However, as we compare actual numbers to predictions, it is important to note that the prediction (392 or 42%) was based on headcount, which results in higher numbers than FTEs.

Under the isolation protocols, Nunavut-based workforce (employees and contractors) were sent home to protect Kivalliq communities from the spread of COVID-19. Reintegration of the Nunavummiut workforce began in June 2021, being completed by the end of October. However, with the raise of the Omicron variant, the Kivalliq-based workforce from Meadowbank / Whale Tail and Meliadine were sent home in December 2021 to help protect their communities. Agnico Eagle's stay-at-home employees continued to receive remuneration. Delivery of Inuit-focused training and recruitment strategies was also impacted, being either scaled back or cancelled in 2021. However, Agnico Eagle continued to support community-based training programs, and online engagement in other initiatives, such as the Pre-Employment Training and Employment Information Sessions.

The 2021 KLMA repeats findings of previous versions – that the Kivalliq Inuit labour supply does not meet Agnico Eagle's labour demands due to a combination of factors related to demographics, education and skills, and willingness to work. The Inuit Workforce Barriers and Strategies (IWBS) Study identified two other, unintended barriers to recruitment and hiring of Inuit employees. The first is the challenge of navigating the recruitment process itself (Agnico Eagle has addressed this via the new 10-day Labour Pool Process described below). The second is negative perceptions of the process, such as the perception that skills of individual applicants are not considered in the labour pool process (Mining Industry Human Resources Council (MiHR), 2018a). Other barriers to employment mentioned in the IWBS include increases in rent, and the lack of housing.

Figure 61 Project Agnico Eagle employment (Inuit & non-Inuit)

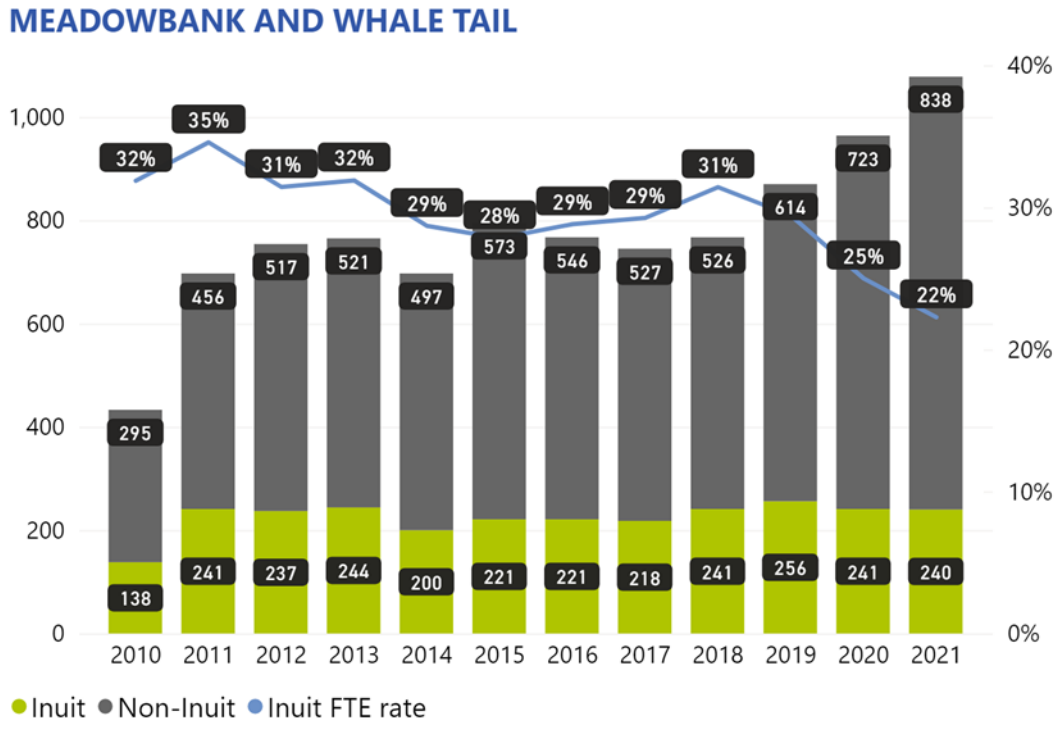
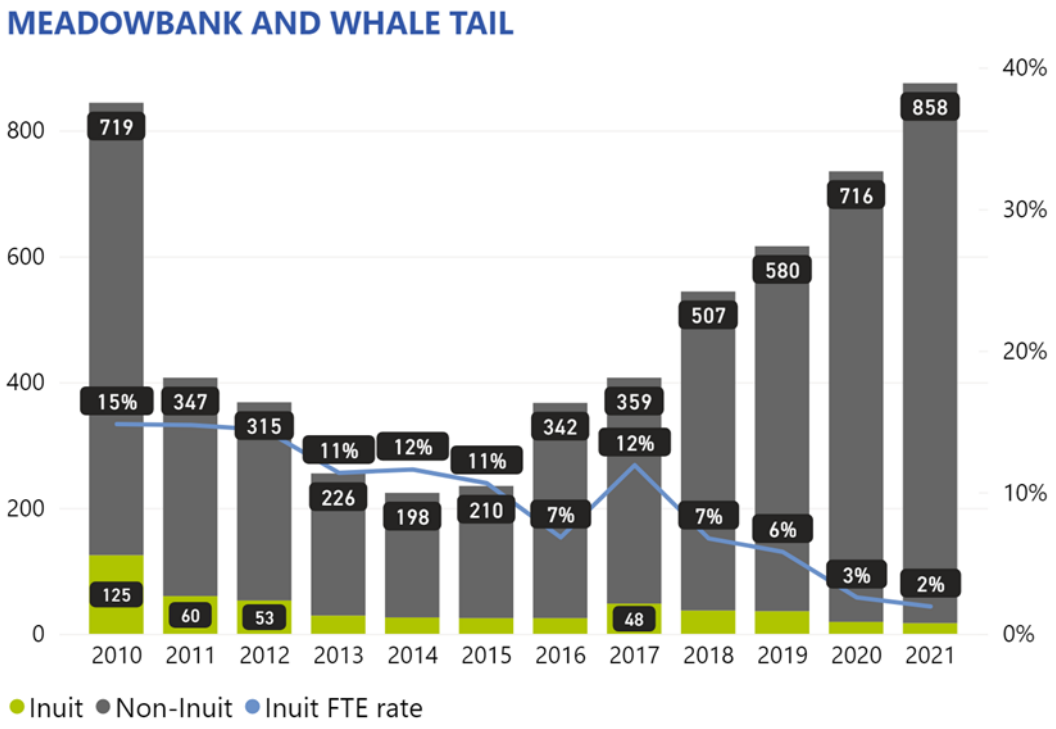


Figure 62 Project contractor employment (Inuit & non-Inuit) [13]



12.4.6.2.2 Project Agnico Eagle Employment by Kivalliq Community

A complete discussion is provided in Section 1.3 of the 2021 SEMR (Appendix 59), and the issue is summarized below.

***FEIS Prediction*:**

MEADOWBANK - none

WHALE TAIL –

> "The FEIS estimates 217 positions will be filled by employees from Baker Lake."
> (Golder Associates, 2016, pp. 7-53)

Discussion: While generally trending upward, the number of Kivalliq-based employees decreased in both 2020 (-8%) and 2021 (-13%), reaching 258 at Meadowbank / Whale Tail. The Whale Tail EIS prediction of 217 employees from Baker Lake is not currently being achieved. In 2021, 56% of Meadowbank / Whale Tail's Kivalliq-based employees were from Baker Lake. Overall, in 2021, Agnico Eagle employed 150 Agnico Eagle employees and 48 contractors from the Baker Lake.

[13] Due to data availability, post 2017 Meadowbank / Whale Tail contractor data and all Meliadine contractor data represent full time equivalents (FTEs), derived based on person-hours worked. The remainder of data points (Meadowbank 2010 to 2016) represent the number of employees as a snapshot at one time of year. Trends between these years should be interpreted with caution.

12.4.6.2.3 Income Paid to Projects' Inuit Employees

A complete discussion is provided in Section 3.1 of the 2021 SEMR (Appendix 59), and the issue is summarized below.

***FEIS Prediction*:**

MEADOWBANK -

> "Direct project wages paid to people in Kivalliq Region, primarily Baker Lake, could exceed $4M annually"

WHALE TAIL –

> ""During operations, the Expansion Project is projected to generate $421.1 million (cumulatively) in direct labour income in Nunavut, and $509.3 million in total territorial labour income." (Golder Associates, 2018, p. 12). The FEIS estimates 217 positions will be filled by employees from Baker Lake." (Golder Associates, 2016, pp. 7-53)

Discussion:

Total income paid to Inuit employees (excluding contractors) continued to increase over the years. In 2021, income paid to Agnico Eagle project employees represented $19.1M, a slight increase since 2020.

In 2021, Agnico Eagle did not achieve the Whale Tail EIS prediction to generate $421.1 million (cumulatively) in direct labour income in Nunavut, and $509.3 million in total territorial labour income.

This can be attributed to several factors:

1. Inuit employees that were sent home received 75% of their base pay for most of the year due to the stay-at-home policy to prevent the spread of COVID-19 to Kivalliq communities.
2. Differing skill level requirements influences average income for Inuit employees
3. Delivery of Inuit-focused training and recruitment strategies impacted due to COVID-19, being either scaled back or cancelled since 2020.

One initiative Agnico Eagle put in place to help supplement some of the loss of income of Nunavummiut employees is the Good Deeds Brigade. Through this initiative, the company paid employees' full salaries to support local projects that may be lacking a workforce. Placements across all Kivalliq communities included: sewing programs; young hunters' programs; video creation; food basket distribution and landfill support (among others). In total, over 8,000 hours of work were performed by 91 employees.

12.4.6.2.4 Project Employment by Skill Level

A complete discussion of this issue is provided in Section 4.4 of the 2021 SEMR (Appendix 59), as summarized below.

***FEIS Prediction*:**

MEADOWBANK - none

WHALE TAIL –

> "As Nunavummiut employees achieve further training and education, it is expected that they will be better poised to advance to more skilled positions as they arise, thereby increasing representation of Nunavut residents in the skilled, professional and management employment categories" (Golder Associates, 2016, pp. 7-55)

***Discussion*:**

Figure 63 shows the number of Inuit employees at each skill level between 2014 and 2021. Agnico Eagle changed how various skill levels are classified in 2013 and 2014, and consequently year-over-year trends of Inuit employment by skill level cannot be drawn pre-2014.

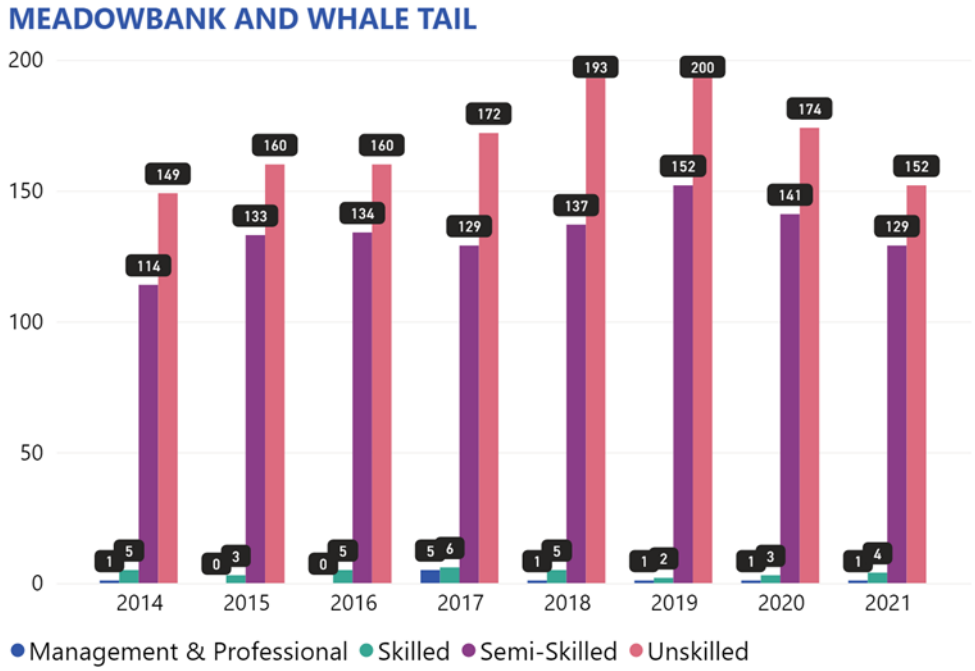
In 2021, the number of Inuit employees continued to decrease in semi-skilled and unskilled job categories, but remained constant or increased for management & professional, and skilled positions. Overall, most unskilled jobs and a quarter of semi-skilled jobs are held by Inuit employees, while Inuit employees are underrepresented in management & professional / skilled roles.

The COVID-19 pandemic impacted the delivery of training and career advancement programs to Nunavut based workers. Nunavut-based employees were therefore not able to participate in existing and newly developed career paths or other programs that would allow skill and career advancements.

There are several longer-term barriers identified in the KLMA (MiHR, 2018b) to retention and advancement of Inuit in the workplace. These include family needs, cultural priorities, language barriers, and access to support programs. Ultimately, there are three pathways through which higher skilled employment can be achieved: (1) direct hiring, (2) greater retention, or (3) internal career progression. The IWBS Study (Mining Industry Human Resources Council (MiHR), 2018a) also identified a number of challenges to increasing Inuit representation in higher-skilled positions through internal advancement programs, including inadequate skillsets, high absenteeism rates, impact of cultural norms, and lack of adequate time and space for training.

Overall, despite the investments Agnico Eagle has been making since project initiation, as well as COVID-19 challenges in recent years, the data points to limited success at growing the number of Kivalliq Inuit labour in higher skilled positions.

Figure 63 Project Agnico Eagle Inuit employees by skill-level



12.4.6.2.5 Employee Migration

A complete discussion of this issue is provided in Section 7.1 of the 2021 SEMR (Appendix 59) as summarized below.

***FEIS Prediction*:**

> MEADOWBANK - The Meadowbank FEIS suggests that in-migration of Southerners to Baker Lake would be the primary concern.
>
> WHALE TAIL – Project is not expected to generate employment-driven migration." (Golder Associates, 2016, 3-C-38)

***Discussion*:**

Agnico Eagle monitors the movement of employees into- and out of Nunavut. In 2021, net employee movements included:

- Five Inuit employees moving out of Nunavut;
- Two Inuit and one non-Inuit employees moving into Nunavut;
- No net migration impacts were reported for Baker Lake or Rankin Inlet.

At Meadowbank / Whale Tail, the number of Inuit employees residing outside Nunavut has increased modestly since 2015, rising from 21 to 28, and accounting for 10% of the Inuit workforce in 2021. The predictions are not specifically supported or refuted by the available data.

12.4.6.2.6 Use of Public Infrastructure

The complete interpretation of this metric is provided in Appendix 59 (Section 8.2), with a summary below. The predictions are not specifically supported or refuted by the available data.

FEIS Prediction:

MEADOWBANK

> "The impacts on social services and infrastructure, of low to medium magnitude, are considered largely positive in the medium term and of moderate significance. There is some potential for closure to have a negative impact on social service delivery." (Cumberland Resources Ltd., 2006, p. 128)

WHALE TAIL

> "Project-induced in-migration could increase demand for services and infrastructure in Baker Lake and Rankin Inlet." (Golder Associates, 2018, p. 17)

Discussion:

The use of public physical infrastructure by Meadowbank / Whale Tail and its employees consists primarily of the use of airports and has been relatively consistent since operation began in 2010. There are no indications of significant positive or negative impacts on this infrastructure.

12.4.6.2.7 Social Assistance

Changes in community use of social assistance are discussed in Appendix 59, Section 8.3, and summarized below. The predictions are not specifically supported or refuted by the available data.

FEIS Prediction:

MEADOWBANK

> "The impacts on social services and infrastructure, of low to medium magnitude, are considered largely positive in the medium term and of moderate significance. There is some potential for closure to have a negative impact on social service delivery." (Cumberland Resources Ltd., 2006, p. 128)

WHALE TAIL - none

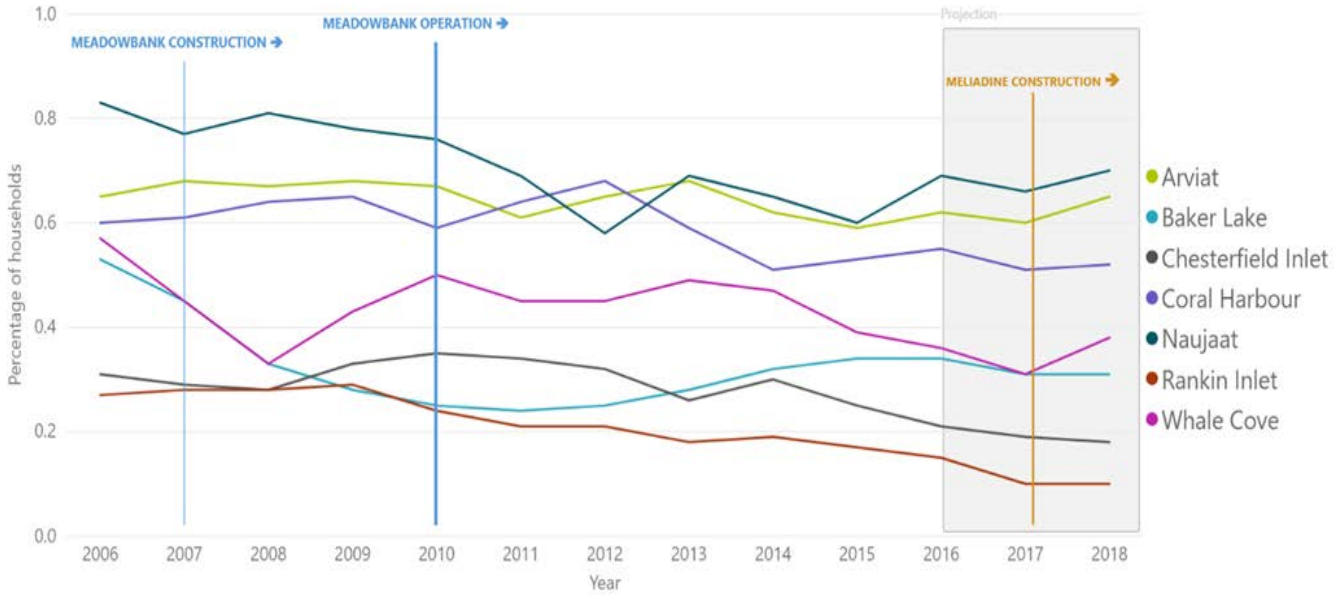
Discussion:

Figure 64 shows the percentage of households receiving social assistance by Kivalliq Community. 2018 is the last year for which data was available. Per capita social assistance expenditures declined in all Kivalliq communities in 2018 following an increase across communities starting in 2012, though current levels are still above the historical average with the exception of Rankin Inlet. The percentage of households receiving social assistance has been steady or declining across the region over the past

decade. Despite declines from historical highs, social assistance data do not show a strong correlation between Agnico-related employment and social assistance requirements; other factors may be at play.

The need for social assistance is often determined by a diverse range of factors. Due to this, along with an inability to observe a correlation between project activities and social assistance data, any impact between Agnico Eagle projects and social assistance cannot be determined at this time.

Figure 64 Per capita social assistance expenditures by community (Department of Family Services, 2019; Statistics Canada, 2006a; Statistics Canada, 2011a; Statistics Canada, 2016a).



12.4.6.3 *Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management*

Effectiveness of Monitoring

Existing monitoring programs are able to address most FEIS predictions (Table 12-17), so these monitoring measures are considered to be effective. In some cases, existing monitoring programs (mainly those run at the community- or territory-level) cannot specifically determine the impact of Agnico Eagle's operations on observed changes. Namely these metrics include: health centre visits, social assistance use, and health and safety awareness among families and communities.

Effectiveness of Mitigation

A summary of the planned mitigation measures for socio-economic impacts for the Meadowbank operations phase (per FEIS, Appendix B, Table B.15-2) along with implementation in 2021 is provided in Table 12-18.

A summary of the planned mitigation measures for socio-economic impacts for the Whale Tail construction and operations phase (per FEIS, Volume 3, Table 3-C-8, Table 3-C-9, Table 3-C-10) along with implementation in 2021 is provided in Table 12-19.

Overall, the only potentially significant departures from FEIS predictions identified in Section 12.4.6.1 are regarding Project Inuit employment, and Project employment by skill level. Agnico Eagle continues to recognize and address these gaps through new management and mitigation initiatives such as the improved Labour Pool Process and the Inuit Employment Growth Initiative and others, which are described in the 2021 SEMR.

Table 12-18 Mitigation measures described in the Meadowbank Project FEIS to reduce impacts of the project on socio-economic VECs (sub-headings in italics), and commentary on current implementation.

Planned Mitigation Measure (FEIS, Appendix B, Table B.15-2)	Implementation (unless indicated, reference to 2021 Socio-Economic Monitoring Report, Appendix 59)
Employment, training, and business opportunities	
Preferential employment and contracting	**Yes -** see Section 1.1, 5.1 and "Existing Management and Mitigation"
Preferential hiring	**Yes -** see Section 1.1, 5.1 and "Existing Management and Mitigation"
Preferential procurement	**Yes** - see Section 5.1
Education and training initiatives	**Yes –** Section 4
Education initiatives directed at specific concern around youth and their future in a mixed economy	**Yes –** Section 4.1 and 4.2 and "Existing Management and Mitigation"
Traditional ways of life	
Allowing use of project winter road to traditional land users	**Yes** – Section 10.2
Income and workforce management practices that value and provide opportunity for traditional activity	**Yes** – Section 3
Workforce management and community initiatives in support of traditional activity	**Yes** – Section 10
Individual and community wellness	
Assistance to individuals experiencing problems and their families, zero tolerance policies	**Yes** – Section 9
Short rotations	**Yes –** Inuit Workforce Barriers and Strategies (IWBS) report (Appendix 61 of the 2018 Annual Report)
Workforce management best practice, including codes of conduct, rotation to point of hire, etc.	**Yes –** Inuit Workforce Barriers and Strategies (IWBS) report (Appendix 61 of the 2018 Annual Report)
Driver training, public education to reduce potential for traffic accidents	**Yes** - Driver training is part of Mandatory Training, public education to reduce potential for traffic accidents is done through annual AWAR public meetings
Operations best practice to minimize emergencies, emergency response planning in the event of an emergency	**Yes** – e.g. Emergency Response Team (ERT) Training, Crisis Management Plan, Emergency Response Plan
Support for community wellness initiatives	**Yes** – Section 9
Infrastructure and social services	
Employment at good wages	**Yes** – Section 1 and 3
Avoidance of sites of heritage significance, protocol in place in event that new sites are identified	**Yes** – Socioeconomic and Archaeology Management Plan: Always conduct archeology studies or consultation of previous archaeology studies before construction to confirm present or not of heritage sites. Mitigation measure to be implemented as per the consultant recommendation and Government of Nunavut.

