



MEADOWBANK COMPLEX

WHALE TAIL PIT

2020 REPORT ON THE IMPLEMENTATION OF MEASURES TO AVOID AND MITIGATE SERIOUS HARM

In Accordance with
DFO *Fisheries Act* Authorization 16-HCAA-00370
and
DFO *Fisheries Act* Authorization 20-HCAA-00275

Prepared by:
Agnico Eagle Mines Limited – Meadowbank Complex

April, 2021

EXECUTIVE SUMMARY

In July, 2018, Agnico Eagle Mines Ltd. (Agnico) was issued *Fisheries Act* Authorization (FAA) 16HCAA-00370 for the Whale Tail Pit project. Approved fish habitat offsetting related to this FAA is described in the Fish Habitat Offsetting Plan for Whale Tail Pit (March, 2018).

In July, 2020, Agnico was issued FAA 20HCAA-00275 for the Whale Tail Pit Expansion Project. Approved fish habitat offsetting related to this FAA is described in the Whale Tail Pit Expansion Project - Fish Habitat Offsetting Plan (March, 2020).

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 this document summarizes the implementation of a suite of DFO-specified measures and standards to avoid and mitigate serious harm to fish.

Section 3 of this report provides a summary of results for monitoring programs specified under Condition 2 of FAAs 16HCAA-00370 and 20HCAA-00275.

Based on results of these monitoring programs, **Section 4** of this report provides details of any contingency measures that were required to be followed to prevent further impacts, in the event that existing mitigation did not function properly (in fulfillment of FAA 16HCAA-00370 Condition 3.1.4 and FAA 20HCAA-00275 Condition 3.1.2).

Finally, as required by FAA 16HCAA-00370 Condition 3.1.1, **Section 5** further provides an evaluation of the effectiveness of the above-described monitoring programs (and other relevant monitoring programs) in validating changes to fish and fish habitat predicted in the Project FEIS.

In summary, all the measures and standards to avoid and mitigate serious harm to fish, as identified in Condition 2 of FAA 16HCAA-00370 and 20HCAA-00275, were implemented in 2020. Based on the results of associated monitoring programs, no new contingency mitigation measures outside of the scope of existing management plans or previously identified seepage events were required in 2020 for the protection of fish and fish habitat (Section 4). These and other mitigation measures (see Appendix A) were therefore considered effective in limiting impacts to fish and fish habitat to those predicted (Section 5) and authorized.

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Appendix A: Summary of FEIS-Planned Mitigation Measures

SECTION 1 • INTRODUCTION

In July, 2018, Agnico Eagle Mines Ltd. (Agnico) was issued *Fisheries Act* Authorization (FAA) 16HCAA-00370 for the Whale Tail Pit project. Approved fish habitat offsetting related to this FAA is described in the Fish Habitat Offsetting Plan for Whale Tail Pit (March, 2018).

In July, 2020, Agnico was issued FAA 20HCAA-00275 for the Whale Tail Pit Expansion Project. Approved fish habitat offsetting related to this FAA is described in the Whale Tail Pit Expansion Project - Fish Habitat Offsetting Plan (March, 2020).

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

In particular, this report addresses Condition 3.1 of both FAAs:

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.*

In fulfillment of Condition 3.1, **Section 2** of this document summarizes the implementation of specific measures and standards to avoid and mitigate serious harm to fish, as identified in Section 2 of FAA 16HCAA-00370 and 20HCAA-00275. Where appropriate, dated photographs with GPS coordinates and inspection reports are provided or referenced to demonstrate effective implementation of these mitigation measures and standards, as required in FAA 16HCAA-00370 Condition 3.1.3 and FAA 20HCAA-00275 Condition 3.1.1.