Table 12-19 Mitigation measures described in the Whale Tail Project FEIS to reduce impacts of the project on socio-economic valued components (sub-headings in italics), and commentary on current implementation. Excludes environmental design features, as these are a component of completed design plans and not ongoing mitigation. TEMP = Terrestrial Ecosystem Management Plan.

Planned Mitigation Measure (FEIS Table 3-C-1)	**Implementation (2021)**
Heritage Sites	
Complete heritage assessment for the Project footprint to identify archaeological sites present.	**Yes** – Socioeconomic and Archaeology Management Plan - Always conduct archeology studies or consultation of previous archaeology studies before construction to confirm present or not of heritage sites. Mitigation measure to be implemented as per the consultant recommendation and Government of Nunavut.
Alter or adjust the location of a Project component or activity to fully avoid impacts on culturally important sites such as graves; otherwise mitigate and conduct heritage resource surveys in accordance with the GN department of Culture and Heritage.	
For archaeological sites that will be adversely affected by the Project, and where more passive mitigation strategies (e.g., capping, relocation) are not viable for those locations, preservation by systematic recording (i.e., excavation or documentation) is an option.	
Complete additional heritage baseline assessment for any changes to the Project footprint in areas considered to have potential to contain heritage resources.	
Agnico Eagle will mark the perimeter of heritage sites to be avoided with flagged stakes or similar, will erect “no work zone” signage, and, if in a potentially high traffic area, will erect snow fencing or similar barrier to prevent entry. Agnico Eagle will monitor condition of site barriers.	**NA**
Agnico Eagle will include no work areas on project drawings.	**Yes** – Socioeconomic and Archaeology Management Plan
Provide awareness training for Agnico Eagle and Contractors that includes general guidelines for the appropriate response to the inadvertent discovery of known or suspected archaeological materials.	**Yes** – Socioeconomic and Archaeology Management Plan
Traditional Land Use – Wildlife Harvesting	
Surveys of proposed granular sources for dens and nests will take place prior to construction.	**Yes** – TEMP
Wildlife will have the right-of-way and vehicle traffic will be minimized according to the TEMP. Maximum speed limits of 50 km/hr will be enforced.	**Yes** – TEMP
Traffic volumes will be managed and roads closed when large numbers of caribou are present, in consultation with the HTO, GN, and KIA according to the TEMP.	**Yes** – TEMP
All employees will be provided with wildlife environmental awareness training.	**Yes** – TEMP
Drivers will be alerted when caribou are observed near the haul road.	**Yes** – TEMP
Littering and feeding of wildlife will be prohibited.	**Yes** – TEMP
Employees will be notified when caribou, muskox and predatory mammals are observed in the local study area.	**Yes** – TEMP
Land will be cleared outside the breeding season (June 1 to August 1). Mitigation to reduce impacts to nesting birds will be discussed with Environment Canada.	**Yes** – TEMP
All spills will be immediately reported, cleaned up and/or isolated from the receiving environment. Ready access to emergency spill kits. Regular maintenance of equipment to reduce oil leakage. Training in refueling procedures for site staff. Hazardous materials and fuel will be stored according to regulatory requirements.	**Yes -** Detailed mitigation is provided in the Emergency Response Plan, Hazardous Materials Management Plan, Whale Tail Haul Road Management Plan and Spill Contingency Plan.
Monitoring for bird nesting activity. Birds showing nesting activity will be discouraged from nesting and roosting on site infrastructure.	**Yes -** Detailed mitigation is described in the TEMP.

Planned Mitigation Measure (FEIS Table 3-C-1)	**Implementation (2021)**
Attenuation Ponds will be monitored for use by water birds. Deterrents will be used if required. Attenuation Ponds will be monitored for water quality.	**Yes -**Detailed mitigation is described in the TEMP.
Enforce no hunting, trapping, harvesting or fishing policy for employees and contractors. Hunter harvest survey, consistent with the Meadowbank Mine will continue. Access to the Project will be controlled (gated at Meadowbank); Restricting public vehicle access beyond km 85 of Meadowbank All-weather Access Road. All efforts will be made to enforce a no shooting zone for the public along the road and around the Project site.	**Yes** - Detailed mitigation is provided in the Whale Tail Haul Road Management Plan, Interim Closure Plan and Reclamation Plan and TEMP.
Any PAG or high metal leaching waste rock will be segregated at source and placed into designated areas within waste rock storage facilities to control acid generating reactions and the migration of contaminants. Leachate from the waste rock piles will be monitored and controlled and not released to the natural environment.	**Yes -** Detailed mitigation is provided in the Operational ARD-ML Sampling and Testing Plan, Landfarm Design and Management Plan, Landfill Design and Management Plan, and Mine Waste Rock and Tailings Management Plan, Air Quality and Dustfall Monitoring Plan, Road Management Plan, Water Management Plan, AEMP, CREMP and the TEMP.
Traditional Land Use – Fishing	
Best management practices for erosion and sedimentation control (e.g., ground cover, silt fences and curtains, runoff management), where needed.	**Yes –** Water Management Plan
Quarries will be inspected on a regular basis to monitor water ponding, particularly at spring melt; when there is flow from a quarry that could enter a waterbody, a water quality sample will be collected and analyzed.	**Yes –** Water Quality and Flow Monitoring Plan
The dike will be constructed using non- potentially acid-generating rock or low potential for metal leaching material	**Yes** – Construction Design Report, ARD-ML Sampling and Testing Plan
In-stream works will be constructed in winter, when possible, to avoid increased TSS and turbidity, and changes to water and sediment quality.	**Yes** - Best practices
Mining staff will not be allowed to hunt or fish while on their work rotation; Agnico Eagle will develop and enforce “no hunting, trapping, harvesting or fishing policy” for employees and contractors, which will be consistent with the Meadowbank Mine.	**Yes**
Runoff and seepage from the Project site will be diverted to sumps and attenuation ponds (and treated if required), prior to release.	**Yes –** Water Management Plan, Water Quality and Flow Monitoring Plan
Water quality in attenuation ponds will be monitored and managed such that the discharge meets discharge limits.	**Yes –** Water Quality and Flow Monitoring Plan
Any potentially acid generating (PAG) or high metal leaching waste rock will be segregated at source and placed into designated areas within the waste rock storage facility.	**Yes –** Operational ARD-ML sampling and testing plan
Traditional Land Use – Plant Gathering	
Implement the spill plan for potential chemical spills, including hydrocarbons.	**Yes -** Spill Contingency Plan
Best management practices for erosion and sedimentation control (e.g., silt curtains, runoff management, armouring of banks, sloping of banks), where needed.	**Yes –** Erosion Management Plan
Use of non-acid generating materials for road bed and fills.	**Yes –** Operational ARD-ML sampling and testing plan
Implement dust control measures on mine roads, when required, including enforcing speed limits.	**Yes –** Air Quality and Dustfall Monitoring Plan, Road Management Plan
Road surfaces will be maintained through grading and the addition of granular material.	**Yes –** Road Management Plan
Equipment and vehicles will comply with relevant non-road emission criteria at that time of purchase.	**Yes**
Waste rock management procedures developed for	**Yes** - Mine Waste Rock and Tailings Management

Planned Mitigation Measure (FEIS Table 3-C-1)	**Implementation (2021)**
potentially problematic waste rock/overburden material. Implement the Mine Waste Rock and Tailings Management Plan.	Plan.
Hazardous materials and fuel will be stored according to regulatory requirements to protect the environment and workers.	**Yes –** Hazardous Management Plan
Adherence to the AWAR and Whale Tail Pit Haul Road Dustall Monitoring Plan (Appendix B of the TEMP).	**Yes** – Air Quality and Dustfall Management Plan
Traditional Land Use – Culturally Important Sites	
See measures listed under Heritage Resources, above.	**N/A**
Provide ongoing consultation with the community of Baker Lake (specifically Elders and the HTO Members), and provide opportunities for participation in heritage resource surveys and mitigation measures.	**Yes**
Best Management practices for controlling equipment noise emissions, including: • Use of silencers on all trucks • Enforcing speed limits • Regular maintenance will be implemented for equipment and vehicles	**Yes –** Noise monitoring and abatement plan
Implement the mitigation measures outlined in the Noise Monitoring and Abatement Plan that was developed for the Meadowbank mine site in 2009 (Agnico Eagle 2009) and refined in 2013 (Agnico Eagle 2013).	**Yes –** Noise report
Traditional Land Use Access	
The haul road will be closed to the public. Access to the Project will be controlled (gated at Meadowbank); Restricting public vehicle access beyond km 85 of Meadowbank All-weather Access Road.	**Yes**
Enforce no hunting, trapping, harvesting or fishing policy for employees and contractors.	**Yes**
Hunter harvest survey, consistent with the Meadowbank Mine will continue.	**Yes -** TEMP
Agnico Eagle will work with local wildlife harvesters to ensure the preferred ATV and snowmobile crossing areas are well identified for both hunters and operators on the road.	**Yes** – HTO/Elders consultation
Socio-Economics	
Use of existing Meadowbank Mine workforce.	**Yes**
Continue existing training initiatives for the Project's workforce.	**Yes –** see 2021 Socio-Economic Monitoring Program Report section “Existing Management and Mitigation”
Housing out-of-area workers in on-site camp; Fly-in/fly-out to and from Kivalliq communities	**Yes**
Continue social management approach identified in the Socio-Economic Management and Monitoring Plan (Appendix 8-E.6).	**Yes**
Implement noise and air quality mitigations including: Adherence to the • Air Quality Monitoring Plan. • Enclosures are used to reduce fugitive emissions at the processing facility. • Adherence to the Incinerator Waste Management Plan •Adherence to the AWAR and Whale Tail Pit Haul Road Dustfall Monitoring Plan (Appendix B of the TEMP). • Best Management practices for controlling equipment noise emissions, including use of silencers on all trucks • Enforcing speed limits. • Regular maintenance will be implemented for equipment and vehicle.	**Yes**- Air and Noise reports

Adaptive Management

Existing management and mitigation related to VSECs are described in the 2021 SEMR (Appendix 59), with any comments for changes to implementation in 2022. These include, for example:

-Full realization of the new Community Liaison Officer (CLO) development program, with the objective to maximize CLO involvement within each community and to foster better communication channels between the communities and AEM operations.

-Launch of the revised Mining Awareness Program (pending covid restrictions)

-Implementation of a new version of the Community Liaison Committee to ensure better communication and participation

12.5 WHALE TAIL PEAMP EVALUATION

For each valued component (VC) in the FEIS Addendum for the Whale Tail Pit – Expansion Project (Agnico Eagle, 2018), a summary of the primary effects pathways that were evaluated is provided in Section 12.3, above. The completed PEAMP evaluation for residual effects associated with those pathways is presented in Sections 12.5.1 – 12.5.6, below.

VCs in this FEIS Addendum include Climate, Air Quality, Noise, Permafrost, Terrestrial Environment (vegetation, wildlife and birds), Aquatic Environment (surface water quantity, surface water quality, hydrogeology and groundwater, fish and fish habitat), Heritage Resources, Traditional Land Use, and Socio-Economics. These are generally the same VCs as identified and assessed for the original Meadowbank FEIS (Cumberland, 2005). For two VCs (hydrogeology and groundwater, heritage resources) no primary effects pathways or residual impacts were identified. For the remaining VCs, predicted residual impacts and measured residual impacts are examined here.

12.5.1 Aquatic Environment

Key mine development activities that could result in changes to the aquatic receiving environment for the Whale Tail site include: Whale Tail and Mammoth Dike construction, dewatering of Whale Tail Lake – North Basin and the IVR area waterbodies, effluent discharge, and dust generated through onsite activities including roads.

Within the Project FEIS Addendum (Agnico Eagle, 2018), impacts to the aquatic environment potentially generated through these activities are described for water quantity, water quality, and fish/fish habitat. Predicted and measured residual impacts for each of these VCs are described below.

12.5.1.1 *Water Quantity*

12.5.1.1.1 Parts 1 & 2: Summary of Predicted and Measured Residual Impacts

A summary of predictions for impacts to surface water quantity (FEIS Addendum, Section 6.3, as summarized in Table 3-C-5) and the accuracy of these predictions since 2019 (measured impacts) are provided in Table 12-20. Cells are highlighted in grey when measured impacts exceed predictions for the current year. Future results will be added to that section to ensure historical trends can be observed, even when predicted impacts are not exceeded in a given year.

Table 12-20 Predicted and measured impacts to surface water quantity for the Whale Tail Site during the construction and operations period (primary pathways according to FEIS Addendum, Table 3-C-5). Measured impacts exceeding or potentially exceeding predictions are shaded grey and further discussed in Section 12.5.1.1.2.

Primary Effect Pathways	Residual Impact	Proposed Monitoring	Key Monitoring Parameters	Key Predicted Impact	Measured Impact		
					2019	2020	2021
Project footprint, which will physically alter watershed areas and drainage patterns, may change downstream discharge, water levels, and channel/bank stability in streams, and affect water quality, fish habitat, and fish	Change in discharge rate and the spatial distribution of water	Monitoring of flows and water levels at key locations All piped and/or pumped discharges to waterbodies will be monitored continuously Climate monitoring, including continuous measurements of rainfall and temperature, will be performed to allow validation of the hydrological model, assessment of seasonal conditions and to provide input to water management. Whale Tail Pit Haul Road Management Plan	Whale Tail South water level	Dewatering (2019): peak 155.7 masl Operations (2020+): 156.0 masl	Peak: 155.8 masl	Peak: 155.8 masl	Peak: 155.6 masl
					2019 flood peak was slightly higher than predicted for that year, but did not exceed final flood level prediction. *2020+ flood peaks are slightly lower than predicted due to minor infrastructure design changes. See discussion, Section 12.5.1.1.2.1*		
Dewatering of lakes may change discharges, water levels, and channel/bank stability in receiving and downstream waterbodies, and affect water quality, fish and fish habitat			Mammoth Lake water level	Dewatering (2019): Slight decrease from baseline Operations (2020/2021): Slight increase from baseline	Mammoth Lake levels similar to or slightly greater than predictions. See discussion, Section 12.5.1.1.2.2		
			Northeast Diversion water level	Dewatering in 2020 to permit construction of the IVR Pit	Flooded in 2019 and dewatered in 2020. See discussion in 2020 PEAMP.		N/A
			Nemo Lake water level	Operations (2020+): similar to or slight decrease from baseline	Nemo Lake levels similar to baseline. See discussion, Section 12.5.1.1.2.3.		
Alteration of watershed flow			Whale Tail	Total discharge	4,940,198	741,620	No

Primary Effect Pathways	Residual Impact	Proposed Monitoring	Key Monitoring Parameters	Key Predicted Impact	Measured Impact		
					2019	2020	2021
paths may change flows, water levels, and channel/bank stability in diverted and receiving waterbodies, and affect water quantity, water quality, fish and fish habitat			Lake dewatering discharge monitoring	will occur in 2019, with a volume of 4,643,712 m^3	m^3	m^3	dewatering
					Some discharge was ongoing until 2020 instead of completion in 2019. See discussion, Section 12.5.1.1.2.1		
			Freshwater withdrawal monitoring (Nemo Lake)	Operations – 2020+: 125,143 m^3/year NWB Water License 2AM-WTP1830: 209,544 m^3	50,559 m^3	43,252 m^3	67,816m^3

12.5.1.1.2 Parts 3 & 4: Discussion

Where impacts are exceeded or potentially exceeded based on monitoring results (as identified in Parts 1 & 2, above), a discussion is provided here.

12.5.1.1.2.1 Whale Tail Lake Water Level and Dewatering Discharge

Discharge Volumes and Timing: From March to October, 2019, Whale Tail Lake – North Basin was dewatered with discharge to Whale Tail Lake – South Basin, and Mammoth Lake. Total dewatering discharge volume in 2019 was 4,940,198 m^3, which is within 7% of the FEIS-predicted value (4,643,712 m^3). In 2020, dewatering of Whale Tail North to Whale Tail South occurred between January 1st and May 15th, at which time the dewatering was complete. The total discharge volume in 2020 was 741,620 m^3. This volume includes Whale Tail Dike seepage water, as this was managed as part of Whale Tail North dewatering until May 2020. Dewatering of Whale Tail North was assessed in the Project FEIS (Agnico Eagle, 2016), and not re-visited in the FEIS Addendum. Dewatering of this area was planned to be complete in 2019 (e.g. Agnico Eagle, 2016 - Appendix 6-F, Section 6.F-2.1), so no dewatering discharge from Whale Tail North was predicted for 2020. However, contributions of discharge of Whale Tail Dike seepage to Whale Tail South water levels were qualitatively assessed in the FEIS Addendum (Section 6.3.3.1.4.1), and determined to result in negligible effects on surface water quantity.

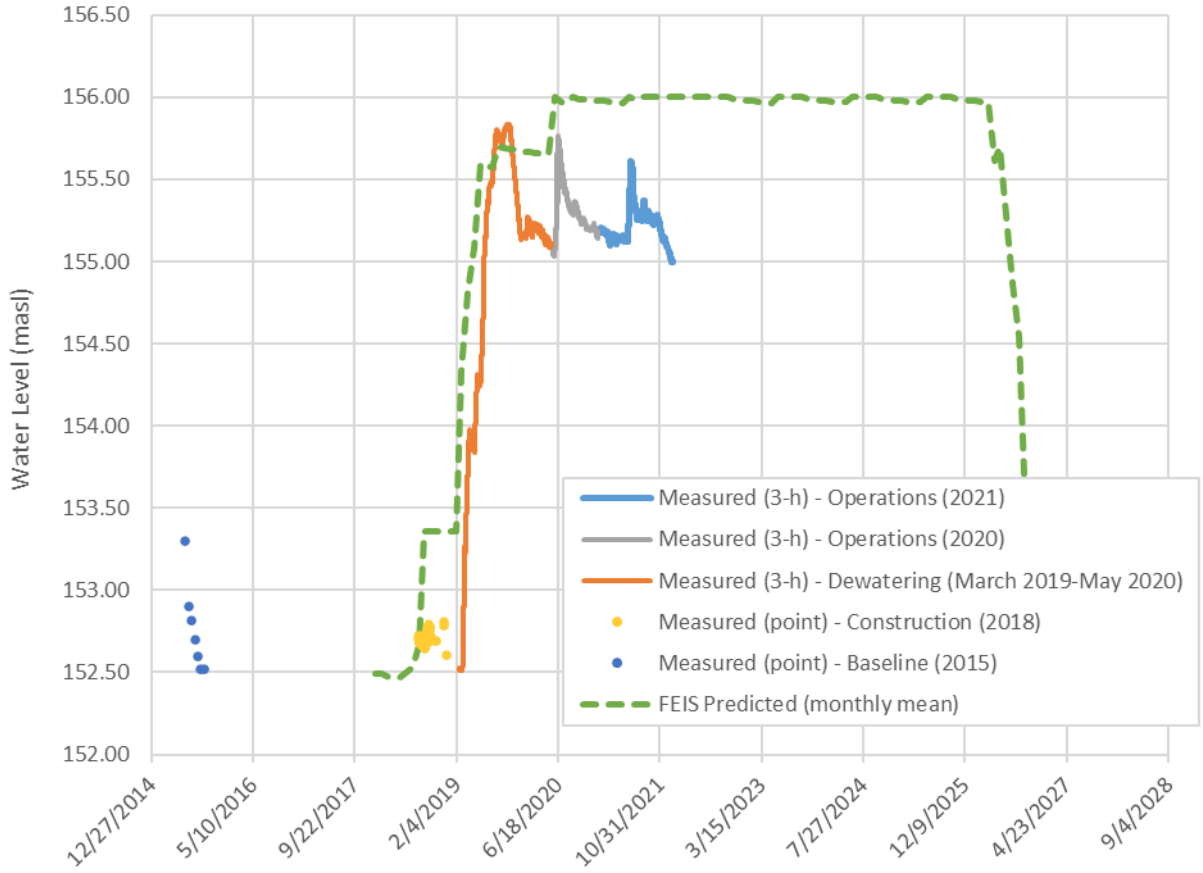
Water Levels: Water levels in Whale Tail Lake South Basin as measured from 2019 - 2021 using piezometric data are shown in Figure 65, below, along with measurements during the construction phase (2018; measured by GPS survey), available baseline measurements (2015), and FEIS Addendum predictions (from FEIS Appendix 6-F). Figure 65 shows the long-term trend in predicted water levels in relation to available baseline, dewatering- and operations-phase measurements. However, it is noted that FEIS-predicted water levels were calculated as monthly timesteps in a mean annual water balance, whereas measured water levels are assessed every 3 hours. Measured values may therefore be expected to vary around the prediction, due to both inter-annual climate variability and scale of measurement.

Due to record rainfall, peak water levels in 2019 exceeded predictions in July (up to 155.8 masl), but did not reach the maximum predicted final flood level of 156.0 masl, which was planned to occur in 2020. Following discussions with NWB, Agnico Eagle pumped non-contact water from the Whale Tail South flood zone directly to Mammoth Lake beginning in October, 2019. This activity temporarily substituted for the passive flow which now (since freshet 2020) occurs through the South Whale Tail Channel (SWTC).

Water levels in Whale Tail South in 2020 were lower than FEIS Addendum model results, which predicted a mean level of 156.0 masl would be maintained throughout the operations period. This change follows an amendment to the final design[14] of the South Whale Tail Channel, which included a decrease in the original inlet elevation by 0.5 m, to 155.3 masl. Operational water levels moving forward are therefore expected to be lower than the 156.0 masl mark. As shown in Figure 65, water levels in WTS now vary from approximately 155.0 – 155.75 masl over the course of a year.

[14] The completed construction summary report for the South Whale Tail Channel is available through the NWB public registry here: ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1830%20Agnico/3%20TECH/D%20CONSTRUCTION/D16/South%20Channel/

Figure 65. Measured (3-h interval and monthly mean, as indicated) and predicted water levels in the Whale Tail South flood zone. Predicted water levels from FEIS Addendum for the Whale Tail Pit Expansion Project, Appendix 6-O, Table D-14. Monthly mean water levels are plotted by the month start date.