These measures and standards may be summarized as:

1. Sediment and erosion control - Sediment and erosion control measures must be in place and shall be upgraded and maintained, such that release of sediment is avoided at the location of the authorized work, undertaking, or activity. And: *Before commencing any works, undertakings and/or activities that have the potential to release sediment into waters frequented by fish, the Proponent shall prepare and implement site specific sediment and erosion control plans for any near or in-water works under the guidance of a certified Professional in erosion and sediment control (CPESC or equivalent).*
2. Adherence to the *General Fish-out Protocol for Lakes and Impoundments in the Northwest Territories and Nunavut* (Tyson et al., 2011) and approved fish-out work plans for the Whale Tail Pit and Whale Tail Pit Expansion Projects;
3. Adherence to the *Freshwater Intake End-of-Pipe Fish Screen Guideline* (Fisheries and Oceans Canada, 1995) (FAA 16HCAA-00370) or the *Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater* (<https://www.dfo->

mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html) (FAA 20HCAA-275) for any and all intake in waterbodies that support fish;

4. Development of a Blasting Mitigation Plan, which shall adhere to the guidance in *Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies, NWT 2000 – 2002* (Cott and Hanna, 2005);
5. Adherence to the *Protocol for Winter Water Withdrawal from Ice-Covered Waterbodies in the Northwest Territories and Nunavut* (Fisheries and Oceans Canada, 2010);
6. 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 bearing streams and rivers, unless otherwise authorized by Fisheries and Oceans Canada. And: *The Proponent shall provide detailed engineering plans to DFO for review and approval for construction works that have the potential to impact fish and fish habitat, at least 90 days prior to the commencement of the works.*

Section 3 of this report provides a summary of results for monitoring programs specified under Condition 2.4 of FAA 16HCAA-00370 (in fulfillment of Condition 3.1.1 of 16-HCAA-00370¹):

1. Adherence to the most recent Core Receiving Environment Monitoring Program;
2. Adherence to the most recent Water Quality and Flow Monitoring Plan;
3. Adherence to the most recent Water Quality Monitoring and Management Plan for Dike Construction and Dewatering.

Based on results of these monitoring programs as well as any supplemental monitoring related to the measures and standards summarized above, **Section 4** of this report provides details of any contingency measures that were required to be followed to prevent further impacts in the event that mitigation did not function properly (in fulfillment of FAA 16HCAA-00370 Condition 3.1.4 and FAA 20HCAA-00275 Condition 3.1.2).

Finally, as required by FAA 16HCAA-00370 Condition 3.1.1, **Section 5** further provides an evaluation of the effectiveness of the above-described monitoring programs (and other relevant monitoring programs) in validating changes to fish and fish habitat predicted in the Project FEIS.

¹ Also included in FAA 16HCAA-00370 Condition 2.4 is the Conceptual Whale Tail Lake (North Basin) Fish-out Work Plan, which is discussed here in Section 2.1.2.

SECTION 2 • AVOIDANCE AND MITIGATION MEASURES

A commentary on the implementation of each FAA-listed measure to avoid or mitigate serious harm to fish and fish habitat in 2020 is provided below.

2.1 SEDIMENT AND EROSION CONTROL

According to FAA 16HCAA-00370 and 20HCAA-00275, *“before commencing any works, undertakings and/or activities that have the potential to release sediment into waters frequented by fish, the Proponent shall prepare and implement site specific sediment and erosion control plans for any near or in-water works under the guidance of a certified Professional in erosion and sediment control (CPESC or equivalent).”*

Further: *“Sediment and erosion control measures must be in place and shall be upgraded and maintained, such that release of sediment is avoided at the location of the authorized work, undertaking, or activity.”*

The authorized works, undertakings, and activities, according to these FAAs, include:

- *Construction of Whale Tail and Mammoth Dikes;*
- *Dewatering of the north basin of Whale Tail Lake;*
- *Construction of the freshwater jetty in Nemo Lake;*
- *Fish-out and dewatering of specified IVR area waterbodies and watercourses;*
- *Water withdrawal for the purposes of operations from A16;*
- *Construction and operation of the IVR pit, waste rock storage facility, and attenuation pond;*
- *Construction of 2 groundwater storage ponds.*

Sediment and erosion control measures for any construction work, undertaking, or activity having the potential to impact waters frequented by fish (including but not limited to the DFO-Authorized works listed above) are described in design reports that are prepared by professionals and stamped by a Professional Engineer. These reports are sent to the NWB for review at least 60 days prior to the intended construction initiation. These reports are available for DFO comment during the NWB review period, and construction is not initiated until a positive response is received from NWB. Design reports have not yet been prepared for the freshwater intake in A16, or the construction of 2 groundwater storage ponds (construction has not yet been initiated).