12.5.1.1.2.2 Mammoth Lake Water Level

Water levels in Mammoth Lake as measured primarily throughout the open water seasons of 2018 (construction period) and 2019 (dewatering period) by GPS survey are shown in Figure 66 along with available baseline measurements (2015), 2020-2021 piezometer results, and FEIS predictions for the operations period (months of June – September, annually; from data in FEIS Addendum Section 6.3.3.1.4.2 and ERM, 2020-App. I).

As shown in Table 12-21, FEIS predictions (Agnico Eagle, 2016 - Appendix 6-E) indicated that mean monthly water levels in Mammoth Lake would decline up to 12 cm below baseline values during the dewatering phase. Predictions for the operations phase were updated in the FEIS Addendum (Section 6.3.3.1.4.2, Table 6.3-3) and indicated that mean monthly water levels may increase up to 5 cm from baseline.

Median, low-flow year, and high-flow year modeled baseline water levels were provided in ERM (2020) – Appendix I, facilitating comparison to FEIS Addendum predictions for changes. Low-water thresholds for ensuring non-measurable residual impacts to fish habitat are also provided in that document. In ERM (2020), predicted water levels were compared to modeled baseline water levels for a low-flow year, as

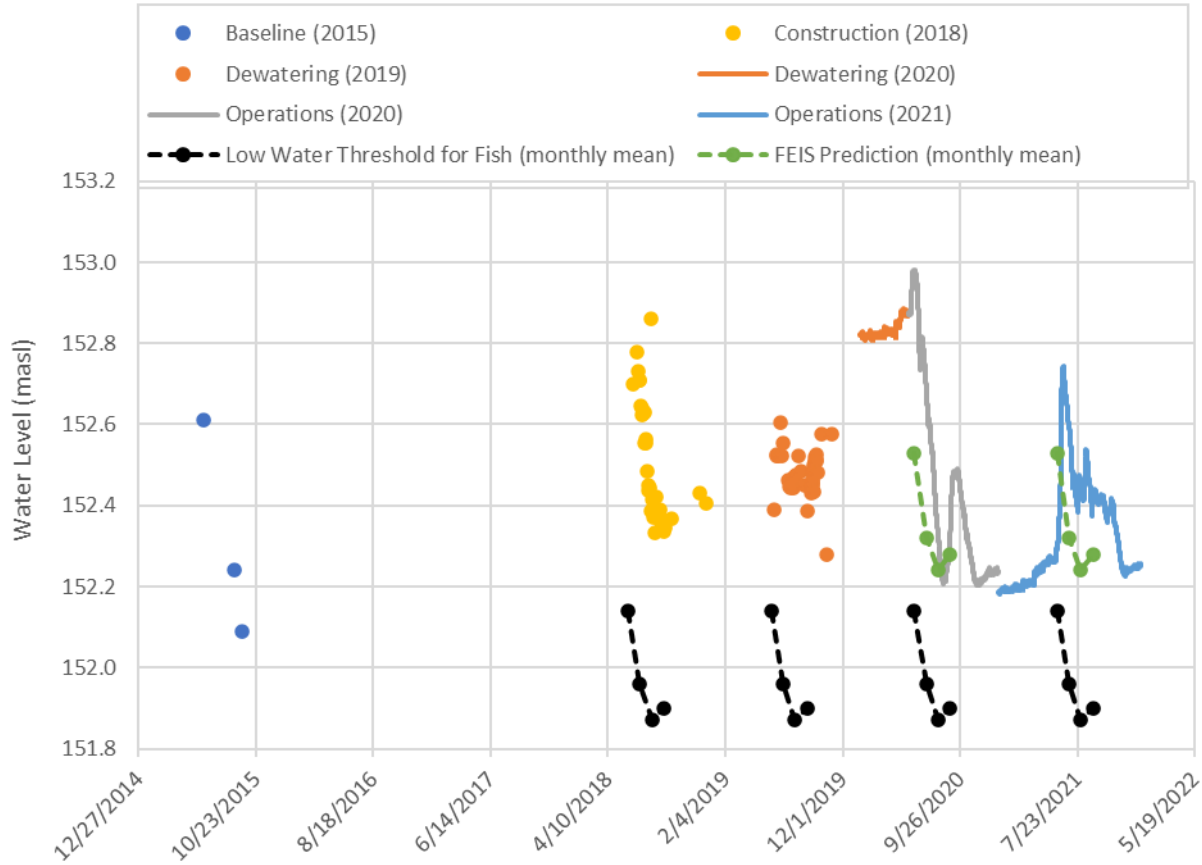
well as modeled baseline median water levels values minus 10%, and the water elevation change associated with a 10% under-ice withdrawal volume (for Mammoth Lake, median water level minus 0.34 m, as shown in Figure 66).

To date, measured water levels have been similar to or higher than the predicted monthly means, and have not declined below fish impact thresholds.

Table 12-21 Predicted change in water levels from baseline in Mammoth Lake during the construction and dewatering phases (from FEIS Appendix 6-E) and operations phase (from FEIS Addendum Section 6.3.3.1.4.2, Table 6.3-3) under mean monthly discharge scenarios.

Project Phase	Year (approx.)	June	July	August	September	October
Construction (m)	2018	-0.16	-0.16	-0.11	-0.14	-0.13
Dewatering (m)	2019	-0.12	-0.04	-0.05	-0.09	-0.10
Operations (m)	2020 – 2026	+0.05	+0.02	+0.03	+0.04	+0.03
Closure (m)	2026+	-0.20	-0.20	-0.14	-0.14	-0.13

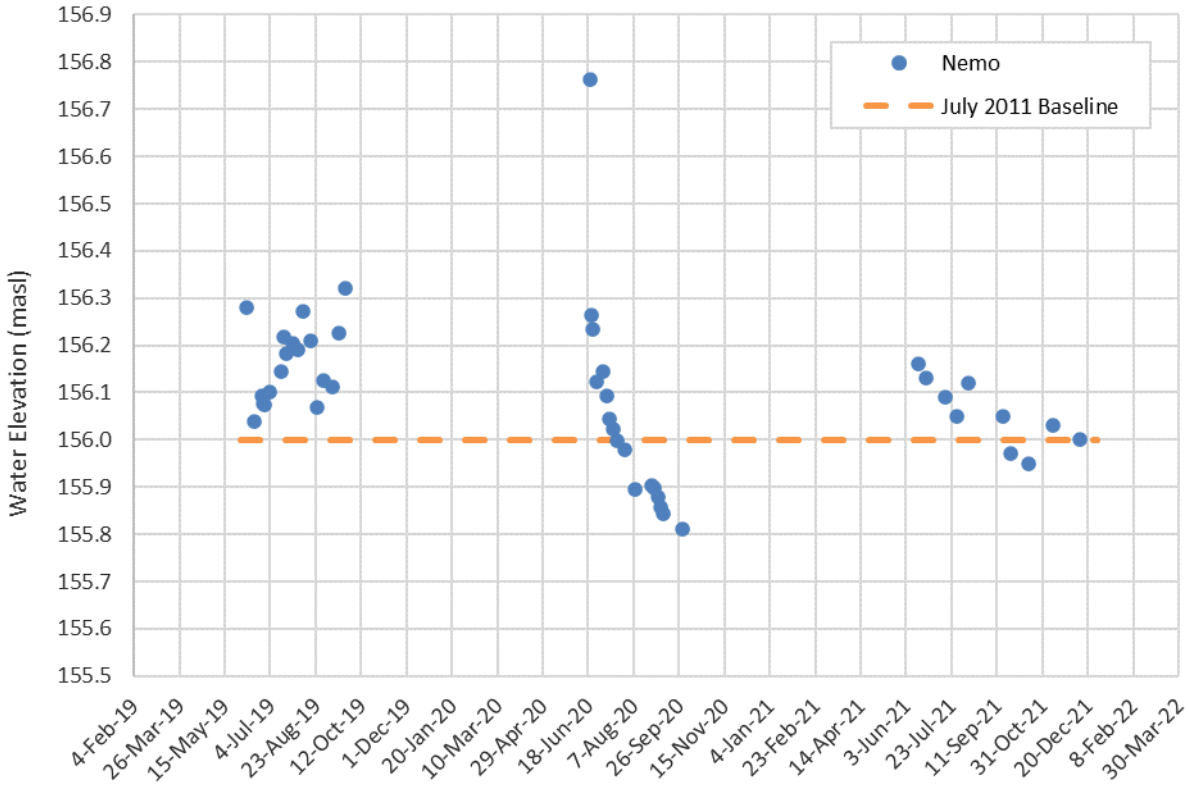
Figure 66 FEIS predictions (monthly mean for June – September annually; operations phase predictions shown (2020, 2021), from data in FEIS Addendum Section 6.3.3.1.4.2 and ERM, 2020-App. I) and measured water levels in Mammoth Lake. Results from 2015 – 2019 are by GPS survey, and results for 2020+ are piezometric data (3-h intervals). Low water threshold for fish from App. I of ERM (2020) (median baseline water level minus 0.34 m).



12.5.1.1.2.3 Nemo Lake Water Levels

In the FEIS Addendum (Agnico Eagle, 2018), impacts to Nemo Lake water levels were assessed as a result of freshwater intake and changes to discharge patterns as a result of the IVR Diversion. During the operations phase, mean monthly water levels are expected to remain similar to baseline values in May and decrease by 0.07 m in June, 0.09 m in July, 0.08 m in August, 0.07 m in September, and 0.04 m in October, from the baseline values. Measured water levels are shown in Figure 67. Since only a single baseline water level estimate is available (from July, 2011 imagery – C. Portt and Associates, 2018), a quantitative comparison to FEIS Addendum predictions of change is not feasible. However, water levels have generally remained similar to baseline.

Figure 67. Measured water levels in Nemo Lake. A single baseline water level estimate from July, 2011 imagery is available and water levels may be expected to vary about that point.



12.5.1.1.3 Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management

Effectiveness of Monitoring

Although FEIS recommendations for monitoring related to surface water quantity were not always specific, and comparisons of measured results to quantitative FEIS predictions was not always feasible, the monitoring programs being implemented at the Whale Tail site are able to measure changes in receiving environment water levels in key locations. Monitoring programs are therefore considered effective.

Effectiveness of Mitigation

A summary of the FEIS-planned mitigation measures for surface water quantity along with a commentary on implementation in 2021 is provided in Table 12-22. This summary excludes Environmental Design Features, which are incorporated into construction plans but are not ongoing mitigation measures included in this annual review.

Mitigation measures related to water quality and fish and fish habitat are provided in Sections 12.5.1.2.3 and 12.5.1.3.3, respectively.

Table 12-22 Mitigation measures described in the Whale Tail FEIS Addendum (Agnico Eagle, 2018) to reduce impacts of the project to water quantity during the construction and operations phases, and commentary on current implementation.

Project Activity	Planned Mitigation Measure (FEIS Addendum, Section 3, Table 3-C-5)	Implementation (2021)
Mine Infrastructure Footprint (e.g. open pits, site roads, access roads)	Best management practices for erosion and sedimentation control (e.g., ground cover, silt fences and curtains, runoff management), where needed.	**Yes** – Erosion Management Plan
Site Water Management: Dewatering of Project Footprint Lakes to Downstream Receiving Lakes	Pumped discharge will be directed to the lake environment, and not directly to outlets, to attenuate flow changes.	**Yes** – Water Management Plan
	If feasible, pumped discharge to the receiving environment will cease during the winter.	**NA**
Site Water Management: Watershed Modification by Diversion of Water	Best management practices for erosion and sedimentation control (e.g., silt curtains, runoff management, armouring of banks, sloping of banks), where needed.	**Yes** – Erosion Management Plan
	Where practical, natural drainage patterns will be used to reduce the use of ditches or diversion berms.	**Yes** – Erosion Management Plan
General construction and operation of the Whale Tail Haul Road	Where deemed appropriate, use of staggered culvert configuration, and removal of snow at the culvert inlet and outlet prior to the freshet to promote drainage during spring thaw and freshet.	**Yes**
	Inspection prior to spring melt period to identify build-up of snow or ice, and take remedial action.	**Yes** – Freshet Action Plan
	Regular inspection of the road to identify any areas where ponding of water along the road represents a risk, and installing additional culverts or drains to alleviate the risk.	**Yes** – Freshet Action Plan
Open Pits	Mined-out pit flooding will be augmented by active fresh water diversion active flooding will reduce the period required to flood the pits, and the period of time with increased hydraulic gradients between waterbodies.	**Yes** – Water Management Plan
Existing Meadowbank Infrastructure	See Meadowbank site PEAMP for water quantity	-

Adaptive Management

No adaptive management measures for water quantity are proposed for 2022 at this time, based on results of the above PEAMP analysis.

12.5.1.2 *Water Quality*

12.5.1.2.1 Parts 1 & 2: Summary of Predicted and Measured Residual Impacts

A summary of predictions for residual impacts to surface water quality (FEIS Addendum, Section 6.2, as summarized in Table 3-C-6) and the accuracy of these predictions in 2019 - 2021 (measured impacts) are provided in Table 12-23. Cells are highlighted in grey when measured impacts exceed predictions for the

current year. Future results will be added to that section to ensure historical trends can be observed, even when predicted impacts are not exceeded in a given year.

To assess impacts of the Project on water quality, site-wide water quality modeling was conducted for the full suite of parameters (nutrients, metals, major ions) for the operations and closure phases. Water quality predictions were developed for locations within the mine footprint (attenuation ponds [Whale Tail and IVR], flooded Whale Tail Pit, flooded IVR Pit) and the downstream receiving environment (Mammoth Lake, Lake A15, Lake A12, Lake A76, Downstream Node 1, and Downstream Node 2) (FEIS Addendum Table 6.2-3 and Figure 6.2-1).

This PEAMP evaluation focuses on a comparison of general water quality predictions for effluent and receiving environment locations with monitoring results from the Water Quality Monitoring Plan for Dike Construction and Dewatering, the Water Quality and Flow Monitoring Plan, and the Core Receiving Environment Monitoring Program. Water quality monitoring results for onsite locations are not specifically included in this review, since any discharge from those locations to the receiving environment is assessed under effluent monitoring.

Given the uncertainties associated with the FEIS Addendum water quality modelling exercise (i.e., the development stage of the Project, laboratory-based input values, assumptions where data do not exist and consideration of an average climate year), the predicted concentrations are considered by the modellers to be order-of-magnitude estimates (FEIS Addendum Section 6.2.3.3.1). This uncertainty is considered in comparisons of annual water quality monitoring data with FEIS predictions.

The 2021 CREMP report (Appendix 33) provides a comprehensive assessment of water quality monitoring for the receiving environment, with analysis of inter-annual trends, and a comparison to site-specific trigger values and FEIS predictions. For 2020 and onwards, water chemistry data (monthly measured concentrations for each parameter) from Whale Tail South (WTS) and Mammoth Lake are compared to water quality predictions in the 2018 Whale Tail FEIS Addendum. These are the only downstream lakes for which both model predictions and monitoring results are available. In previous CREMP/PEAMP assessments (2019), model results were only available for Mammoth Lake, according to the 2016 FEIS.

Exceedances of FEIS water quality model predictions are noted in Table 12-23, and a full discussion is provided in Section 12.5.1.2.2.

Table 12-23 Predicted and measured impacts to surface water quality for the Whale Tail Site during the construction and operations period (primary pathways according to FEIS Addendum Section 3, Table 3-C-6). Measured impacts exceeding or potentially exceeding predictions are shaded grey and further discussed in Section 12.5.1.2.2. *FEIS Addendum, Appendix 6-H – as described in Section 6.2.3.3.1, these are expected to be accurate within an order of magnitude. **Appendix G of the 2021 CREMP Report. * FEIS Addendum Section 6.2.3.3.2.1**

Effects Pathway	FEIS/FEIS Addendum Proposed Monitoring	Current Monitoring	Predicted Impact	Measured Impact		
				2019	2020	2021
Project footprint, which will physically alter watershed areas and drainage patterns, rates and quantities of diverted non-contact water to new watersheds, change downstream flows through flooding and dewatering, water levels, channel/bank stability in streams, and disturb lakes and may affect water quality and sediment quality	Dike Construction and Monitoring Plan (FEIS Addendum – Construction Phase only)	Water Quality Monitoring Plan for Dike Construction and Dewatering	Dewatering effluent: <NWB criteria***	Dewatering effluent: mostly < NWB criteria. Four exceedances for TSS occurred – see discussion, Section 12.5.1.2.2.1	Dewatering effluent: < NWB criteria	N/A (no in-water dike construction)
Water management activities (dams, drainage, diversion, discharge, and dewatering) that will alter natural drainage paths and create a reservoir may cause a change in mercury cycling and bioaccumulation						
Activities from construction activities and mining operations (e.g., equipment, vehicles, buildings, open-pit mining, blasting) can create fugitive dust emissions and subsequent dust deposition may cause a change in water quality	CREMP	CREMP (inc. Mercury Monitoring Plan)	Receiving environment comparable to FEIS water quality model predictions* Total Mercury** - WTS: 5.21 ng/L MAM: 8.43 ng/L	Receiving environment comparable to FEIS water quality model predictions Total Mercury: NM (see 2019 CREMP Report)	Receiving environment generally comparable to FEIS water quality model predictions– see discussion, Section 12.5.1.2.2 Total Mercury** - WTS: <5.21 ng/L MAM: <8.43 ng/L	Water quality results to date are consistent with the predicted magnitude of impact (*low* or *medium*). See discussion, Section 12.5.1.2.2 Total Mercury** - WTS: <5.21 ng/L MAM: <8.43 ng/L
Activities from construction activities and mining operations (e.g., equipment, vehicles, buildings, open-pit mining, blasting) can alter air and dust emissions (including sulphur dioxide, nitrogen oxides, and particulate matter) and subsequent deposition may cause a change in water quality						

Effects Pathway	FEIS/FEIS Addendum Proposed Monitoring	Current Monitoring	Predicted Impact	Measured Impact		
				2019	2020	2021
Release of treated mine effluent (including sources from sewage, WRSF pond, and attenuation pond contact) may cause changes to surface water quality and sediment quality (i.e., nutrient and metal concentrations) in Mammoth Lake in operations and closure.	Water Quality and Flow Monitoring Plan	Water Quality and Flow Monitoring Plan	Effluent <NWB criteria***	Effluent <NWB criteria		
Dewatering of waterbodies may change flows, water levels, channel/bank stability, and water quality (e.g., suspended sediments, nutrients, metals) in receiving and downstream waterbodies.						

12.5.1.2.2 Parts 3 & 4: Discussion

Where impacts are exceeded or potentially exceeded based on monitoring results (as identified in Parts 1 & 2, above), or require further explanation, a discussion is provided here.

12.5.1.2.2.1 Dewatering Effluent

In 2019, water quality compliance monitoring in accordance with MDMER and NWB criteria was conducted for effluent discharge and dike construction. Among these programs, four water quality samples exceeded MDMER and/or NWB Water License criteria. All were for TSS or turbidity in dewatering effluent from Whale Tail North basin. This low number of exceedances is not expected to constitute a significant departure from overall FEIS predictions of water quality. Whale Tail North basin dewatering occurred between March and December, 2019, with discharge to Whale Tail South basin and Mammoth Lake. During daily water quality monitoring, four isolated incidents arose when individual TSS or turbidity concentrations exceeded the MDMER grab sample maximum and/or NWB Type A Water License criteria for the short-term maximum (STM). The NWB Maximum Monthly Mean (MMM) was not exceeded for any parameter. Based on standard operating procedures identified in the Water Quality Monitoring for Dike Construction and Dewatering Plan, supplemental management actions were not required.

In 2020, dewatering of the Whale Tail North basin to Whale Tail South continued from January – May, Quarry 1 was discharged to Mammoth Lake in April, Attenuation Pond discharge to Mammoth Lake occurred in June – October, and to Whale Tail South in November and December. No exceedances of MDMER/NWB water license criteria occurred.

No in water dike construction or dewatering occurred in 2021.

12.5.1.2.2.2 Receiving Environment Water Quality Predictions

Within the receiving environment where water quality monitoring is conducted, impact predictions in the form of water quality models are available for Mammoth Lake (2019 onwards), and WTS (2020 onwards). Overall, FEIS analysis predicted the magnitude of potential effect on water quality in each of the lakes would be *low* (<1x CCME Water Quality Guidelines for the Protection of Aquatic Life) for all parameters with CCME guidelines, except for total phosphorus which was *medium* (1 to 10x CCME WQGs).

In the 2021 CREMP Report (Appendix 33), monthly mean results for water quality parameters were screened against monthly FEIS Addendum predictions for Mammoth Lake and WTS. This is the same process as 2020, but different to 2019 when annual means were compared. As described in Section 6.4.3.3.1 of the FEIS Addendum, these model predictions are estimated to be accurate within an order of magnitude.

In total, 25 parameters exceeded specific monthly predictions for at least one month in 2021 (Table 5-10 and Appendix B2 of the 2021 CREMP Report (Appendix 33) but only manganese (2020, 2021) and nitrate (2021) in WTS have exceeded that 10x range of uncertainty, and only in March and May (sampling occurs March, May, July, August, September). These parameters do not have CCME WQGs, however, concentrations did not exceed CREMP trigger values (set as the 95th centile of baseline concentrations), and therefore, following the intent of the FEIS magnitude ratings, results would be considered consistent with a “low” magnitude of impact, because measured values exceed average baseline concentrations but are below concentrations associated with adverse effects.

In addition, all results were less than 1x CCME WQGs where available, except total phosphorus which was measured at 1 – 10x the CCME WQG, as predicted.

Overall, measured water quality results to date indicate that the magnitude of impact predictions (*low,* or *medium* for TP) for Whale Tail South and Mammoth Lake are not being exceeded.

12.5.1.2.3 Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management

Effectiveness of Monitoring

Based on the results in Table 12-23 and discussed above in Section 12.5.1.2.2, current monitoring programs are able to address all FEIS impacts for which monitoring was recommended (i.e. monitoring is considered effective).

Effectiveness of Mitigation

A summary of the FEIS-planned mitigation measures for surface water quality, along with a commentary on implementation in 2021 is provided in Table 12-24. Mitigation measured related to water quantity, and fish and fish habitat are provided in Sections 12.5.1.1.3 and 12.5.1.3.3, respectively, though some overlap may occur.

Table 12-24 Mitigation measures described in the Whale Tail FEIS Addendum to reduce impacts of the project on surface water quality during the construction and operations phases, and commentary on current implementation.