In 2020, design reports were submitted to the NWB for the following construction activities with potential to impact waters frequented by fish²:

- IVR area waterbodies dewatering;
- Whale Tail South Winter and Summer Diffusers;
- IVR Diversion Channel;
- IVR D-1 Dike.

Following completion of construction activities, Construction Summary Reports are submitted to the NWB with the details of final construction and are available for DFO review. Construction Summary Reports fully describe the mitigation measures that were implemented to reduce erosional concerns and are available from the NWB public registry³. Those submitted in 2020 included:

- Whale Tail Dike;
- Whale Tail North Dewatering;
- Baker Lake Tank Farm Expansion;
- Mammoth Lake Summer and Winter Diffusers;
- Road 24 to Whale Tail Diversion Channel;
- South Whale Tail Channel Construction.

No comments were received from DFO regarding these 2020 Design Reports or Construction Summary Reports.

Site-wide, water quality monitoring is conducted under the Core Receiving Environment Monitoring Program (CREMP 2015 Plan Update with 2018 Addendum for Whale Tail Pit), the Water Quality and Flow Monitoring Plan (Version 6; May, 2019), and the Water Quality Monitoring and Management Plan for Dike Construction and Dewatering (Versions 1 and 3, January, 2017 and May, 2020, respectively) according to NWB Water License 2AM-WTP1830 to track trends in regulated and non-regulated parameters of concern. Those results are summarized in Sections 3.1 - 3.3, below, with a commentary on how they reflect the effectiveness of the sediment and erosion control measures.

² Design Reports for 2020 are available here: <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1826%20Agnico/3%20TECH/D%20CONSTRUCTION/>

³ Construction summary reports for 2020 are available here: <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1826%20Agnico/3%20TECH/D%20CONSTRUCTION/D15/>

The ongoing maintenance of existing erosion control measures for water management infrastructure is also evaluated through the Freshet Action Plan. Under this Plan, inspections of water management infrastructure (bridges, culverts, ditches) are conducted daily to weekly by dedicated personnel starting in May, and water quality monitoring for turbidity/TSS is conducted as required based on visual observations. TSS is analyzed by onsite assay laboratory procedures when excess turbidity is observed, and by commercial accredited laboratory if any elevated results are received. 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.

In 2020, no erosion concerns that required mitigation actions were identified during visual inspections for Whale Tail Haul Road water management infrastructure, and no water quality samples were required to be collected. As precautionary measures, straw booms or woodchip booms were installed for some Whale Tail Haul Road culverts and bridges during freshet.

For Whale Tail onsite inspections, no major erosional concerns causing impact to a fish-bearing waterway were observed. During snowmelt, some water was observed ponding along Road 24 leading to the emulsion plant and South Whale Tail Channel. This ponding water against the road was determined to have the potential to cause future geotechnical and erosional concerns. Booms were preventively installed downstream of the road beginning June 9. In mid-July, water levels declined, and any overland flow had ceased. Culverts were installed in August (following previous submission of a design report to NWB) to mitigate these concerns in coming freshet seasons and will be inspected as per the Freshet Action Plan.

2.2 ADHERENCE TO THE GENERAL FISH-OUT PROTOCOL FOR LAKES AND IMPOUNDMENTS IN THE NORTHWEST TERRITORIES AND NUNAVUT (TYSON ET AL., 2011) AND APPROVED FISH-OUT WORK PLANS FOR THE WHALE TAIL PIT AND WHALE TAIL PIT EXPANSION PROJECTS

The fish-out of Whale Tail North Basin for the Whale Tail Pit Project was complete in 2018 and has been previously reported.

The Whale Tail Pit Expansion Project Fish-out at the Meadowbank site took place between July 18 and September 8, 2020. This program followed the 2020 Whale Tail Pit Expansion Project Fish-out Work Plan (June, 2020), which was developed in consultation with DFO, and based on the General Fish-out Protocol for Lakes and Impoundments in the Northwest Territories and Nunavut (Tyson et al., 2011).

All fish-out activities in 2020 were confined to the waterbodies authorized under FAA 20HCAA-00275, and all data required under the 2020 Whale Tail Pit Expansion Project Fish-out Work Plan (June, 2020) was collected. The fish-out waterbodies are shown in Figure 1. A summary of the fish-out report is provided below, and the complete report is provided in Meadowbank's 2020 Annual Report to the NIRB. Field data collected according to the approved work plan was provided to DFO in the Fish-Out Database Microsoft Excel format.

For each waterbody and gear type, daily reports of total catch, effort, and CPUE were communicated with DFO, who advised on fish-out phase transition and termination. In all cases, fish-outs were determined to be complete on the advice of DFO.

With all effort combined, between 0 and 17,682 fish consisting of up to five species (ninespine stickleback, slimy sculpin, Arctic char, burbot, and lake trout) were captured from each of the nine waterbodies (Table 1). In total, four waterbodies were fish-less (including A52 which was found to be dry), four had populations of only ninespine stickleback, and two contained both small- and large-bodied species.

All attempts were made to transfer salvaged fish to Whale Tail Lake South, and the successful live transfer rate for the CPUE Phase and Final Removal Phase combined was 70 – 97% for each waterbody.

Table 1. Total abundance and biomass by species and waterbody for the 2020 Whale Tail Expansion Project Fish-out.

Waterbody	Species	Biomass		Abundance	
		g	%	#	%
A0	NNST	300	100%	1,050	100%
A-P38	-	0	-	0	-
A46	NNST	562	100%	837	100%
A47	NNST	2,361	100%	4,045	100%
A48	NNST	4,299	100%	17,682	100%
A49	LKTR	6,250	96%	13	7%
	SLSC	279	4%	183	93%
	Total	6,529	100%	196	100%
A50	-	0	-	0	-
A51	-	0	-	0	-
A52	Waterbody dry. No fish present.				
A53	NNST	3,216	6%	2,709	96%
	SLSC	125	0%	40	1%
	BURB	3,808	7%	23	1%
	ARCH	17,271	31%	29	1%
	LKTR	31,310	56%	20	1%
	Total	55,731	100%	2,821	100%