Project Activity	Planned Mitigation Measure (FEIS Addendum, Section 3, Table 3-C-6)	Implementation (2021)
Whale Tail Pit Infrastructure Footprint (e.g. open pits, site roads, access roads)	Erosion and sedimentation control (e.g., silt curtains, runoff management, armouring of banks, sloping of banks), where needed.	**Yes** – Erosion Management Plan
	Regular road inspections to check for ponding.	**Yes** – Site inspections
	Monitoring during activities and use of adaptive management where necessary.	**Yes** – Site inspections
	Pumped water from the dewatered waterbodies will be directed through properly designed structures to the lake environment, and not to lake outlets, to prevent erosion in the receiving waterbodies and to attenuate flows.	**Yes** – Water Management Plan
	During dewatering activities, TSS will be monitored, and if necessary, treated before release downstream.	**Yes** – No dewatering in 2021
Site Water Management (drainage and diversions)	Water that does not meet discharge criteria will be treated prior to discharge into Mammoth Lake.	**Yes** – Water Management Plan
	A Water Management Plan has been developed and describes designs to reduce changes to local flows, drainage patterns, and drainage areas (adherence to Water Management Plan)	**Yes** – Water Management Plan
	Use of turbidity curtains during dike construction to limit disturbance to lakes and waterbodies	**Yes** – No in water dike construction in 2021
	Monitoring during activities and use of adaptive management where necessary.	**Yes** – Water Management Plan
	Use of the Dewatering Dikes, Operations, Maintenance and Surveillance Manual developed by Agnico Eagle.	**Yes** – No in water dike construction in 2021 (Dike construction Dewatering monitoring plan), Dewatering

Project Activity	Planned Mitigation Measure (FEIS Addendum, Section 3, Table 3-C-6)	Implementation (2021)
		Dike OMS
Earthworks: Drilling, blasting and excavation (includes Quarry/Borrow Pit) and Crushing activities for the haul road and Whale Tail Pit development	Where possible, stockpiling of rock and fill from quarries and borrow sites will be placed such that surface water is not diverted through the piles with runoff to surface waterbodies; drainage from quarries will not flow directly into any waterbodies or watercourses.	**Yes** – Erosion Management Plan
	When there is seepage from a quarry that could enter a waterbody, a water quality sample will be collected and analyzed.	**Yes** – Site inspections
	Quarries will be inspected on a regular basis to monitor water ponding, particularly at spring melt.	**Yes** – Site inspections
	Best management practices for erosion and sediment control.	**Yes** – Erosion Management Plan
Site Water Management along the road (seepage and runoff)	Use of non-acid generating material at any watercourse crossings. Testing will verify lack of acid rock drainage and metal leaching potential. Testing will continue on new sources identified for road building.	**Yes** – Operational ARD-ML sampling and testing plan
	Road contact water will be monitored during construction.	**Yes** – Construction Design Report
Mining and supporting infrastructure for the Whale Tail Pit and haul road	Implement dust control measures, if needed on mine roads.	**Yes** – Air Quality and Dustfall Monitoring Plan
	Equipment and vehicles will comply with relevant non-road emission criteria at the time of purchase	**Yes**
	Enforcing speed limits (maximum speed 50 km/h) to suppress dust production.	**Yes** – Road logs
	If deemed necessary through monitoring, dust from roads will be managed through use of dust suppressant.	**Yes** – Air Quality and Dustfall Monitoring Plan
	The running surface of the road will be maintained thereby reducing the generation of dust.	**Yes** – Road maintenance
	Adherence to the Air Quality and Dustfall Monitoring Plan	**Yes** – Air Quality and Dustfall Monitoring Plan
	Most personnel arriving at or leaving the site will be transported by bus, thereby reducing the amount of traffic (and dust).	**Yes**
	Construction equipment and trucks will be equipped with industry-standard emission control systems.	**Yes**
	Equipment and vehicles will comply with relevant non-road emission criteria at the time of purchase	**Yes** – Air Quality and Dustfall Monitoring Plan
	Exhaust emissions from non-road vehicles will be managed through regular and routine maintenance of vehicles.	**Yes** – Air Quality and Dustfall Monitoring Plan
	SO2 emissions from non-road vehicles and stationary equipment will be reduced through the use of low emission diesel fuel.	**Yes**
	Adherence to existing air quality monitoring plan to detect changes in air quality	**Yes** – Air Quality and Dustfall Monitoring Plan
	Adherence to water quality monitoring and adaptive management in the CREMP to detect changes in water quality	**Yes** - CREMP
Dike Construction	Erosion and sediment control measures will be implemented during dike construction, where	**Yes** – Dike construction Dewatering monitoring plan.

Project Activity	Planned Mitigation Measure (FEIS Addendum, Section 3, Table 3-C-6)	Implementation (2021)
	appropriate (e.g., installation of silt curtains for turbidity control)	No in water dike construction in 2021
	The dike will be constructed using non-potentially acid-generating rock or low potential for metal leaching material	**Yes** – Construction design report
	Adherence to the Water Quality Monitoring and Management Plan for Dike Construction and Dewatering, including installation of turbidity curtains and monitoring.	**Yes** - Water Quality Monitoring and Management Plan for Dike Construction and Dewatering
Development of Supporting Infrastructure for Whale Tail Pit and the haul road	Best management practices for erosion and sedimentation control (e.g., silt curtains, runoff management, armouring of banks), where needed to limit disturbance to lakes.	**Yes** – Erosion Management Plan, site inspection
	In-stream works will be constructed in winter, when possible, to avoid increased TSS and turbidity, and changes to water and sediment quality.	**Yes** - Water Quality Monitoring and Management Plan for Dike Construction and Dewatering, best practices
	Where applicable, construction runoff will be captured and managed to minimize suspended solids.	**Yes** – Erosion Management Plan
	Regular road inspections to check for ponding.	**Yes** – Site Inspections
Mine Site Operations and Maintenance, including the use of existing infrastructure at Meadowbank Mine and the haul road	Best management practices for erosion and sediment control (e.g., silt curtains, runoff management) will be implemented, as needed to limit disturbance to lakes.	**Yes** – Erosion Management Plan, site inspection
	Water Management Plan is approved and adhered to at existing facilities and Water Management Plan specific to the Whale Tail Pit areas has been developed and these plans have considered the containment and management of contact site water	**Yes** – Water Management Plan
	Runoff and seepage from the Project site will be diverted to sumps and attenuation ponds (and treated if required), prior to release	**Yes** – Water Management Plan
	Water quality in attenuation ponds will be monitored and managed such that the discharge meets discharge limits	**Yes** – Water Management Plan
	Any potentially acid generating (PAG) or high metal leaching waste rock will be segregated at source and placed into designated areas within the waste rock storage facility	**Yes** - Mine Waste Rock Management Plan, Operational ARD-ML sampling and testing plan
	Adherence to the Operational ARD/ML Testing and Sampling Plan and the Mine Waste Rock and Tailings Management Plan	**Yes** - Operational ARD/ML Testing and Sampling Plan
Construction and operation of roads	Regular road inspections to check for ponding	**Yes** – Site Inspections
	Removal of snow at the culvert inlet prior to freshet.	**Yes** – Freshet Action Plan
Development of Supporting Infrastructure for Whale Tail Pit and the haul road	Regular inspection of the road to identify any areas where ponding of water along the road represents a risk, and installing additional culverts to alleviate the risk.	**Yes** – Freshet Action Plan
Site Water management: Seepage and Runoff	A Water Management Plan has been developed and describes the containment and management of contact water on-site	**Yes** – Water Management Plan
	Seepage will be captured at sumps and diverted to the Attenuation Pond.	**Yes** – Water Management Plan
	Facility discharge water will be monitored for water quality, and treated as required, prior to	**Yes** – Water Management Plan

Project Activity	Planned Mitigation Measure (FEIS Addendum, Section 3, Table 3-C-6)	Implementation (2021)
	discharge	
	Performance of the dikes will be monitored and appropriate remediation applied, if required	**Yes** – Water Management Plan
Fuel Storage and use (includes Chemical and Hazardous material Storage and Explosives Storage Area)	The Spill Contingency Plan will be implemented, including ready access to an emergency spill clean-up kit for cleaning up any spills.	**Yes** – Spill Contingency Plan
	Hazardous materials and fuel will be stored according to regulatory requirements to protect the environment and workers and will be stored at the Meadowbank Mine.	**Yes** – Hazardous Management Plan
	Storage tanks (e.g., fuel, engine oil, hydraulic oil, and waste oil and coolant) will be double walled, or located in lined and bermed containment areas	**Yes** – best practices, site inspection
	Hazardous wastes will be temporarily stored at Whale Tail Pit and then transported to the Meadowbank Mine in appropriate containers to prevent exposure until they are shipped off site to an approved facility.	**Yes** – Hazardous Management Plan
	Individuals working on site and handling hazardous materials will have appropriate training (e.g. WHMIS)	**Yes** – Hazardous Management Plan
	Soils from petroleum spill areas will be deposited at the Meadowbank Mine Landfarm	**Yes** – Landfarm Management Plan
	Equipment will be re-fueled, serviced, or washed away from the watercourse crossings	**Yes** – best practices
	Fuel, lubricants, hydraulic fluids, and other chemicals will be stored at least 31 m away from the high water mark of any waterbody.	**Yes** – Hazardous Management Plan
	Construction equipment will be regularly maintained	**Yes** – Maintenance logs
	Emergency spill kits will be available wherever toxic materials or fuel are stored and transferred	**Yes** – Spill Contingency Plan
	Enforced speed limits	**Yes**
Mining Activities and Water Management	Adherence to Water Management Plan	**Yes** – Water Management Plan
	Treated sewage will be piped to the attenuation pond	**Completed**
	Water quality in attenuation ponds will be monitored and managed such that the discharge entering Mammoth Lake meets Type A Water Licence discharge limits. If water quality does not meet discharge limits, it will be circulated and re-treated.	**Yes** – Water Management Plan
	Other applicable design features and mitigation, as outlined in the Interim Closure and Reclamation Plan	**Yes** - Interim Closure and Reclamation Plan
Water Management Infrastructure, including existing infrastructure that will be used the Meadowbank Mine site, the haul road, and the Whale Tail Pit	Manage pumping rates so total annual discharge from Whale Tail and Nemo Lake does not drop below the 10-year dry condition	**Yes** – Water Management Plan
	Water withdrawal rate(s) will be controlled to avoid effects on the source water lake(s).	**Yes** – Water Management Plan
	Capture and reuse site water to reduce fresh water requirements	**Yes** – Water Management Plan
	During dewatering activities, TSS will be monitored, and if necessary, treated before release downstream	**Yes** – No dewatering in 2021
	Pumped water from the dewatered waterbodies will be directed through properly designed	**Yes** – No dewatering in 2021

Project Activity	Planned Mitigation Measure (FEIS Addendum, Section 3, Table 3-C-6)	Implementation (2021)
	structures to the lake environment, and not to lake outlets, to prevent erosion in the receiving waterbodies and to attenuate flows.	
	Erosion and sedimentation control (e.g., silt curtains, runoff management, armouring of banks, sloping of banks), where needed	**Yes** – Construction design report, Freshet Action Plan, site inspection
Open Pits	Groundwater inflow to the pits or other dewatered areas will not be directly released to local watersheds	**Yes** – Groundwater Management plan
	All pit water will be pumped to the Attenuation Pond for management and treated prior to release	**Yes** – Water Management Plan
	Mined-out pit flooding will be augmented by fresh water diversion	**Yes** – Water Management Plan

Adaptive Management

Since no significant exceedances of FEIS predictions occurred for water quality programs in 2021, no new adaptive management measures are planned at this time based on this PEAMP analysis.

12.5.1.3 *Fish and Fish Habitat*

12.5.1.3.1 Parts 1 & 2: Summary of Predicted and Measured Residual Impacts

The FEIS for the Whale Tail Pit Project and FEIS Addendum for the Whale Tail Pit Expansion Project assessed potential direct and indirect effects to fish and fish habitat as a result of Project activities. Residual impacts were associated with dewatering dike construction, lake dewatering, water diversion (flooding), pit re-flooding, and effluent discharge. A summary of predictions for residual impacts to fish and fish habitat (FEIS Volume 6, Section 6.5, as summarized in Volume 3, Table 3-C-7; FEIS Addendum Section 6.5, as summarized in Table 3-C-7) and the accuracy of these predictions in 2019 - 2021 (measured impacts) are provided in Table 12-25. Cells are highlighted in grey when measured impacts exceed predictions for the current year. Future results will be added to that section to ensure historical trends can be observed, even when predicted impacts are not exceeded in a given year.

Table 12-25 Predicted and measured impacts to fish and fish habitat for the Whale Tail Site during the construction and operations period (primary pathways according to FEIS and FEIS Addendum Tables 3-C-7). *Effects Pathways added for the Expansion Project are in italics.* NA = not assessed. Measured impacts exceeding or potentially exceeding predictions are shaded grey and further discussed in Section 12.5.1.3.2. *FEIS values differ slightly from those calculated under the Whale Tail Pit Fish Habitat Offsetting Plan (March, 2018).

Effects Pathway	FEIS Proposed Monitoring	Current Monitoring	Predicted Impact		Measured Impact		
					2019	2020	2021
DIRECT EFFECTS							
The construction of the Northeast, Whale Tail, and Mammoth dikes, and Whale Tail Pit, and the dewatering of the diked area in Lake A17 (Whale Tail Lake) and Lake A16 (Mammoth Lake) will result in the direct loss or alteration of fish habitat.	None	As-built Reports for Mammoth and Whale Tail Dike	*FEIS values* (in-water footprints during operations phase, with assumed baseline water elevations)*: Mammoth Dike: 0.07 ha Mammoth Lake dewatering: 0.93 ha (TBD masl) Whale Tail Dike: 3.98 ha Whale Tail dewatering: 64.58 ha (152.5 masl)	*Offsetting Plan values* (Portt & Associates, 2018; footprints during operations phase, with baseline water elevations)*: Mammoth Dike area above water + dewatering: 1.2 ha (152.57 masl) Whale Tail Dike area above water + dewatering: 69.5 ha (153.02 masl)	NA – to be calculated following completion of the as-built reports (est. 2020)	NA – to be calculated in 2021.	NA – per updated FHOMP (June, 2021) to be calculated following offset construction (est. 2026 for WTS and Lake A18, est. 2043 for WTN). See discussion Section 12.5.1.3.2.1.
The dewatering of smaller waterbodies and watercourses in the northeast area to permit construction of the IVR Pit and WRSF for the Expansion Project, and the dewatering of and use of Lake A53 as the IVR Attenuation Pond for the Expansion Project, will result in the direct	None	As-built Reports for IVR Pit, WRSF, Attenuation Pond	*FEIS Addendum values* (Section 6.5.4.2.2): total losses of 7.9 ha of lake/pond area; 1,155 m of stream length	*Offsetting Plan values* (ERM, 2020 – Table 7-1): Total area of 26.01 ha (inc. watercourses, excl. Whale Tail Lake)	NA	NA – to be calculated following completion of the as-built reports (est. 2026).	

Effects Pathway	FEIS Proposed Monitoring	Current Monitoring	Predicted Impact		Measured Impact		
					2019	2020	2021
loss or alteration of fish habitat.							
Water diversions for the Whale Tail and Northeast dikes during construction and operations will flood tributary lakes and streams, and will result in access to new habitat. *Extension of flooding period for Whale Tail South due to the Expansion Project.*	None	Water level monitoring & surface area calculation Fish Habitat Offsets Monitoring Plan (inc. Productivity Study)	***Northeast Flood Zone*** *FEIS operations phase prediction (2019):* Lake A46: +3.5 m to 34 ha, consuming lakes A47, A48, A113, Pond A-P38, and Pond A-P68 including 412 m of flooded streams. *FEIS Addendum operations phase prediction (2020+):* Dewatered to permit construction of IVR Pit	***Northeast Flood Zone*** *Offsetting Plan(s) operations phase assumption:* Northeast flood zone is assumed lost fish habitat.	Flooded to +3.5 m prior to pumping.	Dewatered in 2020 to permit construction of IVR Pit.	

Effects Pathway	FEIS Proposed Monitoring	Current Monitoring	Predicted Impact	Measured Impact		
				2019	2020	2021
			Whale Tail South Flood Zone *FEIS Operations phase assumption:* +3.5m to 156 masl (from July 2011 baseline), resulting in 131 ha of flooding, access to new habitat and potential increase in population productivity. (Not assumed to provide offsets until after construction of the A18 Sill and drawdown, est. 2026)	NA – flooding not complete in 2019 (peak 155.84 masl)	Annual range of approx. 155.0 – 155.75 masl, and approx. 117 ha of flooding at peak. See full discussion, Section 12.5.1.3.2.2 Since the flood zone is not considered offsetting prior to permanent sill construction (est. 2026), final flood zone habitat area will be calculated at that time.	
The dewatering of the diked area in Lake A17 (Whale Tail Lake) and Lake A16 (Mammoth Lake) *and smaller waterbodies in the northeast area for the Expansion Project* will result in the removal and subsequent mortality of fish from the area during the proposed fish-out.	None	2018 Whale Tail Lake Fishout Report 2020 Whale Tail Expansion Project Fishout Report	***Whale Tail Lake est. loss:*** 870 kg or 3346 fish ***IVR area waterbodies est. loss:*** A46 – 2.9 kg A47 – 43.2 kg A48 – 1.2 kg A49 – 23.5 kg A53 – 125.5 kg A0 – 0.4 kg A-P38 – 1.2 kg **TOTAL = 197.9 kg**	***Whale Tail Lake loss:*** 776.6 kg or 3078 fish	***IVR area waterbodies loss:*** A46 – 0.56 kg A47 – 2.4 kg A48 – 4.3 kg A49 – 6.5 kg A53 – 55.7 kg A0 – 0.30 kg A-P38 – 0 kg A50 = 0 kg A51 = 0 kg A52 = 0 kg **TOTAL = 69.8 kg**	NA (no fishout)
INDIRECT EFFECTS						
The construction of the North-East, Whale Tail, and Mammoth dikes will alter access to tributary streams and lakes (i.e., habitat connectivity) in the LSA, and may result in habitat loss for Lake	None	Fish Habitat Offsetting Plan – Complementary Measures	Minor effect on fish populations (not quantified).	NA - post-flooding hydroacoustics surveys (or other survey types) planned prior to drawdown (est. 2026) under FHOMP		

Effects Pathway	FEIS Proposed Monitoring	Current Monitoring	Predicted Impact	Measured Impact		
				2019	2020	2021
Trout, Arctic Char, and Round Whitefish.						
Water diversions will result in a reduction of water levels in Mammoth Lake and downstream locations during some project phases, affecting fish and fish habitat.	Water level monitoring	Water level monitoring	No measurable residual impacts to fish (App. I - 2020 Fish Habitat Offsetting Plan for the Whale Tail Pit Expansion Project)	Mammoth Lake water levels have generally exceeded predictions and have not declined below low water level thresholds for fish (further discussion provided in Section 12.5.1.1.2.3)		
Release of treated mine effluent (including sources from sewage, WRSF pond, and attenuation pond contact) may change trophic status in Mammoth Lake, *Whale Tail Lake, and downstream waterbodies* in operations and closure.	Total phosphorus (CREMP)	CREMP	**Total phosphorus:** >mesotrophic trigger (10-20 µg/L) in Mammoth Lake, to a max. of 29 µg/L (2021). Within mesotrophic trigger range (10-20 µg/L) in WTS to a max. of 20 µg/L (2026).	Below predicted concentrations.	Within or below predicted trophic range, but some exceedances of monthly predictions.	
			Phytoplankton: Increase in phytoplankton biomass and possibly altered species composition in Mammoth Lake, Whale Tail Lake, A15, A12, A76 and potentially further downstream to DS1.	Increase in phytoplankton biomass.	Non-significant increases and decreases in phytoplankton biomass. Significant reduction in taxa richness in WTS.	Increase in phytoplankton biomass (significant in A20 only), no change in species composition.
		None	**Zooplankton**: Increase in secondary production (zooplankton) and altered species composition in Mammoth Lake and downstream lakes.	NA (not measured)		
		CREMP	**Benthic Invertebrates**: Possible delayed increase in benthic invertebrate abundance and biomass.	No mine-related impacts on benthic invertebrate community.		
		Fish Habitat Offsetting Plan – Complementary Measures	**Fish**: Possible increase in forage fish abundance; possible minor increase in growth and reproduction rates for large-bodied fish (not measurable).	Research study underway as described in the 2021 Fish Habitat Offset Monitoring Report (Appendix 44) (complete results planned for 2023)		

Effects Pathway	FEIS Proposed Monitoring	Current Monitoring	Predicted Impact	Measured Impact		
				2019	2020	2021
		Discussion:		*Since in many cases FEIS predictions for impacts of effluent release were not quantitative, further discussion is provided in Section 12.5.1.3.2.4, below.*		

12.5.1.3.2 Parts 3 & 4: Discussion

Where impacts are exceeded or potentially exceeded based on monitoring results (as identified in Parts 1 & 2, above), or for pathways where further details are warranted, a discussion is provided here.

Most quantitative FEIS and FEIS Addendum predictions for impacts to fish and fish habitat were for changes to habitat areas and direct loss of biomass as a result of the dewatering and fishout of Whale Tail Lake North and the IVR Pit area.

12.5.1.3.2.1 Habitat Losses

Predicted direct habitat losses for the Whale Tail North area were calculated as the in-water footprints of the Mammoth and Whale Tail Dikes. The validity of these predictions can be assessed by comparing as-built dike footprint area to the footprint from FEIS and offsetting plan designs, taking the assumed baseline water level into account. Construction summary reports (as-built designs) were finalized in November, 2020, and these comparisons were planned to be completed in 2021. In general, the final constructed footprint of these dikes was similar to FEIS-phase designs. However according to the updated Fish Habitat Offsets Monitoring Plan (June, 2021), full structural assessments in the context of fish habitat losses will be conducted once after construction of the final habitat offsets – i.e. for offsets obtained through flooding, this will occur once final post-closure water elevations are reached (est. 2026 for Whale Tail South and Lake A18, and 2044 for Whale Tail North). At that time, structural assessments will confirm the total area of the losses and offsets, and compare these to offsetting plans, including losses related to the footprints of the Mammoth and Whale Tail Dikes.

For the IVR area, habitat losses were calculated in the FEIS Addendum as the area of affected waterbodies and length of affected watercourses. For the associated offsetting plan (ERM, 2020), losses were calculated as a total area, including waterbodies and watercourses. Eventual as-builts for the IVR Pit, IVR WRSF and IVR Attenuation Pond will be reviewed to generally confirm the footprint of those facilities impacts waterbodies as predicted (est. 2026).