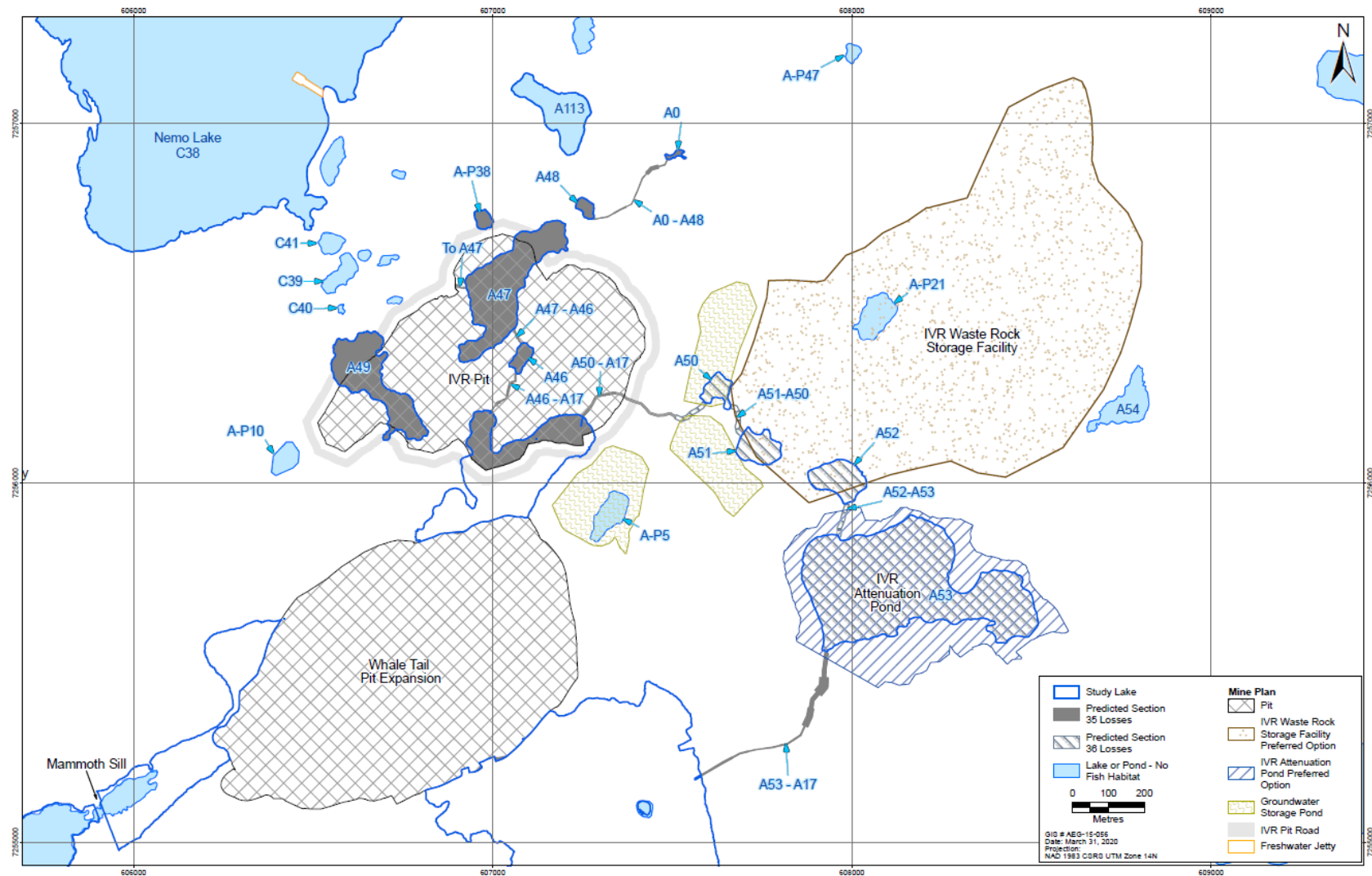


Figure 1. Whale Tail Pit Expansion Project 2020 fish-out lakes (from the 2020 Whale Tail Expansion Project Fish-out Report; an appendix of the 2020 Meadowbank Complex Annual Report to the NIRB).

2.3 ADHERENCE TO THE FRESHWATER INTAKE END-OF-PIPE FISH SCREEN GUIDELINE (FISHERIES AND OCEANS CANADA, 1995) OR THE INTERIM CODE OF PRACTICE: END-OF-PIPE FISH PROTECTION SCREENS FOR SMALL WATER INTAKES IN FRESHWATER FOR ANY AND ALL INTAKE IN WATERBODIES THAT SUPPORT FISH

Freshwater intakes in 2020 were located in Nemo Lake (camp use), A-P38, A46, A47, A49, A50, A51 and A53 (water management and dewatering). Dewatering was also ongoing in Whale Tail North Basin (January – May, 2020), but the fish-out of this area was completed in 2019 and the water intake is not discussed here.

Construction of the freshwater intake in Nemo Lake occurred in 2018. As described in the 2018 Report on the Implementation and Monitoring of Measures to Mitigate and Avoid Serious Harm to Fish – Whale Tail Pit Project, construction adhered to the *Freshwater Intake End-of-Pipe Fish Screen Guideline* (Fisheries and Oceans Canada, 1995) and the design was approved by DFO. The as-built report including drawings and photographs was provided to NWB in 2019⁴.

In 2020, waterbodies A-P68, A46, A47, A49, A50, A51 and A53 were dewatered to permit construction of the IVR Pit, Waste Rock Storage Facility, and Attenuation Pond (as shown in Figure 1). Dewatering of these waterbodies occurred in August and September, following completion of the associated fish-outs (see Section 2.2.1). Two additional ponds (A-P21 and A52) were planned to be dewatered, but were found to be dry during the 2020 season. Water level management also took place in the Northeast pond area (A47) and A53 during June and July (prior to or during fish-out).

In placement of these temporary freshwater intakes, consideration was given to screen area, material, and installation best practices, as described in the *Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater* (<https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html>) and lessons learned in 2019 water management for this area. Depending on the pump system, square (4 x 4 x 4') or rectangular (1'10" x 1'10" x 4'2") cages were installed around each cylindrical water intake. These fish screens were constructed of No. 8 stainless steel mesh (0.028" diameter wire), with an opening width of 0.097". Cages were elevated 1'2" above the lake bottom. Designs of the fish screens are provided in the construction summary report for the IVR area dewatering, available through the NWB public registry⁵ and designs for the square type cage are copied below (Figure 2).

In 2019, during water management activities in the Northeast pond area, several ninespine stickleback were impinged and killed on the intake screen of one of two pumps. DFO was notified

⁴ Available here: <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1826%20Agnico/3%20TECH/D%20CONSTRUCTION/D15/>

⁵ Construction Summary Report – Whale Tail Dewatering Phase 2 – Available at: <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1830%20Agnico/3%20TECH/D%20CONSTRUCTION/D16/210204%202AM-WTP1830%20Whale%20Tail%20Dewatering%20Phase%202%20Construction%20Summary%20Report-IMLE.pdf>

and pumping ceased until mitigation measures were put in place, which consisted of daily inspections of the intake pump and downstream lake area, and moving the pump intake location to limit access by smaller fish. Specifically, an extra exclusion zone was created around the suction to prevent fish from being drawn into the flow created (see Figure 2 below). Once these modifications were done, no further impacts were noted.

In 2020, no fish impingement on freshwater intake screens was observed.