12.5.1.3.2.2 Whale Tail South Flooding

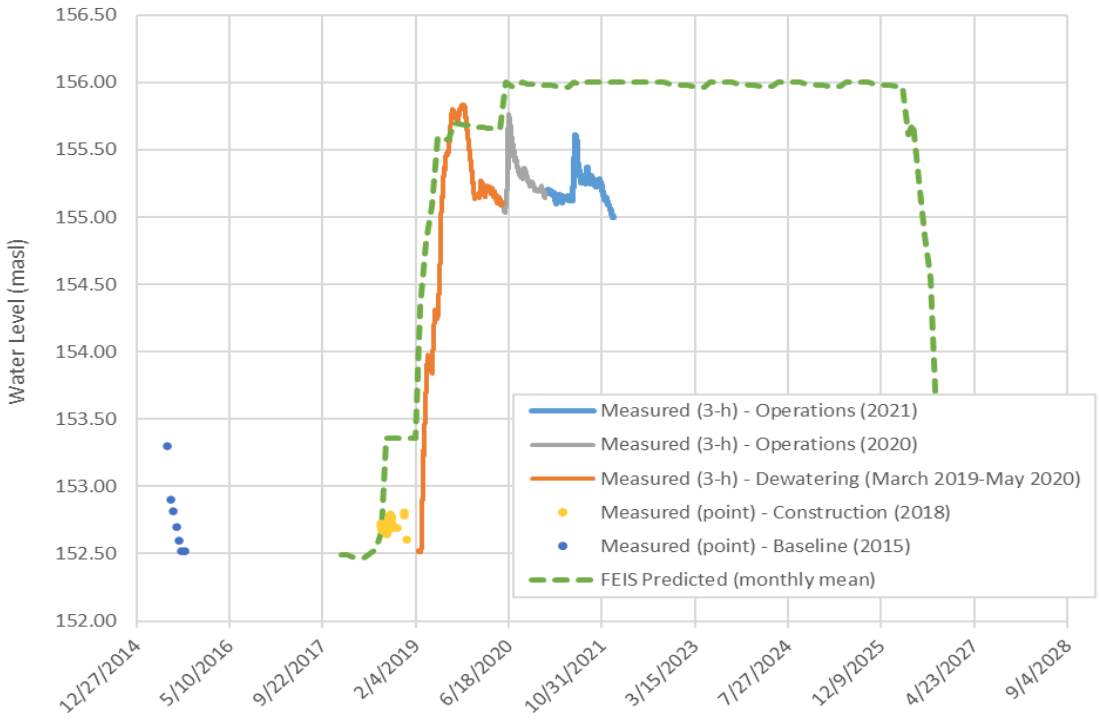
FEIS (2016) predictions indicated that during operations, water levels in Whale Tail South would increase in elevation by 3.5 m (from 152.5 to 156.0 masl) and increase in surface area from 369 ha to 513 ha, resulting in 144 ha of flooding (Volume 6, Section 6.5.3.2). Refined water level modelling in the FEIS Addendum predicted 148.5 ha of flooding at elevation 156.0 masl (FEIS Addendum, Appendix 6-F, Table 6-F-1). The resulting impacts on fish were only assumed to occur at the individual level (access to new habitat). No population-level changes were assumed as a result of this additional aquatic habitat.

Within the Fish Habitat Offsetting Plan for Whale Tail Pit (March, 2018), the calculated expansion of aquatic habitat during operations was 131 ha, which is smaller than FEIS calculations. This is due to differences in assumed baseline water levels (152.5 masl in the FEIS, 153.02 masl in the offsetting plan). Although a potential increase in fish population productivity during the operations phase was noted in this Plan, the flooded terrestrial zone was not assumed to provide fish habitat for offsetting purposes until after drawdown to +1 m above baseline (154.02 masl, from a baseline of 153.02 masl), during the closure phase. This drawdown was planned to occur from 2022 – 2026, and the permanent flooded habitat would occur in Whale Tail Lake only.

No change to these assumptions was presented in the Whale Tail Pit Expansion Project's Fish Habitat Offsetting Plan (ERM, 2020), except the drawdown will not begin until 2026, but will still be completed within the same year. Under this plan, a sill will be constructed between Lake A18 and Whale Tail Lake (South Basin) in 2026 to maintain some of the flooding in upstream areas. The new permanent water level throughout this area would be 155.3 masl, which is 1.3 m above baseline in A18, and 0.3 m above baseline in A22.

Measured water levels in the Whale Tail South flood zone to date are shown in Figure 68. To help preserve integrity of the Whale Tail Dike, construction designs for the South Whale Tail Channel were changed prior to construction in early 2020. The inlet invert elevation was decreased by 0.5 m from original plans, to an elevation of 155.3 masl. As a result, operational water levels in the Whale Tail South area have been lower than the FEIS prediction of 156.0 masl (generally 155.0 – 155.75 masl). These water levels correspond to a terrestrial flood zone range of approximately 73 - 117 ha (FEIS Addendum, Appendix 6-F, Table 6-F-1) which is 14 – 58 ha smaller than the 2018 offsetting plan calculation for the operations period (131 ha). However, as noted above, no offsetting was associated with temporary operations-phase flooding, and the assumptions for permanent habitat creation (post-closure habitat) in both the 2018 and 2020 offsetting plans are still expected to be met once the South Whale Tail Channel is decommissioned, since peak flood levels currently exceed 155.3 masl.

Figure 68 Measured (3-h interval and monthly mean, as indicated) and predicted water levels in the Whale Tail South flood zone. Predicted water levels from FEIS Addendum for the Whale Tail Pit Expansion Project, Appendix 6-O, Table D-14. Monthly mean water levels are plotted by the month start date.



12.5.1.3.2.3 Mammoth Lake and Downstream Water Levels

FEIS and FEIS Addendum predictions indicated that "*during the construction and operation of the Whale Tail, Mammoth, and WRSF dikes, water diversions will result in a reduction of water levels in Mammoth Lake and downstream locations, affecting fish and fish habitat*" (FEIS Addendum, Section 6.5.4.3). The predicted change in water levels is summarized in Section 12.5.1.1.2.2 (Mammoth Lake Water Level). Discharges and water levels were expected to be slightly reduced at Lake A5, and changes were not expected to be measurable at Lake DS1, so the evaluation focused on Mammoth Lake. Modelled declines in water levels during the construction and closure phases (up to 0.2 m reduction in mean monthly lake level) were predicted to result in a "*moderate effect to population abundance and distribution*" of VC fish species.

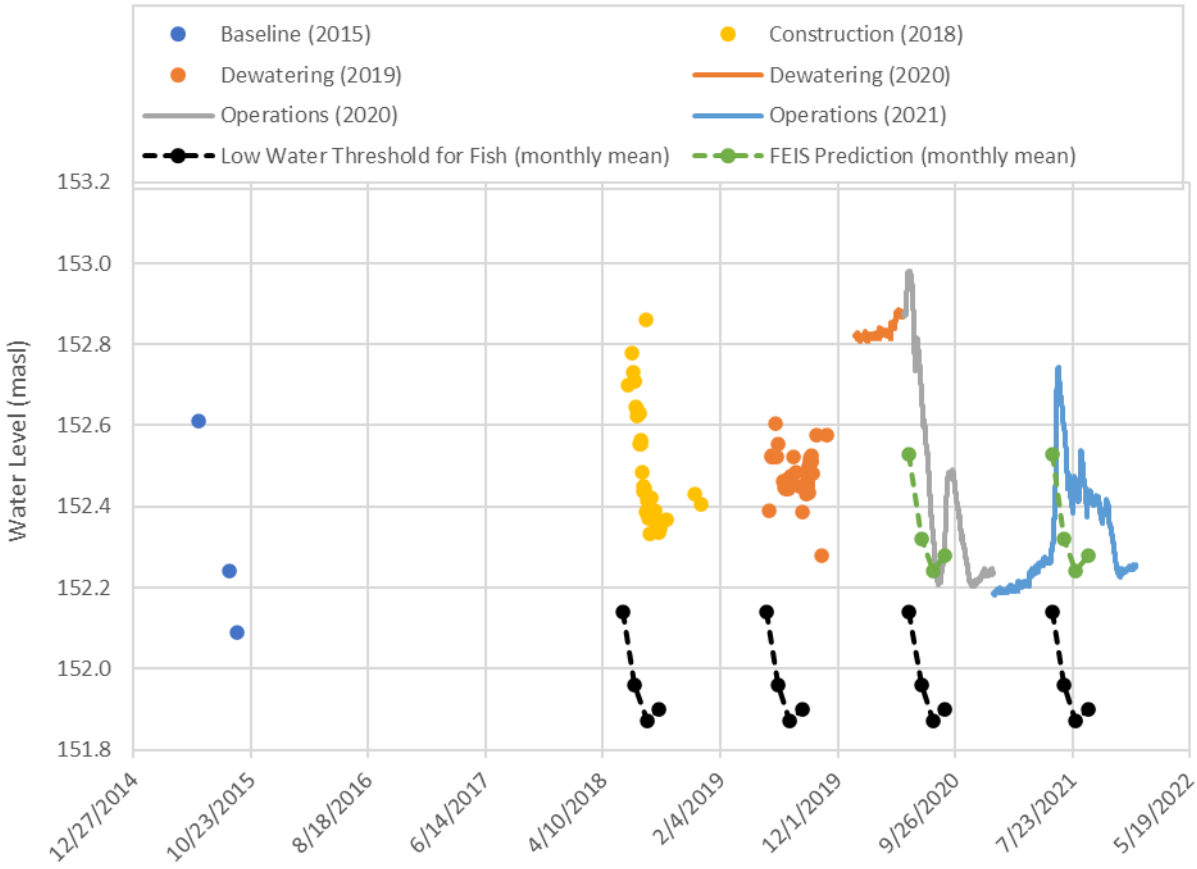
However, as part of offset planning for the Whale Tail Pit Expansion Project (Appendix I in ERM, 2020), potential impacts of water level changes in Mammoth and downstream lakes on fish habitat were assessed in more detail. Predicted water levels were compared to modeled baseline water levels for a low-flow year, as well as modeled baseline median water levels values minus 10%, and finally, the water elevation change associated with a 10% under-ice withdrawal volume (for Mammoth Lake, median water level minus 0.34 m – low flow threshold for fish, as shown in Figure 69). Based on this comparison, predicted changes (including up to a 20 cm decline in Mammoth Lake water levels during the closure phase) were expected to have *"a low probability of detectable residual impacts on the downstream aquatic ecosystem"*. Monitoring of water levels in Lake A16 (Mammoth Lake), and if required, in Lakes A12, A15, and A76 during closure was recommended to confirm predictions.

Under the existing water management strategy and as described in the Project FEIS Addendum – Whale Tail Pit Expansion Project (December, 2018; Section 6.3.3.1.4, Table 6.3-3, copied below), no flow reduction is predicted for Mammoth Lake and downstream lakes under the current Operational Phase of the Project (2020 – 2026). During this Project phase, there is no significant water storage strategy onsite and no diversion of water out of the Whale Tail watershed. While the inflow location for Whale Tail Lake to Mammoth Lake has changed from the eastern inlet to the newly constructed Whale Tail South Channel, all flows still fully report to Mammoth Lake. The combined effect of all permitted Operational Phase project activities (including effluent discharge to Whale Tail South and Mammoth Lake) is a minor increase in mean monthly water levels for Mammoth Lake (up to +5 cm above baseline was predicted) during this Project phase.

Although no decline in water levels is predicted for the current operations phase, and monitoring was not specifically recommended until the closure phase, Agnico Eagle has measured water levels in Mammoth Lake since 2018. Monitoring by GPS survey occurred in 2018 – 2019, at which time piezometers were installed in the Mammoth Dike (with 3-h data logging). These measured water levels along with FEIS predictions for the operations period (months of June – September, annually; from data in FEIS Addendum Section 6.3.3.1.4.2 and ERM, 2020-App. I) and the identified low flow threshold for fish (median water level minus 34 cm for June – September; ERM, 2020 – App. I) are shown in Figure 69.

To date, measured water levels have been similar to or higher than the predicted monthly means, are similar to baseline values measured in 2015, and have not declined below fish impact thresholds.

Figure 69. FEIS predictions (monthly mean for June – September annually; operations phase predictions shown (2020, 2021), from data in FEIS Addendum Section 6.3.3.1.4.2 and ERM, 2020-App. I) and measured water levels in Mammoth Lake. Results from 2015 – 2019 are by GPS survey, and results for 2020+ are piezometric data (3-h intervals). Low water threshold for fish from App. I of ERM (2020) (median baseline water level minus 0.34 m).



12.5.1.3.2.4 Lake Ecosystem Productivity

Since residual impacts on fish and fish habitat due to changes in lower trophic levels were predicted, but those predictions were not quantitative, a discussion is provided here.

Predicted impacts to fish and fish habitat associated with changes in lower trophic levels stem from a predicted increase in nutrient concentrations due to effluent discharge. Increased phytoplankton biomass and possibly altered species composition was predicted but not quantified for Mammoth Lake, Whale Tail Lake, A15, A12, A76 and potentially further downstream to DS1.

Phosphorus concentrations were predicted in the FEIS Addendum to increase briefly beyond the CCME mesotrophic range (10 - 20 µg/L) during the operations phase in Mammoth Lake, to a maximum of 29 µg/L (in 2021; Figure 69). Measured concentrations of total phosphorus in Mammoth Lake are shown in Figure 70, and have remained below predictions to date.

Concentrations were predicted to be largely within the mesotrophic range for WTS during operations (10 – 20 µg/L), to a maximum of 20 µg/L (in 2026) (Figure 70). Predicted and measured values to date are shown in Figure 70. While some measured concentrations of phosphorus have exceeded monthly FEIS predictions in WTS (particularly in 2020), all were within an order of magnitude (the level of uncertainty assigned to these predictions in the FEIS), and overall concentrations were below or within predicted trophic levels to date (concentrations in 2019 – 2021 were predicted to be in the oligotrophic range, or 4 – 10 µg/L).

Figure 70 Predicted concentrations of phosphorus for various receiving environment locations (from FEIS Addendum for Whale Tail Pit Expansion Project – Appendix 6-H, Section 4.1.3).

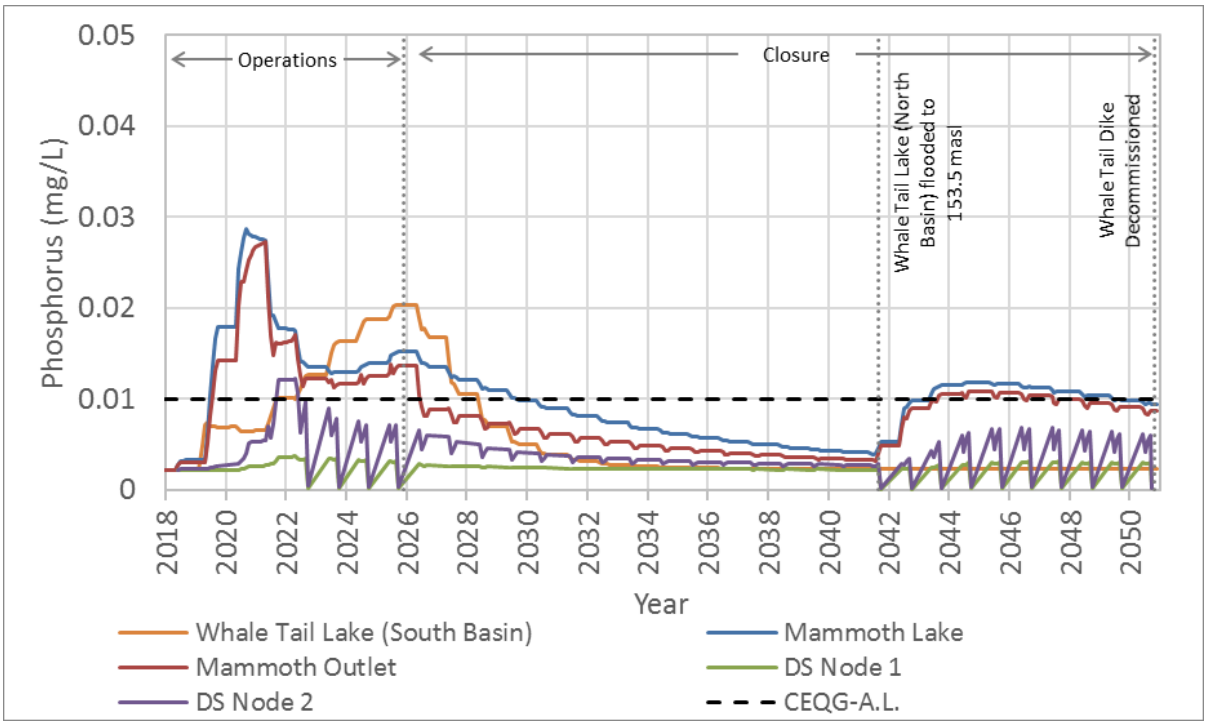
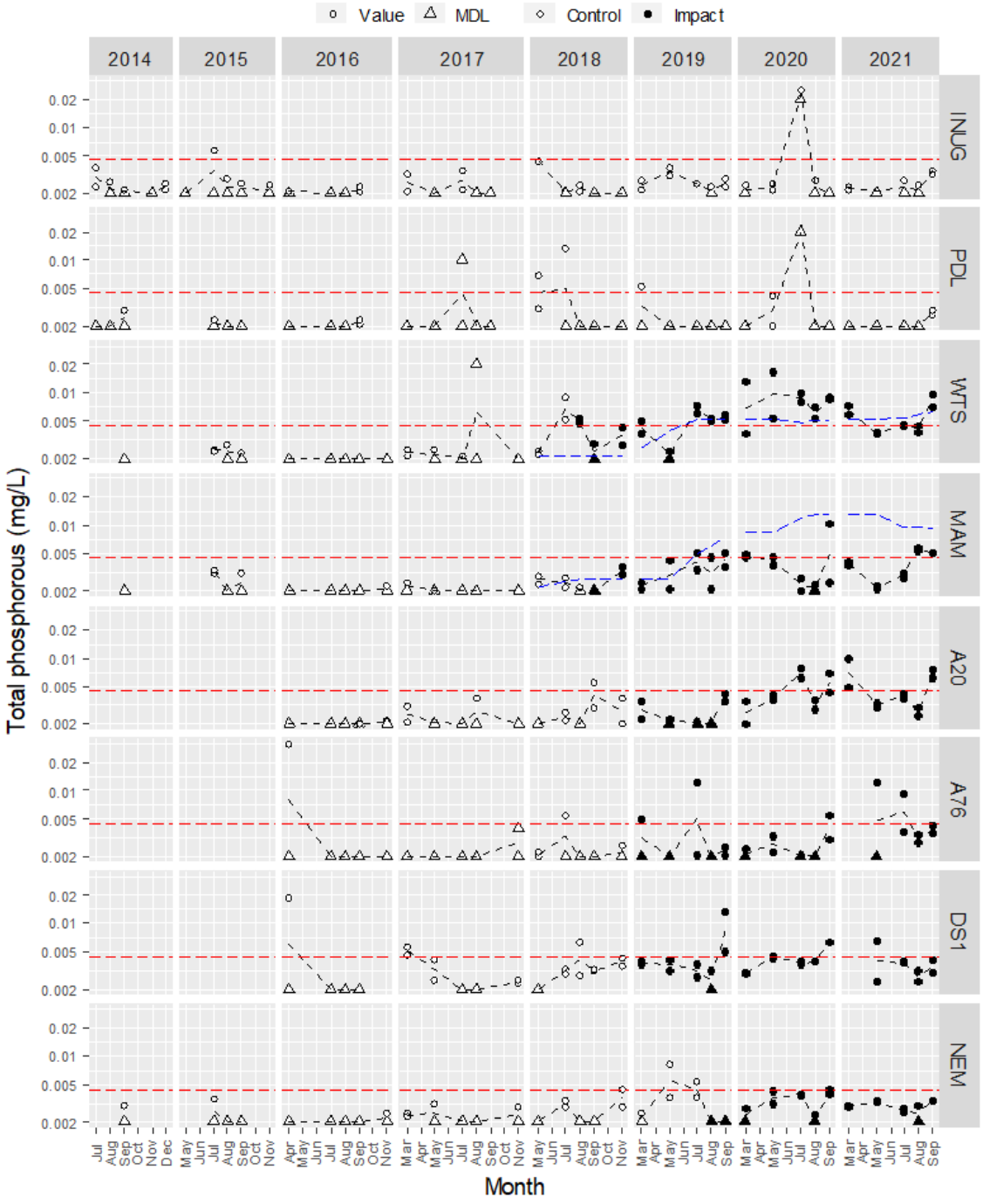


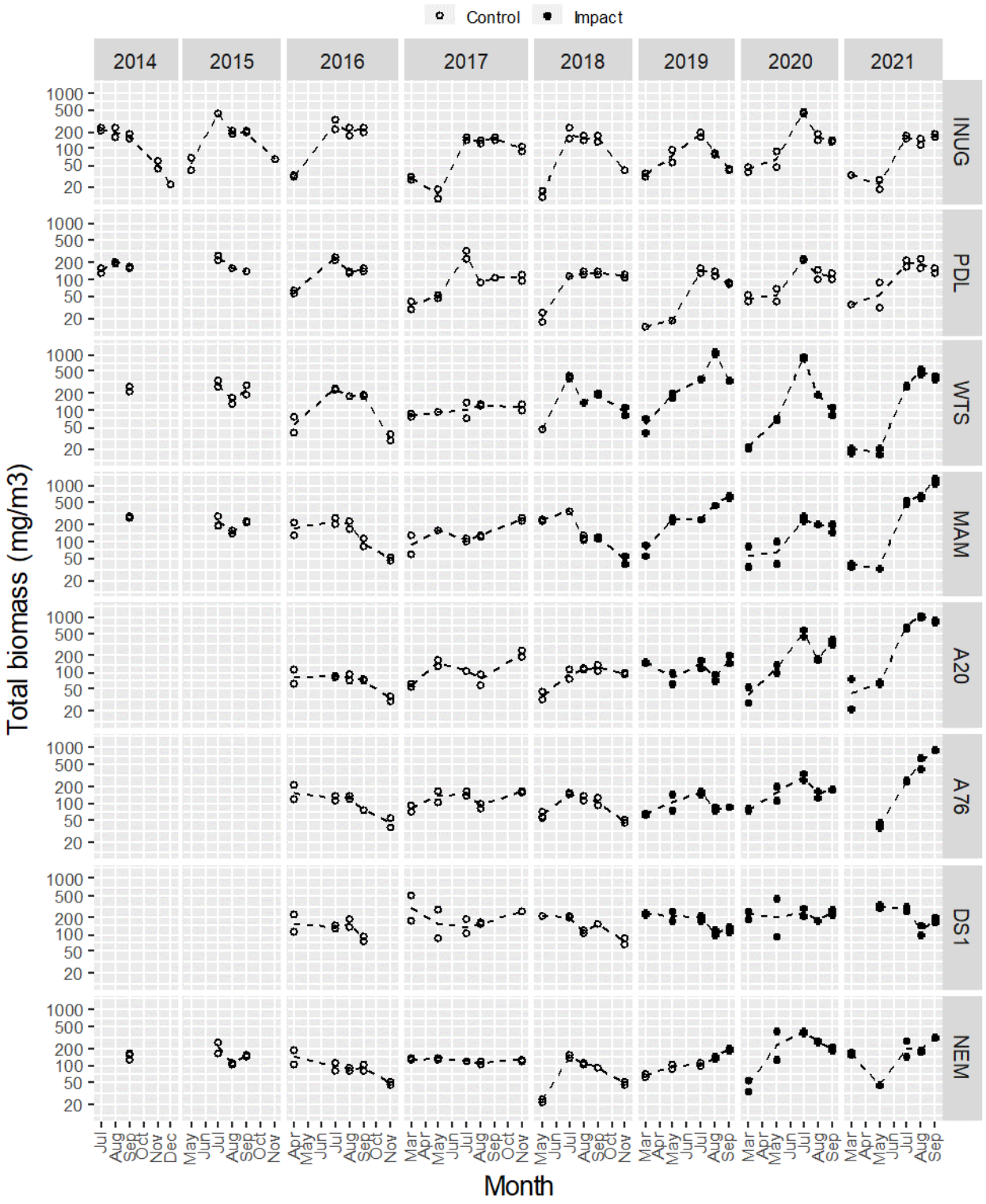
Figure 71 Total phosphorus in water samples from Whale Tail study area lakes since 2014. Red dashed line indicates CREMP trigger value. Blue dashed line indicates FEIS Addendum model prediction. The detection limit was adjusted for some July 2020 samples from 0.002 mg/L to 0.010 mg/L or 0.020 mg/L.