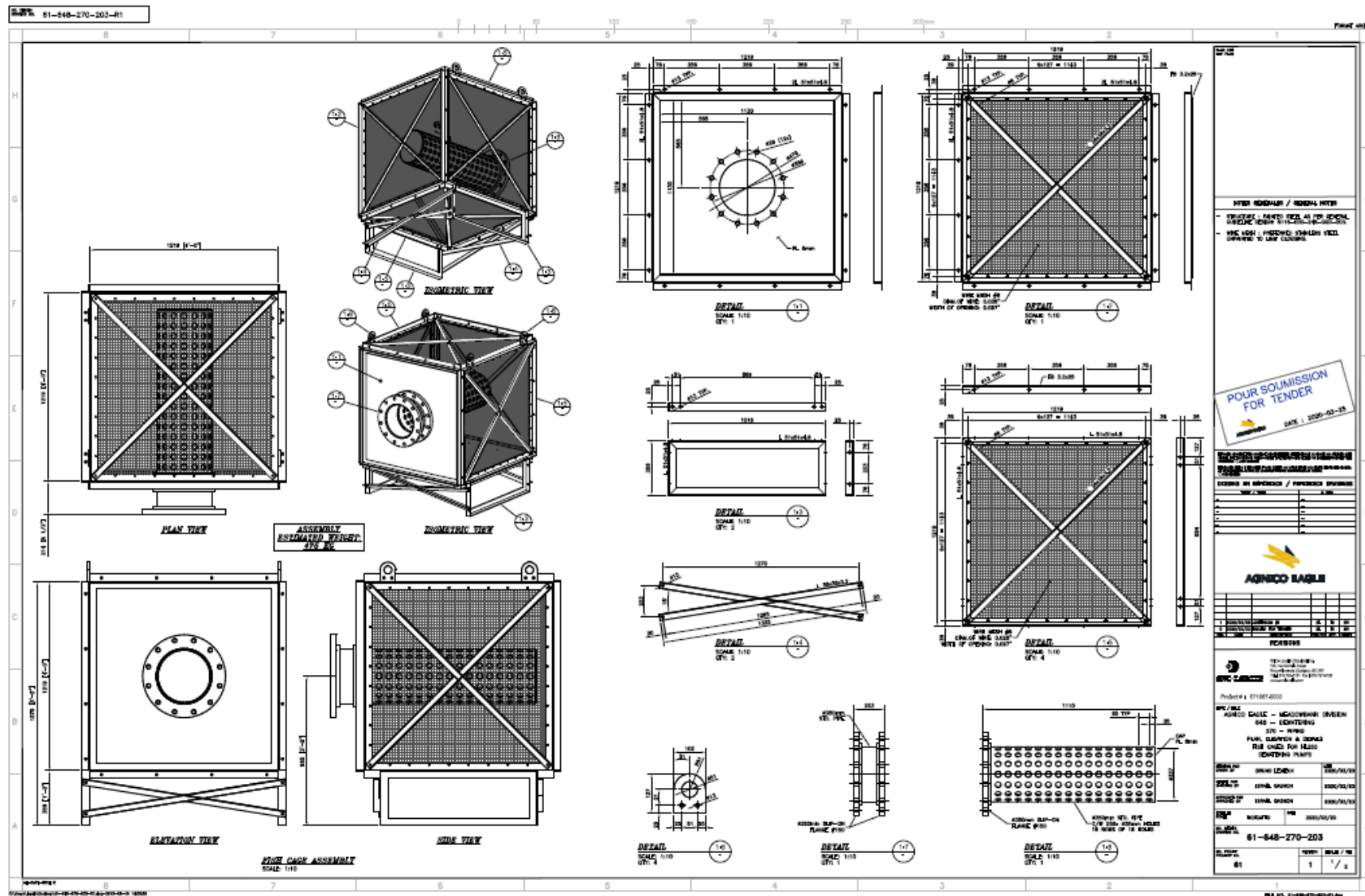


Figure 2. Square-type fish screens used in the dewatering of the IVR area waterbodies in 2020. From the Construction Summary Report – Whale Tail Dewatering Phase 2 (February 3, 2021).

2.4 DEVELOPMENT OF A BLASTING MITIGATION PLAN AND ADHERENCE TO “MONITORING EXPLOSIVE-BASED WINTER SEISMIC EXPLORATION IN WATERBODIES, NWT 2000 – 2002” (COTT AND HANNA, 2005).

In accordance with Condition 2.3.3 of FAA 16HCAA-00370 and Condition 2.2.3 of FAA 20HCAA-00275, Agnico has developed a Blast Monitoring Program (Version 6, March 2021) that adheres to the guidance in the document “*Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies, NWT 2000 – 2002*” (Cott and Hanna, 2005) and Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters (Wright and Hopky, 1998) as modified by the DFO for use in the north.

A report on blast monitoring according to the Blast Monitoring Plan is provided every year in the Annual Report to the NIRB. 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.

Further, Agnico regularly submits technical memorandums to DFO regarding blast monitoring and mitigation for various construction activities. In September 2019, Agnico submitted to DFO a specific Technical Memorandum regarding blast monitoring and mitigation for construction of the Whale Tail South Channel, and this construction was initiated in January, 2020. In response to DFO comments on the Technical Memorandum, Agnico monitored blasts for this activity and reported any exceedances of designated limits to DFO within 72 h.

For the purposes of fish and fish habitat protection, peak particle velocity (PPV) and overpressure monitoring data was recorded throughout 2020 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 2020, and a total of four PPV exceedances were recorded. All of them occurred during the period of egg incubation (egg incubation period is from August 15 to June 30). One of these events was associated with the Whale Tail Pit and the other three were recorded during the construction of the Whale Tail South Channel.

The first exceedance was recorded at Mammoth Station (just east of Mammoth Dike, with a PPV of 14.6 mm/s in July 10th, 2020. For this blast, eight (8) preshear holes were detonated on the same delay. To mitigate the probability of another exceedance for preshear holes, mitigation technique number four from the Blast Monitoring Plan was used. This technique is to reduce the explosives quantity per delay.

The other exceedances were recorded at the Whale Tail South Channel construction site on January 27, February 5 and February 10. Agnico Eagle advised DFO following each event to detail the cause and mitigation measures put in place. All the exceedances were observed at the SWTC-2 station (Figure 3), near the shore of lake A20. Various controls from the Blast Monitoring

Plan were put in place in order to control the vibrations, and were ultimately successful in mitigating ongoing exceedances.