In 2019, there was a statistically significant increase in annual average phytoplankton biomass in Whale Tail South and a notable, but not statistically significant, increase in Mammoth Lake (Figure 72, below), relative to baseline/reference conditions. While biomass was higher than seen during baseline monitoring, the apparent increases were also driven by lower biomass at the reference area (INUG) relative to previous years. Thus, the biomass results for 2019 appeared due to the combined influence of natural variability and mining-related activities. In 2020, there were no statistically significant changes to phytoplankton biomass, but in 2021 a statistically significant increase (compared to baseline/reference) was see in A20, along with notable but not statistically significant increases in other near- and mid-field lakes (Mammoth, WTS, A76).

As predicted in the FEIS as a possibility, a statistically significant decrease in phytoplankton taxa richness was observed for WTS in 2020 for the first time, but not for other lakes, nor was this observed in 2021, suggesting the 2020 observation was due to natural variation.

Figure 72. Total phytoplankton biomass (mg/m^3) from the Whale Tail Pit study lakes since 2015.



No significant mine-related changes in benthic invertebrates have been observed to date, although FEIS predictions indicated impacts may be delayed.

Potential impacts on forage fish that were also predicted to occur are being assessed through a research study agreement with the University of Waterloo (Section 8.9). While early indications suggest increased population abundance in flood zone habitat, differences related to nutrient inputs have not yet been explored. Final results of this study are expected in 2023.

Overall, FEIS predictions for changes to lower trophic levels were not quantitative, but nutrient concentrations have increased for near-field lakes and associated primary production shifts may be occurring, as anticipated.

12.5.1.3.3 Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management

Effectiveness of Monitoring

Based on the results in Table 12-25, existing monitoring is able to effectively address all FEIS predictions for changes to fish and fish habitat, with the exception of predicted impacts to zooplankton. The rationale for omitting zooplankton is discussed in the 2019 PEAMP.

Effectiveness of Mitigation

A summary of the FEIS planned mitigation measures related to fish and fish habitat, along with a commentary on implementation in 2021 is provided in Table 12-26. Mitigation measured specifically related to water quantity and water quality are provided in Sections 12.5.1.1.2 and 12.5.1.2.2, respectively, though some overlap may occur.

Table 12-26 Mitigation measures described in the Whale Tail FEIS Addendum to reduce impacts of the project to fish and fish habitat, and commentary on current implementation.

Project Activity	Planned Mitigation Measure (FEIS, Volume 3, Table 3-C-7)	Implementation (2021)
Mine infrastructure footprint	Best management practices for erosion and sedimentation control (e.g., ground cover, silt fences and curtains, runoff management), where needed.	**Yes** – Freshet Action Plan
Site water management (road infrastructure) and Whale Tail Haul Road operation	Where possible, in-stream works will be constructed in winter when watercourses are frozen. In-stream works will be conducted according to DFO timing windows to avoid critical periods for fish.	**NA**
	Mining staff will not be allowed to hunt or fish while on their work rotation; Agnico Eagle will develop and enforce “no hunting, trapping, harvesting or fishing policy” for employees and contractors, which will be consistent with the Meadowbank Mine.	**Yes**
	Watercourses will be inspected upstream and downstream of the crossings for, erosion, scour, and flow blockages	**Yes** – Road Inspection
	Regular inspection of the road to identify any areas where ponding of water along the road represents a risk, and installing additional culverts or drains to alleviate risk, where required.	**Yes** – Road Inspection
	Rock aprons at culvert inlets and outlets will provide erosion protection and prevent localized erosion from concentrated high velocity flows above the peak 1:10 year rainfall event.	**Yes** – Road Inspection

Project Activity	Planned Mitigation Measure (FEIS, Volume 3, Table 3-C-7)	Implementation (2021)
	Use of staggered culvert configuration, and removal of snow at the culvert inlet and outlet prior to the freshet to promote drainage and increased conveyance of flow during spring thaw and freshet.	**Yes** – Road Inspection
Earthworks: Drilling, blasting and excavation (includes Quarry/Borrow Pit) and Crushing activities	Only the required amount of explosive will be used as necessary for the amount of rock or borrow material to be blasted	**Yes** – Blast monitoring Plan
	Applicable guidelines for set-back distances and quantities of explosives will be followed.	**Yes** – Blast monitoring Plan
	Where possible, stockpiling of rock and fill from quarries and borrow sites will be placed such that surface water is not diverted through the piles with runoff to surface waterbodies; drainage from quarries will not flow directly into any waterbodies or watercourses.	**Yes** - Mine Waste Rock Management Plan
	Borrow and rock quarry activity will be at least 31 m from the high water mark of any waterbody	**Yes** - Mine Waste Rock Management Plan
	Borrow pits and quarry will be excavated and sloped for positive drainage	**Yes** - Mine Waste Rock Management Plan
	Quarries will be inspected on a regular basis to monitor water ponding, particularly at spring melt.	**Yes** – Road inspection
	Drainage from borrow pits and quarry will not flow directly into any waterbodies or watercourses.	**Yes** - Mine Waste Rock Management Plan
	When there is ponded water in the rock quarry or borrow pits that could enter a waterbody or watercourse, a water quality sample will be collected and analyzed, and the results used to determine appropriate mitigation measures (e.g., prevent runoff from entering waterbody or watercourse).	**Yes** – Water quality and flow monitoring Plan
	To avoid and mitigate Serious Harm to Fish, Agnico Eagle will continue to adhere to blasting requirements and will continue to use practices consistent with those used at the Meadowbank Mine. Agnico Eagle will engage with DFO, when required.	**Yes** – Blast monitoring Plan
	Use of non-acid generating material at watercourse crossings; testing will verify lack of acid rock drainage and metal leaching potential.	**Yes** - Mine Waste Rock Management Plan, Operational ARD/ML Testing and Sampling Plan
	Any PAG or high metal leaching waste rock will be segregated at source and placed into designated areas within the waste rock storage facilities.	**Yes** - Mine Waste Rock Management Plan
General Construction /Decommissioning Activities	Best management practices for erosion and sedimentation control (e.g., silt curtains, runoff management, armouring of banks), where needed to limit disturbance to lakes and streams.	**Yes** - Mine Waste Rock Management Plan, Water quality and flow monitoring plan
	In-stream works will be in winter, when possible, to avoid increased TSS and turbidity, and changes to water quality	**NA** – no in-stream work
	Where applicable, runoff from construction / decommissioning activities will be captured and managed to minimize suspended solids (e.g., discharged into an attenuation pond to settle out suspended sediments)	**NA**
	Where possible, in-stream works will be constructed in winter when watercourses are frozen. In-stream works will be conducted according to DFO timing windows to avoid critical periods for fish.	**NA** – no in-stream work
	Bridge abutment installation will span majority of the active channel (i.e., outside of the high-water mark), and if feasible, construction will occur in winter	**NA** – no bridge installation
	Disturbed areas along the streambanks will be stabilized and allowed to revegetated upon completion of work	**NA**

Project Activity	Planned Mitigation Measure (FEIS, Volume 3, Table 3-C-7)	Implementation (2021)
Site Water Management	A Surface Water Management Plan will be implemented	**Yes** – Water Management Plan
Dike Construction / Decommissioning causing release of sediment	Use of the Dewatering Dikes, Operations, Maintenance and Surveillance Manual developed by Agnico Eagle.	**Yes** – Dike construction Dewatering monitoring plan. No in water dike construction in 2021
	Best management practices for erosion and sedimentation control (e.g., ground cover, silt fences and curtains, runoff management), where needed.	**Yes** – Dike construction Dewatering monitoring plan. No in water dike construction in 2021
	During summer construction, turbidity curtains will be installed near the portion of the alignment where dike construction will occur, which is an approach demonstrated at other northern mining projects	**Yes** – Dike construction Dewatering monitoring plan. No in water dike construction in 2021
	Non- potentially acid generating, chemically inert material (i.e., granite) will be used to construct the dike to prevent leaching of metals into water.	**Yes** – Dike construction design report
	Turbidity monitoring will be conducted at designated locations throughout open water and under-ice conditions, within and outside of the zone of the turbidity curtains. In the event that TSS concentrations approach monitoring thresholds, a review of local conditions and activities will be conducted.	**Yes** – Dike construction Dewatering monitoring plan. No in water dike construction in 2021
General mining activities and use of vehicles causing fugitive dust & other air emissions	Implement dust control measures, if needed on mine roads.	**Yes –** Air Quality and Dustfall Monitoring Plan
	Equipment and vehicles will comply with relevant non-road emission criteria at the time of purchase	**Yes –** Air Quality and Dustfall Monitoring Plan
	Enforcing speed limits (maximum speed 50 km/h) to suppress dust production.	**Yes**
	If deemed necessary through monitoring, dust from roads will be managed through use of dust suppressant	**Yes –** Air Quality and Dustfall Monitoring Plan
	The running surface of the road will be maintained thereby reducing the generation of dust.	**Yes –** Air Quality and Dustfall Monitoring Plan
	Adherence to the Air Quality and Dustfall Monitoring Plan	**Yes –** Air Quality and Dustfall Monitoring Plan
	Most personnel arriving at or leaving the site will be transported by bus, thereby reducing the amount of traffic (and dust).	**Yes**
	Adherence to water quality monitoring and adaptive management in the CREMP to detect changes in water quality	**Yes** - CREMP
	Construction equipment and trucks will be equipped with industry-standard emission control systems.	**Yes** - Air Quality and Dustfall Monitoring Plan
	Compliance with regulatory emission requirements will be met.	**Yes –** Air Quality and Dustfall Monitoring Plan
	Exhaust emissions from non-road vehicles will be managed through regular and routine maintenance of vehicles	**Yes** – Maintenance logs
	SO_2 emissions from non-road vehicles and stationary equipment will be reduced through the use of low emission diesel fuel.	**Yes**
Waste Rock Storage Areas and Stockpiles	A Water Management Plan has been developed and describes the containment and management of contact water on-site.	**Yes** – Water Management Plan
	Contact water will be monitored and managed through the Storage and Attenuation Ponds. The IVR Diversion will divert clean runoff from the upper watershed of the IVR Pit to the Nemo Lake watershed.	**Yes** – Water Management Plan
	Seepage will be captured at sumps and diverted to the Attenuation Pond.	**Yes** – Water Management Plan
	Facility discharge water will be monitored for water quality, and treated as required, prior to discharge	**Yes** – Water Management Plan

Project Activity	Planned Mitigation Measure (FEIS, Volume 3, Table 3-C-7)	Implementation (2021)
	Performance of the dikes will be monitored throughout their construction and operating life.	**Yes** – Water Management Plan
Site Water Management	Manage pumping rates so total annual discharge from Whale Tail and Nemo Lake does not drop below the 10-year dry condition	**Yes** – Water Management Plan
	Water withdrawal rate(s) will be controlled to avoid effects on the source water lake(s).	**Yes** – Water Management Plan
	Capture and reuse site water to reduce fresh water requirements	**Yes** – Water Management Plan
	Pumped water from the dewatered lakes will be directed through properly designed structures to prevent erosion in the receiving waterbodies	**Yes** – Water Management Plan
	Pumped discharge will be directed to the lake environment, and not directly to outlets, to attenuate flow changes	**Yes** – Water Management Plan
	Best management practices for erosion and sedimentation control (e.g., silt curtains, runoff management, armouring of banks, sloping of banks), where needed	**Yes** – Water Management Plan
	Water Management Plan will be implemented	**Yes** – Water Management Plan
	A fish-out of the diked area of Whale Tail and Mammoth lakes, and smaller waterbodies in the northeast area for the Expansion Project, will be conducted before and during dewatering phase; the fish-out plan will be designed and implemented in consultation with DFO and local Inuit communities, and will consider recommendations in Tyson et al. (2011).	**Yes** – 2020 Fishout Work Plan. No fishout in 2021
	Appropriately sized fish screens, which meet DFO guidelines, will be fitted to pumps to limit fish access and to limit fish entrained to the smaller species and life stages	**Yes** – Water Management Plan
	Runoff and seepage from the Project site will be diverted to sumps and the attenuation pond (and treated if required) prior to release.	**Yes** – Water Management Plan
	Water quality in attenuation ponds will be monitored and managed such that the discharge meets discharge limits.	**Yes** – Water Management Plan
	Potential acid generating rock and metal leaching waste rock will be segregated at source and placed into designated areas within waste rock locations	**Yes** – Mine Waste Rock Management Plan
Fuel Storage and use (includes Chemical and Hazardous material Storage and Explosives Storage Area)	The Spill Contingency Plan will be implemented, including ready access to an emergency spill clean-up kit for cleaning up any spills	**Yes** - Spill Contingency Plan
	Hazardous materials and fuel will be stored according to regulatory requirements to protect the environment and workers and will be stored at the Meadowbank Mine.	**Yes** – Hazardous Management Plan
	Storage tanks (e.g., fuel, engine oil, hydraulic oil, and waste oil and coolant) will be double walled, or located in lined and bermed containment areas	**Yes** – Hazardous Management Plan
	Hazardous wastes will be temporarily stored at Whale Tail Pit site and then transported to the Meadowbank Mine in appropriate containers to prevent exposure until they are shipped off site to an approved facility	**Yes** – Hazardous Management Plan
	Individuals working on site and handling hazardous materials will have appropriate training (e.g. WHMIS)	**Yes** – Hazardous Management Plan
	Soils from petroleum spill areas will be deposited at the Meadowbank Mine Landfarm	**Yes** – Landfarm Management Plan
	Equipment will be re-fueled, serviced, or washed away from the watercourse crossings.	**Yes** – best practices
	Fuel, lubricants, hydraulic fluids, and other chemicals will be	**Yes** – site inspection

Project Activity	Planned Mitigation Measure (FEIS, Volume 3, Table 3-C-7)	Implementation (2021)
	stored at least 31 m away from the high water mark of any waterbody.	
	Construction equipment will be regularly maintained	**Yes** – Maintenance Logs
	Emergency spill kits will be available wherever toxic materials or fuel are stored and transferred	**Yes** – Spill Contingency Plan
	Enforced speed limits	**Yes**
Mining Activities and Water Management – effluent release	Adherence to Water Management Plan	**Yes** – Water Management Plan
	Runoff and seepage from the Project site will be diverted to sumps and the attenuation pond	**Yes** – Water Management Plan
	Treated sewage will be piped to the attenuation pond	Completed
	Water quality in Attenuation Ponds will be monitored and managed such that the discharge entering Mammoth Lake, Whale Tail Lake, or the alternative discharge locations (Lake 1 or Lake 5) meets discharge limits. If water quality does not meet discharge limits, it will be circulated and re-treated.	**Yes** – Water Management Plan

Adaptive Management

No impact predictions for fish and fish habitat have been exceeded to date, so no adaptive management actions are planned at this time.

12.5.2 Vegetation, Terrestrial Wildlife, and Birds

12.5.2.1 *Parts 1 & 2: Summary of Predicted and Measured Residual Impacts*

The 2021 Wildlife Monitoring Summary Report (Appendix 47) provides a complete assessment of wildlife monitoring programs including a comparison to monitoring thresholds detailed in the Terrestrial Ecosystem Management Plan (TEMP Version 7; 2019) and impacts predicted in the Whale Tail Pit Project FEIS (Agnico Eagle, 2016) and FEIS Addendum for the Whale Tail Pit Expansion Project (Agnico Eagle, 2018). Results are summarized here in the PEAMP format.

For each wildlife VC, a summary of residual predicted impacts and the accuracy of those predictions (observed impacts) as determined through various monitoring programs conducted under the TEMP is provided in Table 12-27. Thresholds for the implementation of adaptive management, as developed in the TEMP (Version 7; 2019) were used in this comparison because most impact predictions in the Terrestrial Ecosystem Impact Assessment of the FEIS (Agnico Eagle, 2016) and FEIS Addendum (Agnico Eagle, 2018) were qualitative only. The 2019 TEMP thresholds were developed in consultation with the Terrestrial Advisory Group (TAG), and represent quantitative measurement endpoints that trigger management action.

Of note is that Table 12-27 below presents only TEMP results for monitoring conducted in relation to predicted residual impacts for the Whale Tail Site. Results for all additional TEMP monitoring endpoints have thresholds that were developed for the Meadowbank Complex, and these results are described in the Meadowbank Terrestrial and Wildlife Environment PEAMP evaluation, Section 12.4.2.

Overall, no TEMP thresholds were exceeded for the Whale Tail site and haul road in 2021.

Table 12-27 Predicted residual impacts to terrestrial environment and wildlife VCs for the Whale Tail Site during the construction and operations period (primary pathways according to FEIS Volume 5, and updated to reflect FEIS Addendum, Section 5.4 and 5.5 as indicated); thresholds according to the Terrestrial Ecosystem Management Plan (Version 7; 2019); and measured impacts according to the annual Wildlife Monitoring Summary Report (Appendix 47). NM = not required to be measured in the identified year. NA = no threshold.

Effect Pathway	Proposed Monitoring	Current Monitoring	Threshold/ Prediction	Measured Impact		
				2019	2020	2021
VEGETATION (WILDLIFE HABITAT)						
Direct loss and fragmentation of vegetation habitat from the Project footprint	TEMP	TEMP - Ground Surveys, Mapping, GIS Analysis	Predicted/Permitted area + threshold over prediction (Whale Tail site and haul road): 1188/1505 ha + 5%	NM (next assessed in 2021)		775 ha
Loss or alteration of local flows, drainage patterns (distribution), and drainage areas from the Project footprint and haul road that can cause changes to vegetation	None	TEMP - Ground Surveys, Mapping, GIS Analysis	*FEIS Addendum, Section 5.4.3.1.2:* Localized and temporary effects to vegetation habitat quality through decreased species abundance.	NA (no threshold)		
Dust deposition on vegetation from haul roads and mining activities (air emissions, dust deposition, or chemical contamination on terrain, soils, and vegetation can potentially change the quality and/or chemical properties of soil and effecting vegetation)	TEMP	TEMP (Screening Level Risk Assessment)	*Prediction (Proponent Response to IRs for the Whale Tail Pit Expansion Project FEIS Addendum, "Human Health and Ecological Risk Assessment – Whale Tail Pit Expansion Project" – Golder, May 2019):* All soil concentrations <CCME guidelines or max. baseline + 10%. All water concentrations <screening values.	NM (next assessed in 2020)	NM (2020 assessment postponed to 2021)	All soil concentrations <CCME guidelines or max. baseline + 10%, or exceedances not mine-related. All water concentrations <screening values.
UNGULATES						
Sensory disturbance from vehicles, on-site equipment, human presence and vibrations, can change the amount of different quality habitats, and alter wildlife	Satellite-collaring data; Road surveys; Pit and mine-site ground surveys;	Satellite-collaring data; Road surveys; Pit and mine-site ground surveys; Remote cameras; HOL surveys	No threshold as of 2019 – Caribou Management Decision Tree in place	NA (no threshold)		

Effect Pathway	Proposed Monitoring	Current Monitoring	Threshold/ Prediction	Measured Impact		
				2019	2020	2021
movement and behaviour	Incidence reports, HOL surveys					
Direct loss and fragmentation of wildlife habitat from the Project footprint	Ground Surveys, Mapping, GIS Analysis	Ground Surveys, Mapping, GIS Analysis	High Suitability Habitat Predicted/Permitted Area + threshold over prediction: Growing – 38/56 ha + 10% Winter – 613/1057 ha + 10%	NM (next assessed in 2021)		Growing – 21 ha Winter – 561 ha
Barriers to migration, which may affect population connectivity and distribution	-	Remote camera	None	NA (no threshold)		
PREDATORY MAMMALS						
NONE	-	-	-	-	-	-
SMALL MAMMALS						
NONE	-	-	-	-	-	-
RAPTORS						
NONE	-	-	-	-	-	-
WATERBIRDS						
Destruction of nests and flooding from construction activities including increased flows or water levels can increase risk of mortality to individual birds, which can affect population sizes	None	Trent University/ECCC migratory bird deterrent studies (2018 – 2020); Migratory Bird Protection Report (Appendix 47)	*Prediction (FEIS Section 5, Table 5.5-11)*: Total 89 nests displaced (waterbirds and upland birds)	Est. 32 – 62 nests displaced (final estimate available 2021)		Final estimate: 31 – 50 nests lost through flooding
UPLAND BREEDING BIRDS						

Effect Pathway	Proposed Monitoring	Current Monitoring	Threshold/ Prediction	Measured Impact		
				2019	2020	2021
Sensory disturbance from vehicles, on-site equipment, human presence and vibrations, can change the amount of different quality habitats, and alter wildlife movement and behaviour	None	PRISM Plots and Transects (suspended)	*Threshold: 20% change from natural* *Prediction (FEIS Volume 5, Section 5.5.3.3):* Upland bird density will decrease by 50% within 200 m of project facilities. At 1.41 birds/ha, 6000 birds may be impacted. *Prediction (FEIS Addendum, Section 5.5.3.3):* Additional 419 birds impacted. Changes in density or productivity are unlikely to be detectable.	NA – program suspended pending ongoing regulatory review.		NA – Agnico Eagle/ECCC agreement for PRISM and BBS to begin in 2022. There will be no threshold.
Destruction of nests and flooding from construction activities including increased flows or water levels can increase risk of mortality to individual birds, which can affect population sizes	None	Trent University/ECCC migratory bird deterrent studies (2018 – 2020); Migratory Bird Protection Report (Appendix 47)	See Waterbirds section, above.	See Waterbirds section, above.		

12.5.2.2 *Parts 3 & 4: Discussion*

Where impacts are exceeded based on monitoring results (as identified in Parts 1 & 2, above), a discussion is provided here. To date, no thresholds have been exceeded.

12.5.2.3 *Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management*

Effectiveness of Monitoring

Based on the results in Table 12-27, current TEMP monitoring programs are able to address all FEIS impacts for which TEMP monitoring was recommended (i.e. monitoring is considered effective).

Effectiveness of Mitigation

FEIS-planned mitigation measures to limit impacts of the Whale Tail Pit Project on terrestrial wildlife were originally described in the Terrestrial Ecosystem Management Plan (Version 2, June 2016), a component of the FEIS (Agnico Eagle, 2016). This plan was most recently updated in 2019 (Version 7), and a mitigation audit is a component of this updated plan. The audit is to be undertaken annually, and focuses specifically on mitigation listed in Section 2 of the TEMP.

The audit evaluates:

- What mitigation has been implemented;
- Which mitigation is perceived to be, or shown to be successful;
- If new mitigation has been implemented in response to new issues; and
- If some mitigation is redundant.

Refer to the 2021 Wildlife Monitoring Summary Report in Appendix 47.

However, in the context of the PEAMP evaluation, mitigation is considered effective if impact predictions (or in this case, TEMP thresholds) are not being exceeded. Therefore, since no TEMP thresholds were exceeded for the Whale Tail site in 2021, mitigation is considered effective.

Adaptive Management

Although no TEMP thresholds were exceeded in 2021, several management recommendations are planned to be implemented in 2022 along with continued implementation of all TEMP monitoring and management programs (see Meadowbank Terrestrial and Wildlife Environment PEAMP – Section 12.4.2.3).

12.5.3 Noise

12.5.3.1 *Parts 1 & 2: Summary of Predicted and Measured Residual Impacts*

In the Whale Tail Pit Project's initial FEIS (Agnico Eagle, 2016), noise impacts were modeled and assessed for three primary pathways: construction of the Whale Tail Haul Road, operation of the Whale Tail Haul Road, and operation of the Whale Tail Pit. In the FEIS Addendum for the Whale Tail Pit Expansion Project (Agnico Eagle, 2018), no new primary pathways were identified but updated noise modeling for the Project incorporated new activities (haul road widening, surface and underground mine operations) and modeling approaches (modeling for the full length of the haul road during operation). Modeling reflects mining activities during the year 2022, which is planned to be the year of highest production for the Project, and anticipated highest sound emissions.

In the FEIS Addendum's noise assessment, modeled Project sound levels at the local study area (LSA) boundary were compared with Permissible Sound Levels from AER Directive 038 (40 dBA night-time, 50 dBA daytime) to provide a reference for Project impacts. However, residual impacts were not specified or classified as significant or non-significant because noise does not have an assessment endpoint. Any potential effects associated with the primary pathways are captured in the assessment of potential effects to other VCs (e.g. wildlife and the aquatic environment).

Monitoring sites were established around the site and along the Whale Tail Haul Road, as described in the site's Noise Monitoring and Abatement Plan (Version 3, June 2018 or Version 4, December 2018). For the purposes of this PEAMP, measured sound levels in those locations are compared to model predictions for ambient noise levels made in the FEIS Addendum (Agnico Eagle, 2018). In accordance with noise mitigation measures listed in the FEIS Addendum (Volume 3, Appendix 3-C, Table 3-C-1 and see below Table 12-29), periodic far-field monitoring will be conducted at the LSA boundary to validate modeling and confirm adherence with the PSL. This far-field monitoring is currently scheduled for 2022, to coincide with the anticipated year of maximum production and maximum sound emissions, as indicated in the FEIS Addendum.

Table 12-28, below, compares FEIS predictions for area sound levels with the results of noise monitoring conducted under the current Noise Monitoring and Abatement Plan. For all monitoring stations, FEIS predictions were derived from the maximum sound emissions scenario: summertime, haul road widening plus surface and underground operations (Agnico Eagle, 2018 - Volume 4, Figure 4.4-3). Measured background sound levels (Agnico Eagle, 2016 - Volume 4, Appendix 4-D) were added to all predictions.

No exceedances of FEIS-modeled maximum sound levels have occurred to date.

Table 12-28 Predicted and measured sound levels for the Whale Tail Site and Haul Road. *Values identified from sound level contours in Agnico Eagle, 2018; Section 4, Figure 4.4-3 plus measured background levels (Agnico Eagle, 2016; Appendix 4-D). Measured impacts exceeding predictions are shaded grey and further discussed in Section 12.4.3.2. ^Value for 2019 from the FEIS (Agnico Eagle, 2016; Volume 4). **Adjusted from values incorrectly reported in 2020.

Effect Pathway	Monitoring Station	FEIS Addendum Predicted Max. Value (dBA)*	Measured Values $L_{eq,\ 24\text{-}h}$ (dBA)		
			2019	2020	2021
Noise emissions from vehicles on the haul road can increase ambient noise levels.	R6	2019^: 50.0 2020+: 42.5	41.8	33.1	-
			-	28.2	34.2
	R7	40.4	-	36.8	37.9
Noise emissions from mining equipment can increase ambient noise levels. Blasting can result in ground vibration and increase ambient noise levels.	R8	45.1**	-	32.8	39.3
			-	-	40.6
			-	-	41.4
	R9	45.1	-	35.5	39.8
			-	30.9	35.5
	R10	50.0**	-	-	41.3
	R11	50.0	-	38.8	-
			-	34.7	-
	R11a	50.0	-	-	37.4
			-	-	35.0

12.5.3.2 *Parts 3 & 4: Discussion*

Where impacts are exceeded or potentially exceeded based on monitoring results (as identified in Parts 1 & 2, above), a discussion will be provided here.

No exceedances of FEIS-modeled maximum sound levels occurred in 2021. Maximum sound levels are anticipated to occur in 2022.

12.5.3.3 *Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management*

Effectiveness of Monitoring

The noise monitoring program that was implemented in 2021 at the Whale Tail site was conducted in accordance with the approved Noise Monitoring and Abatement Plan (December, 2018), which was designed in conjunction with the FEIS Addendum's noise impact assessment. This monitoring program is therefore considered effective and suitable to confirm noise impact predictions.

Effectiveness of Mitigation

FEIS-planned mitigation measures to limit impacts of the Project on area noise levels were described in the FEIS Addendum Volume 3, Table 3-C-1 and the associated Noise Monitoring and Abatement Plan for the Project (Version 4, December 2018). This Plan includes noise mitigation measures for both the Meadowbank and Whale Tail sites, and implementation of the planned abatement measures in the current year is detailed in Section 12.4.3.

Since no exceedances of FEIS predictions have occurred for the Whale Tail site, existing mitigation measures are considered to be effective.

Adaptive Management

In 2021, noise monitoring for a sub-set of stations (R8, R9, R10) was conducted at locations indicated in Version 3 of the Noise Monitoring and Abatement Plan (June, 2018). Results were compared to the appropriate model predictions for these locations. However that Plan was updated to Version 4 (December, 2018) and moving forward all stations will be sited according to Version 4 (re-named R8a, R9a, R10a, R11a).

No other adaptive management actions are planned for 2021 since monitoring results indicate that sound levels onsite are not exceeding impact predictions and all planned mitigation practices are in place.

12.5.4 Air Quality and Climate

12.5.4.1 *Parts 1 & 2: Summary of Predicted and Measured Residual Impacts*

In the FEIS Addendum for the Whale Tail Pit - Expansion Project, residual impacts were not classified for air quality as a VC, because air quality does not have an assessment endpoint, only measurement endpoints (i.e., comparison to relevant ambient air quality guidelines or standards). Any potential effects associated with the primary pathways are captured in the assessment of potential effects to, and residual impact classifications for, other VCs. Nevertheless, quantitative predictions were made in relation to air

quality guidelines, so the validity of those predictions is assessed here, where feasible using results from approved monitoring programs.

In order to estimate potential impacts of the Project on air quality, modeling exercises were conducted as a component of the FEIS Addendum to determine emission rates and dispersion of various criteria air contaminants (CACs) from different Project sources (Agnico Eagle, 2018; Section 4). These included assessments for the Whale Tail Site and the Whale Tail Haul Road.

For the Whale Tail Haul Road, calculation of CAC emissions included the following sources:

- Exhaust from vehicles operating on the haul road; and
- Un-paved road dust from the haul road.

Air quality dispersion modelling of a representative 1 km section of the haul road oriented northeast to southwest was used to predict the following:

- Maximum plus background concentrations of CACs as a function of distance from the haul road;
- Maximum dust deposition as a function of distance from the haul road.

For the Whale Tail Site, calculation of CAC emissions included the following sources:

a) Whale Tail Pit activities, including:
    - in pit and underground drilling and blasting;
    - in pit and underground material handling;
    - un-paved road dust from mining operations; and
    - exhaust from off-road equipment operating in the Whale Tail Mining area;
b) Wind erosion from ore pad and waste storage pile;
c) Stationary combustion emissions from the camp heating and camp power; and
d) Un-paved road dust and vehicle exhaust from the section of haul road within the Property boundary; and
e) Emissions from an incinerator.

Air quality dispersion modelling was then conducted to predict maximum plus background concentrations of CACs at the Property boundary.

Associated monitoring was recommended and is conducted according to the Air Quality and Dustfall Monitoring Plan (March, 2020), as follows:

Table 12-29. Air quality monitoring locations and parameters for the Whale Tail Site and Haul Road (Air Quality and Dustfall Monitoring Plan, March 2020). ^Installed in 2021.

Monitoring Location	Measured Parameters
DF-6a or b	TSP, PM_{10}, $PM_{2.5}$, passive NO_2, dustfall
DF-7^	Continuous active NO_2
DF-8 (co-located with DF-7) ^	Passive NO_2
Whale Tail Haul Road km 134	Dustfall transect
DF-9^/Whale Tail Haul Road km 151	Passive NO_2, dustfall transect
Whale Tail Haul Road km 169	Dustfall transect

For the Whale Tail Haul Road, dust deposition is measured over three transects using static dustfall collectors that are deployed in the field for a 30-d period. However, due to differences in particle sizes collected by static dustfall monitors (typically < 0.85 mm) and those assessed through air quality emissions and dispersion modelling (typically < 0.30 µm), these are considered screening-level comparisons only. Since dustfall canisters collect particles across a much wider range of sizes than included in standard modeling, they are very likely to measure higher rates of total dustfall than those specified in the FEIS. However, if measured dustfall is lower than predicted dustfall, model results can be verified as conservative. To improve the comparison, maximum measured background rates of static dustfall in this area during baseline studies (0.27 mg/cm^2/30d) are added to FEIS predicted deposition rates (see 2021 Air Quality and Dustfall Monitoring Report in Appendix 50 for further details).

For the Whale Tail Site, concentrations of suspended particulates are assessed using automated air samplers (Partisol 2025 Sequential Air Samplers). These samplers measure concentrations of suspended particulates over a 24-h period every 6 days. Onsite concentrations of NO_2 by volume (ppb) are analyzed over one month periods using a passive sampling device provided by an accredited laboratory. A continuous (active) NO_2 monitoring station was installed in 2021, sited in consultation with ECCC. Dustfall (deposition of particulate matter) onsite is measured using the static dustfall collectors described for the Whale Tail Haul Road, above.

For reference, all results for air quality and dustfall monitoring are provided in the 2021 Air Quality and Dustfall Monitoring Report (Appendix 50), along with comparisons to regulatory guidelines, FEIS predictions, and historical measurements.

Impact predictions associated with these air contaminants and monitoring locations are identified in Table 12-30, along with measured results from 2019 - 2021. Measured impacts exceeding or potentially exceeding predictions are shaded grey and further discussed in Section 12.5.4.2.

Table 12-30 Predicted and measured impacts to air quality and climate for the Whale Tail site and haul road. 2019 measurements are compared to predictions from the FEIS for the Whale Tail Pit Project (Agnico Eagle, 2016). 2020 measurements are compared to predictions from the FEIS Addendum for the Whale Tail Pit – Expansion Project (Agnico Eagle, 2018). NA = not assessed. Measured impacts exceeding or potentially exceeding predictions are shaded grey and further discussed in Section 12.5.4.2. *Addition of background values described above. ^Predictions for the 24-h average are open-ended (> 120 µg/m^3 or >50 µg/m^3) and therefore not compared to measured values.

Effect Pathway	Proposed Monitoring (FEIS)	Monitoring Conducted	FEIS Prediction + Background	Measured Value	FEIS Addendum Prediction + Background	Measured Value	
				2019		2020	2021
Vehicle emissions and fugitive dust from traffic on the haul road can affect air quality	Static dustfall	Static dustfall	Max. deposition rate* (mg/cm^2/30d) 25 m: 1.46 100 m: 0.83 300 m: 0.53 1000 m: 0.38	Max. dustfall (mg/cm^2/30d) 25 m: 8.04 100 m: 2.24 300 m: 1.42 1000 m: 0.46	Max. deposition rate* (mg/cm^2/30d) 25 m: 3.67 100 m: 2.17 300 m: 0.86 1000 m: 0.38	Max. dustfall (mg/cm^2/30d) 25 m: <3.67 100 m: <2.17 300 m: <0.86 1000 m: <0.38	Max. dustfall (mg/cm^2/30d) 25 m: 10.08 100 m: <2.17 300 m: <0.86 1000 m: <0.38
Blasting, stationary and mobile combustion sources, and fugitive dust from mining activities in the Whale Tail Pit can affect air quality.	TSP, PM_{10}, $PM_{2.5}$, NO_2, dustfall	TSP, PM_{10}, $PM_{2.5}$, NO_2, dustfall	NO_2: 4.4 ppb (annual average) Static dustfall: none TSP: 174 µg/m^3 (24-h average) 16.9 µg/m^3 (annual average) PM_{10}: 52.4 µg/m^3 $PM_{2.5}$: 20.1 µg/m^3 (24-h average) 4.3 µg/m^3 (annual average)	NO_2: 1.46 ppb (annual average) TSP, PM_{10}, $PM_{2.5}$ - NA	NO_2: 8 - 16 ppb (annual average) Static dustfall: none TSP^: 30 - 45 µg/m^3 (annual average) PM_{10}: NA^ $PM_{2.5}$: 21 - 28 µg/m^3 (24-h average) 5 – 7.5 µg/m^3 (annual average)	NO_2: 1.29 ppb (annual average) TSP^: 35.0 µg/m^3 (annual average) $PM_{2.5}$: all < 28 µg/m^3 (24-h average); 1.44 µg/m^3 (annual average)	NO_2: 1.66 ppb (annual average) TSP^: 24.3 µg/m^3 (annual average) $PM_{2.5}$: all < 28 µg/m^3 (24-h average); 1.82 µg/m^3 (annual average)
Additional 3 years of processing and use of supporting infrastructure at the Meadowbank mine site and the existing AWAR for delivery of materials can continue to affect	Assessed under Meadowbank PEAMP	-	-	-	-	-	-

Effect Pathway	Proposed Monitoring (FEIS)	Monitoring Conducted	FEIS Prediction + Background	Measured Value	FEIS Addendum Prediction + Background	Measured Value	
				2019		2020	2021
air quality							
Greenhouse gas emissions from the Project can contribute to climate change.	Report emissions	GHG emissions reported	Whale Tail Site: 64.2 kt $C0_2e$/yr Meadowbank Mill: 180 kt CO_2e/yr	189,867 t CO_2e total (2020 recalc. = 195,564 t CO_2e total)	Whale Tail Site: 164.2 kt $C0_2e$/yr Meadowbank Mill: 180 kt CO_2e/yr	225,435 t CO_2e total	243,752 t CO_2e total

12.5.4.2 *Parts 3 & 4: Discussion*

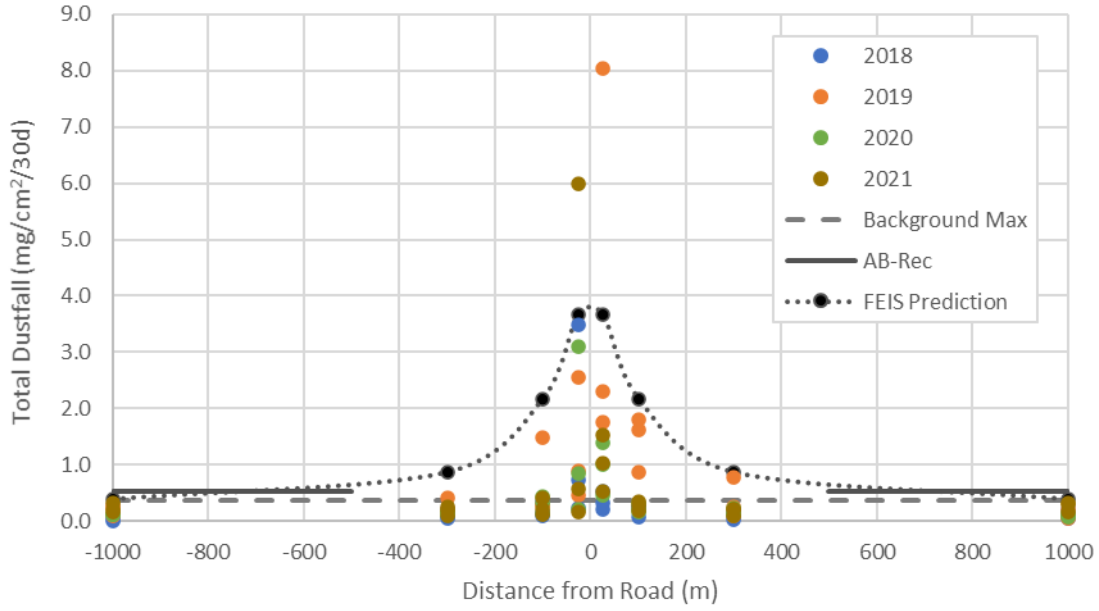
Where air quality impacts are exceeded or potentially exceeded based on monitoring results (as identified in Parts 1 & 2, above), a discussion is provided here.

12.5.4.2.1.1 Whale Tail Haul Road Dustfall

Because rates of dustfall for the Whale Tail Haul Road exceeded FEIS predictions historically (2019) and for one site at 25 m in 2021, a discussion is provided here.

In 2019, measured rates of dustfall along the Whale Tail Haul Road commonly exceeded FEIS-predicted rates of dust deposition. This was likely a result of three factors: differences in particle size between deposition modeling and dustfall measurements, sampling at ground level as opposed to 2-m height, and limited dust suppressant application in 2019. As further described in the 2021 Air Quality and Dustfall Monitoring Report (Appendix 50), sampling beginning in 2020 was conducted on stands, dust suppressant was applied to the full length of the WTHR along with intermittent watering, and FEIS predictions were updated according to the assessment for the Whale Tail Expansion Project. All dustfall monitoring results for the WTHR in 2020 were below FEIS Addendum predictions, and only once exceedance (at a 25 m station) occurred in 2021. Historical results for August (the time period with the driest conditions and generally highest rates of traffic) are shown in Figure 73.

Figure 73. Total dustfall rates (mg/cm^2/30d) for all samples collected in August along the Whale Tail Haul Road to date. 2018 and 2019 data was collected at ground level, while all 2020+ samples were collected on stands. Negative distances represent the east side of the road, and positive distances represent the west side. FEIS Prediction values are from the FEIS Addendum Appendix 4C, Table 4-C-24 (Agnico Eagle, 2018).



12.5.4.3 *Effectiveness of Monitoring and Mitigation, and Adaptive Management*

Effectiveness of Monitoring

With the installation of the continuous NO_2 analyzer in 2021, all monitoring recommended in the FEIS to assess air quality impacts is being conducted according to the Air Quality and Dustfall Monitoring Plan (March, 2020).

Overall, it is considered difficult to compare air quality model outputs with specific monitoring results. Air quality modelling is a statistical exercise which captures the maximum and average concentrations expected from an emissions source, provided all meteorological conditions are understood. However, air quality modelling is not appropriate for determining single-event concentrations, such as comparing a single hour of modelled data to monitoring data collected at the same time. Additionally, air quality modelling considers only the sources in the model which typically does not include transboundary transport or other background sources of contaminants.

However, air quality monitoring at the Whale Tail site is able to effectively measure ambient concentrations of CACs, and when these values are lower than model results or regulatory criteria, those predictions can be confirmed as conservative.

For most CACs at the Meadowbank and Whale Tail Sites, measured concentrations have been well below available regulatory guidelines and FEIS predictions, so existing monitoring programs are able to effectively to validate those predictions. While static dustfall results for the Whale Tail Haul Road in 2019 tended to exceed impact predictions, dustfall methods in particular are not well aligned with deposition modelling outputs, as discussed above. Adjustments were made in 2020 which improved the effectiveness of that program for the purposes of FEIS comparisons (sampling at 1.8 m height rather than ground level).

Effectiveness of Mitigation

A summary of the planned mitigation measures for air quality during the construction and operations phases is provided in Table 12-31, along with a commentary on current implementation.

As described in the Air Quality and Dustfall Monitoring Report (Appendix 50), monitoring thresholds were established within the Air Quality and Dustfall Monitoring Plan (March, 2020) to confirm effectiveness of existing mitigation. Thresholds relate to dustfall and suspended particulate measurements, and in 2021, all thresholds were met for the Whale Tail site and WTHR.

Table 12-31. Mitigation measures described in the Project FEIS Addendum (Table 3-C-1) to reduce impacts of the project on area air quality and climate, and commentary on current implementation.

Project Activity	**Planned Mitigation Measure** (FEIS Addendum Volume 3, Table 3-C-1)	**Implementation (2021)**
General construction, operations, and decommissioning activities associated with the Whale Tail Pit and the haul road; and Mining of the Whale Tail Pit	All vehicles will adhere to the 50 km/h speed limit.	**Yes**
	Regular maintenance will be implemented for equipment and vehicles.	**Yes** – Maintenance logs
Upgrading of the haul road from the Whale Tail Pit	Implement dust control measures,	**Yes –** Air Quality and

Project Activity	Planned Mitigation Measure (FEIS Addendum Volume 3, Table 3-C-1)	Implementation (2021)
to the Meadowbank Mine	if needed on mine roads.	Dustfall Monitoring Plan
	Equipment and vehicles will comply with relevant non-road emission criteria at the time of purchase.	**Yes –** Air Quality and Dustfall Monitoring Plan
	Regular maintenance will be implemented for equipment and vehicles.	**Yes** – Maintenance logs
Traffic on the haul road from the Whale Tail Pit to the Meadowbank Mine	Watering of roads and enforcing speed limits to suppress dust production.	**Yes –** Air Quality and Dustfall Monitoring Plan
	Equipment and vehicles will comply with relevant non-road emission criteria at the time of purchase	**Yes**
	Regular maintenance will be implemented for equipment and vehicles	**Yes** – Maintenance logs
Construction of the Whale Tail Pit	Best Management practices for controlling fugitive dust from construction activities	**Yes** – Air Quality and Dustfall Monitoring Plan
	Equipment and vehicles will comply with relevant non-road emission criteria at the time of purchase	**Yes**
	Regular maintenance will be implemented for equipment and vehicles	**Yes** – Maintenance Logs
Mining of the Whale Tail Pit	Watering of pit roads and enforcing speed limits to suppress dust production.	**Yes** – Air Quality and Dustfall Monitoring Plan
	Equipment and vehicles will comply with relevant non-road emission criteria at the time of purchase.	**Yes**
	Regular maintenance will be implemented for equipment and vehicles.	**Yes** – Maintenance logs
	Enclosures are used to reduce fugitive emissions at the processing facility	**Yes** – Air Quality and Dustfall Monitoring Plan
	Adherence to the Incinerator Waste Management Plan	**Yes** - Incinerator Waste Management Plan

Adaptive Management

Since all measured results met established thresholds for adaptive management, no changes to monitoring or mitigation related to air quality are planned for 2022 based on this PEAMP analysis.

12.5.5 Soil, Terrain, and Permafrost

12.5.5.1 *Parts 1 & 2: Summary of Predicted and Measured Residual Impacts*

Although primary pathways of effects were identified for soil, terrain, and permafrost, no residual impact predictions were made because soil, terrain, and permafrost do not themselves have measurable effects

endpoints. Any potential effects associated with the primary pathways for soil, terrain, and permafrost are captured in the assessment of the potential effects to, and residual impact classifications for other VCs.

12.5.5.2 *Parts 3 & 4: Discussion*

N/A – residual impacts are not measured for permafrost directly. Potential effects are captured in the assessment of other VCs.

12.5.5.3 *Part 5: Effectiveness of Monitoring and Mitigation, and Adaptive Management*

Effectiveness of Monitoring

Soil, terrain, and permafrost conditions will be continuously monitored and inspected during all phases of the Project to ensure the effectiveness of the design criteria. Where required, adaptive management strategies will be implemented. Full details on management plans and monitoring for the waste rock pile, dewatering of the dikes, and haul road are provided in the Mine Waste Rock and Tailings Management Plan, Water Management Plan, and Whale Tail Pit and Haul Road Management Plan, respectively.

However, since no predictions were made with respect to residual impacts of permafrost directly, these programs are not designed to validate any predictions. Rather, impacts of permafrost are measured through measurement indicators for other VCs and effectiveness of those monitoring programs are assessed in the relevant sections of this report.

Effectiveness of Mitigation

A summary of the planned mitigation measures for permafrost according to the FEIS Volume 3, Table 3-C-2 is provided in Table 12-32, along with a commentary on current implementation. Similarly, planned mitigation measures for soil and terrain are provided in Table 12-31, along with current implementation. If impacts to other VCs are occurring beyond FEIS predictions and those effects are potentially due to impacts on soil, terrain, or permafrost, this record of mitigation can be reviewed. For the purposes of this annual review, the mitigation summary does not include Environmental Design Features, which are incorporated into construction plans but are not ongoing mitigation measures.

Table 12-32 Mitigation measures described in the Whale Tail FEIS (Table 3-C-2) to reduce impacts of the project on permafrost during the construction and operations phases, and commentary on current implementation. Mitigation measures listed here do not include Environmental Design Features that are factored into construction plans.

Project Activity	Planned Mitigation Measure (FEIS Table 3-C-2)	Implementation (2021)
Mine infrastructure footprint	Implement slope stability criteria to manage erosion.	**Yes -** Slopes were designed and built to angle of repose to minimize erosion. Slopes were built using properly graded material to minimize erosion.
	Best management practices for erosion and sedimentation control (e.g., silt curtains, runoff management, armouring of banks, sloping of banks), where needed.	**Yes -** Silt curtains not required as of yet. Infrastructure was designed and built with erosion and sedimentation control as needed (such as channels and dikes). Turbidity barriers installed at the outlet of South Whale

Project Activity	Planned Mitigation Measure (FEIS Table 3-C-2)	Implementation (2021)
		Tail Channel during commissioning.
Earthworks: Drilling, blasting, grading, trenching, excavation and backfilling, crushing activities, and dike construction	Minimize footprint areas for stripping and removal of material. Use appropriately designed structural fill and thickness to maintain and promote permafrost conditions.	**Yes -** All footprint areas were minimized as much as possible. Fill thicknesses were designed with maintaining permafrost in mind.
	Where possible, stockpiling of rock and fill from quarries and borrow sites will be placed such that surface water is not diverted through the piles.	**Yes -** Stockpiles were placed in areas away from surface water flow. Location planning for stockpiles considers the topography and watersheds.
	Minimum setback distance of 31 m from the ordinary high water mark of waterbodies.	**Yes -** The minimum setback distance of 31m from the high water mark was respected.
	Thick drifted snow greater than 1 m thick will be removed before the road fills are placed.	**Yes -** Snow removal took place before any fill was placed.
	Minimize depth of excavations to limit impact on active layer.	**Yes -** Excavation of any kind was avoided when possible and the depth was minimized as much as possible.
	Monitoring of the Whale Tail Dike will be undertaken to understand the hydraulic and thermal behaviour of the dike during filling Whale Tail (South Basin)	**Yes -** Regular instrument monitoring continues.
	Minimize depth of quarrying to limit impact on active layer. Maximum quarry depths of 3 m are currently planned.	**Yes -** Quarry depths were limited as much as possible.
	Appropriate design of quarry walls to promote stability, and to minimize annual slope degradation.	**Yes -** All quarry walls were designed and built to slope angles that would minimize slope degradation.
	Appropriate design of quarries to manage water and minimize ponding of water within the quarries which would result in a deeper active layer.	**Yes -** All quarries were designed and built with floors sloped to promote drainage.
	Where possible, stockpiling of rock and fill from quarries and borrow sites will be placed such that surface water is not diverted through the piles with runoff to surface waterbodies.	**Yes -** Stockpiles were placed in areas away from surface water flow. Location planning for stockpiles considers the topography and watersheds.
	Minimum setback distance of 31 m from the ordinary high water mark of waterbodies.	**Yes -** The minimum setback distance of 31m from the high water mark was respected.
	Drainage from quarries will not flow directly into any waterbodies or watercourses	**Yes -** It was ensured that drainage from quarries would not go into any waterbodies or watercourses.
Mine Site Facilities Construction	Submission of all design drawings to the Nunavut Water Board for approval, prior to construction.	**Yes -** Design drawings were submitted to the Nunavut Water Board for approval prior to construction.
	Where possible, use thaw-stable road fills for construction.	**Yes -** Very few options are available for road fills but placement and design are always done with maintaining permafrost in mind.
	Road fill material will be placed directly over the existing soil layer without cutting, stripping, or grubbing to avoid disturbing the subgrade soils.	**Yes -** Road fill material was always placed directly over the existing soil layer.
	Placement of the road construction materials during winter will minimize	**Yes -** Roads were constructed during the winter whenever possible.

Project Activity	Planned Mitigation Measure (FEIS Table 3-C-2)	Implementation (2021)
	disturbance to the permafrost.	
	Thick drifted snow greater than 1 m thick will be removed before the road fills are placed.	**Yes -** Snow removal took place before any road fill was placed.
Mine Site Operations and Maintenance, including use of existing facilities and AWAR	Stockpile snow on thaw-stable materials, or in areas that are insensitive to thaw settlement.	**Yes -** Snow was placed in designated snow dump areas on pads made of rockfill.
	Use appropriate drainage and water diversion structures to minimize water ponding during thaw.	**Yes -** Water ponding was minimized through pumping during the spring thaw.
	Stock pile snow on thaw-stable materials.	**Yes -** Snow was placed in designated snow dump areas on pads made of rockfill.
	Use snow fencing where appropriate to minimize snow clearing requirements.	**Yes -** Snow fencing was not required yet.
	Annual road maintenance as required.	**Yes -** All roads are maintained and inspected frequently.
	Continue to use appropriate facilities management methods to reduce the amount of ice trapped within the facility.	**Yes -** At the Meadowbank TSF tailing deposition planning was done to reduce ice entrapment as much as possible.
	Use appropriate deposition planning (i.e., tailings placed in layers to promote freezing).	**Yes -** During in-pit deposition, one deposition point is used in each pit. The method of tailings discharge ensures that ice forms on the wall but not within the tailings body in the pit.
Waste Rock Storage Areas and Stockpiles	Where possible begin construction during winter months, when active layer is frozen.	**Yes -** Starting construction of the WRSF and stockpiles was planned for winter months whenever possible.
	Place waste rock in lifts to promote freezing of pile.	**Yes -** Waste rock was always placed in lifts to promote freezing.
Water Management Infrastructure	Use appropriate water management methods to avoid water ponding and to control high volume potentially erosive flows.	**Yes -** Water ponding and erosive flows were minimized through pumping during the spring thaw.
	Manage snow accumulation locally	**Yes -** Snow removal was performed according to a plan with designated snow dump areas.
	Regular inspection of the road to identify any areas where ponding of water along the road represents a risk, and installing additional culverts or drains to alleviate the risk.	**Yes -** Regular inspection of the road was performed to identify the spots where water may pond or was ponding. Culverts were inspected and if they were frozen or plugged they were fixed. If culverts could not be fixed they were replaced.
	Pumped discharge to receiving lake will only occur while water quality discharge criteria are met.	**Yes -** Frequent testing of all water pumped to the receiving environment was performed. If water quality discharge criteria were not met the water was treated by the WTP and only pumped once the criteria was met.
	Pumped discharge will be directed to the lake environment, and not directly to outlets, to attenuate flow changes.	**Yes -** Pumped discharge was only directed to approved area and not directly to outlet
	Shoreline areas susceptible to extensive erosion will be addressed by appropriate erosion protection measures, mitigation measures based on adaptive management, or a combination of both, to reduce erosion and associated re-	**Yes -** Water management was planned and executed in order to avoid causing erosion on shorelines. Examples include using sunken diffusers, discharging water only on boulder pads, and discharging water to lakes at low enough rates to prevent quick rises in water

Project Activity	Planned Mitigation Measure (FEIS Table 3-C-2)	Implementation (2021)
	suspension of fine sediment.	elevation.
Open Pits	Use appropriate back filling methods for the placement of fill material. Initial permafrost retreat that may occur during the placement of backfill may be replaced by permafrost re-establishing within the backfilled areas.	**Yes -** Fill material was placed in thin lifts and compacted to promote the establishment of permafrost.
	Water inflows to the pit will require sumps and be pumped to the Attenuation Pond.	**Yes -** Water inflows to the pit were directed to sumps and pumped to approved location (Whale Tail and IVR Attenuation Ponds)
Underground Mining	Insulate water lines as they produce heat and can thaw adjacent frozen ground.	**NA**
	Water inflows to the underground excavations will require sumps and be pumped to the Attenuation Pond.	**NA**
Fuel Storage and use (includes Chemical and Hazardous material Storage and Explosives Storage Area)	Appropriate operations and maintenance procedures in place for the operation of the fuel tank farm.	**Yes -** To prevent fuel spills procedures were put in place to safely operate the fuel tank farm. These procedures include fuel spill protocols, inspections, and maintenance practices.
	Appropriate re-fueling areas and procedures to minimize and capture spills.	**Yes -** All re-fueling areas are equipped with safeguards to prevent and capture spills. Re-fueling procedures are in place and employees are trained how to re-fuel before operating vehicles.
	Implement the spill plan for potential chemical spills, including hydrocarbons	**Yes -** Spill plans are in place for all types of chemical spills. Employees are trained on how to apply the spill plan to their work.
Waste Management: Landfill, Landfarm, Sewage Treatment	Minimize ground disturbance.	**Yes -** Ground disturbance was minimized as much as possible.
	Use appropriate waste management methods to operate the facilities within the proposed waste rock piles, to promote permafrost growth.	**Yes -** Waste management methods are in place and followed closely to promote permafrost growth, including the creation of small sub-landfills which are encapsulated by waste rock. Inspections and surveys are performed to ensure the landfill is being constructed properly.

Table 12-33. Additional mitigation measures (beyond those in Table 12-32 above) described in the FEIS Addendum for the Whale Tail Pit Expansion Project (Table 3-C-2) to reduce impacts of the project on soil and terrain during the construction and operations phases, and commentary on current implementation. Mitigation measures listed here do not include Environmental Design Features that are factored into construction plans.

Project Activity	Planned Mitigation Measure (FEIS Addendum Table 3-C-2)	Implementation (2021)
Mine Infrastructure Footprint (e.g. open pits, site roads, access roads)	Locating borrow sites as close to the haul road as practical.	**Yes**
	Minimizing borrow areas by using suitable waste rock (e.g., Vault Pit waste rock) to the greatest extent practicable	**Yes**
	Avoid new disturbances by using existing ones where possible	**Yes**
Earthworks: Drilling, blasting, grading, trenching, excavation and backfilling, crushing activities, and dike construction	Most of the overburden will be placed in the Waste Rock Storage Facility, except for a small amount used in operations, which will only be temporarily stockpiled. Overburden will be piled at the base of the Whale Tail WRSF and surrounded with waste rock to stabilize the material and then all the overburden stockpiled in the Whale Tail WRSF will be eventually covered with waste rock.	**Yes** - Mine Waste Rock Management Plan
	Erosion control practices on steep slopes to limit wind and water erosion.	**Yes** – site inspection, design construction, best practices
Mine Site Facilities Construction	Use of non-acid generating material for road construction	**Yes -** Operational ARD/ML Testing and Sampling Plan, design construction
Mine Site Operations and Maintenance, including use of existing facilities and AWAR	Implement dust control measures on mine roads, when required	**Yes** - Air Quality and Dustfall Monitoring Plan
	Road surfaces will be maintained through grading and the addition of granular material.	**Yes** - Air Quality and Dustfall Monitoring Plan
	Equipment and vehicles will comply with relevant non-road emission criteria at that time of purchase	**Yes -** Operational ARD/ML Testing and Sampling Plan, design construction
	Use of non-acid generating materials for road bed and fill	**Yes -** Operational ARD/ML Testing and Sampling Plan, design construction
	Enforcing speed limits will assist in reducing dust emissions	**Yes**
	Implement the spill plan for potential chemical spills, including hydrocarbons	**Yes** – Spill Contingency Plan
	Adherence to the Air Quality and Dustfall Monitoring Plan	**Yes** - Air Quality and Dustfall Monitoring Plan

Project Activity	Planned Mitigation Measure (FEIS Addendum Table 3-C-2)	Implementation (2021)
	Complete a Wildlife Screening Level Risk Assessment every 3 years	**Yes** - TEMP
	Water Management Plan is approved and adhered to at existing facilities and Water Management Plan specific to the Whale Tail Pit areas has been developed and these plans have considered the containment and management of contact site water.	**Yes** – Water Management Plan
	Natural construction materials will be tested before they are used to confirm that they are not potential acid draining or potential sources of metal leaching	**Yes -** Operational ARD/ML Testing and Sampling Plan
Waste Rock Storage Areas and Stockpiles	(see Fish and Fish Habitat section, above)	**NA**
Water Management Infrastructure	(see Water Quantity, Water Quality, and Fish and Fish Habitat sections above)	**NA**
Fuel Storage and use (includes Chemical and Hazardous material Storage and Explosives Storage Area)	(see Water Quality section above)	**NA**

Adaptive Management

Adaptive management consists of changes to permafrost, soil and terrain mitigation methods in response to results of monitoring programs which indicate exceedances or potential exceedances of impact predictions. In this case, the validity of impact predictions related to permafrost, soil and terrain are measured through effects on other VCs. If impacts to other VCs are exceeding predictions as a result of permafrost changes, adaptive management will be considered and reported here.

No adaptive management has been required to date.

12.5.6 Archaeology, Traditional Land Use, and Socio-Economics

Since, in many cases, is it not possible to distinguish impacts of the Meadowbank project from those of the Whale Tail project on Archaeology, Traditional Land Use, and Socio-Economics, the PEAMP evaluation is combined for this section and provided under Section 12.4.6.

12.6 CONTRIBUTIONS TO REGIONAL MONITORING

In fulfillment of Item E in Appendix D of the Project Certificate, a description of Meadowbank's investments in regional monitoring initiatives, academic research studies and ongoing data sharing programs is provided in Table 12-34. These are programs in addition to publication of compliance-related onsite monitoring results. They contribute to the general advancement of environmental management in the North, and help ensure continued optimization of environmental mitigation and monitoring programs at Meadowbank and elsewhere.

Table 12-34 Contributions of the Meadowbank Complex to regional monitoring initiatives, academic research studies, and ongoing data sharing programs. Any related changes to Meadowbank's onsite monitoring and mitigation plans are described.

Program Type	Program Title	Contribution/Program Summary	Dates
Multi-Stakeholder Advisory Groups	Terrestrial Advisory Group	To reach consensus on research projects, needs for future monitoring and research, gain approval and ensure consistent endpoints of success, a Terrestrial Advisory Group (TAG) was created.	2017 - present
	Meadowbank Fisheries Research Advisory Group	Created to oversee the implementation of fisheries research projects related to offsetting for Whale Tail Pit, the Meadowbank Fisheries Research Advisory Group (MFRAG) meets annually and provides a forum for input and recommendations on these studies. Members are: DFO, HTO, KIA, appointed external advisor, and AEM.	2019 - present
Regional Monitoring Studies	GN Caribou Collaring Program	Meadowbank continues to contribute to the GN DOE caribou collaring program which started in 2008. Seven deployments, with a total of 117 collars, have been completed in the area around Baker Lake since Agnico Eagle became involved in the collaring program. In 2017, Agnico Eagle finalized discussions with the GN and entered into a renewed Memorandum of Understanding to commit to another term contribution in support of the regional GN caribou monitoring program. Wildlife branch in directing the implementation, data analysis and management of caribou populations in the Kivalliq region. This agreement is currently expired. Agnico Eagle intends to continue collaboration with the GN DoE caribou satellite-collaring program. Collar data were not available to complete the 2020 and 2021 analysis.	2008 –March 2020 (new MOU under negotiation)t
	ZOI Study	In 2017, in collaboration with Agnico Eagle staff, Golder biologists and statisticians worked to determine a zone of influence (ZOI) for the Meadowbank mine, or evaluate if it is affecting a large number of individuals. It is predicted that reduced use of preferred habitats should reduce herd size (from lower survival and reproduction). Data analysis was completed and hypotheses were tested, documents were provided to regulators and reviewed, presentations were made at the GeoScience Forum. This project continues to be reviewed by the TAG.	2017 - present
	Caribou Behaviour and Road Crossing Study	In 2018, review of caribou data lead to a TAG project to explore the link between caribou road crossings and road closures. Results were presented to the TAG in 2019, and used to inform ongoing monitoring and mitigation. Studies to inform caribou behaviour around road crossings and blasts are ongoing.	2018 - present
	Snow Study	Per Whale Tail Expansion Project commitment 9 from the TAG Meeting held in Baker Lake June 11 – 13, 2019, Agnico Eagle committed to complete a 3-year snow monitoring program as part of the TEMP to measure snow conditions adjacent to the WTHR, with the goal of determining whether changes to snow resulting from snow removal along the WTHR result in conditions that potentially inhibit caribou movements.	2020 – 2021 (pilot study) 2022 – 2024 (full study)
Academic Research Programs	Whale Tail Complementary Measures Suite	Suite of six research programs related to fish and fish habitat in the Meadowbank region. Included in Agnico Eagle's Fish Habitat Offsetting Plan for the Whale Tail Pit project. Projected total contributions from Agnico of $1.6 M. Further information in: Fish Habitat Offsetting Plan for Whale Tail Pit, Appendix C (May, 2018).	2018 – 2034 (est).
	Baker Lake Wastewater Study	Industry partner in NSERC CRD project "Validating Environmental and Human Health Improvements Associated with Wastewater Treatment Upgrades in Arctic Communities". Total contributions from Agnico of $590,000.	2019 – 2023

Program Type	Program Title	Contribution/Program Summary	Dates
	Arctic Raptors	Collaboration with Dr. Alastair Franke/Arctic Raptors to conduct annual raptor monitoring at the Meadowbank and Meliadine sites. The Arctic Raptors program has been monitoring raptor populations in the Arctic since the 1980s.	2015 - present
	Migratory Bird Ecology and Effectiveness of Deterrents	As part of commitments made during the permitting process for Whale Tail Pit, Agnico is funding and facilitating a study on effectiveness of deterrents for minimizing impacts of flooding on nesting waterbirds in the Amaruq area (Dr. Erica Nol, Trent University; Dr. Paul Smith, ECCC). Total contributions from Agnico are $120,000 plus in kind support. As part of these contributions, Agnico has also agreed to support a study on ecology and nest site selection factors for area waterbirds (Dr. Erica Nol, Trent University). Finally, results of these studies will also contribute to the ArcticNet funded study "Modernizing Ecosystem Monitoring to Support Sustainable Development in the Eastern Canadian Arctic" (Dr. Paul Smith, ECCC; Dr. Christina Semeniuk, University of Windsor). This project uses advanced technology to track birds' movements across the Eastern Arctic, and behaviour in relation to human development and disturbance. Results will inform environmental impact mitigation efforts by industry, and simultaneously, contribute to national and international efforts to conserve Arctic biodiversity.	2018 – 2021
Other Information Sharing Programs	DFO Fishout Database	Agnico contributes raw data files from all fishout programs to DFO's Fishout Database.	2009 – 2020 (last fishout program)

SECTION 13. REFERENCES

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