As discussed in the Blast Monitoring Report, results of studies at the Diavik Mine (Faulkner et al. 2006⁶) showed no impact to incubating eggs with over 80 exceedances of the DFO PPV limit (13 mm/s), with a max. measured PPV of 28.5 mm/s at the egg exposure area. This study suggests impacts to incubating eggs at Whale Tail are likely not occurring even if no attenuation of PPV is occurring between blast monitoring sites and spawning habitat.

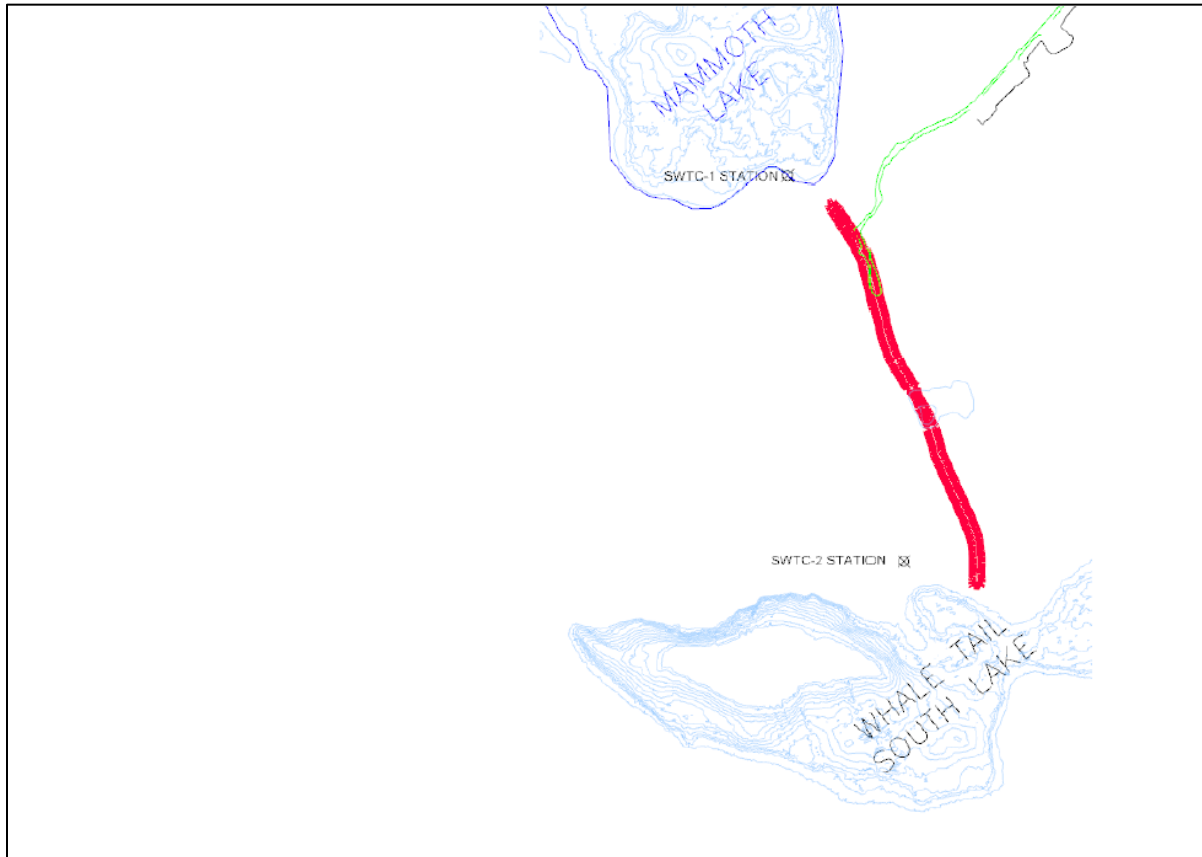


Figure 3. South Whale Tail Channel temporary blast monitoring stations (from the 2020 Blast Monitoring Report; an appendix of the 2020 Meadowbank Complex Annual Report to the NIRB).

2.5 ADHERENCE TO THE PROTOCOL FOR WINTER WATER WITHDRAWAL FROM ICE-COVERED WATERBODIES IN THE NORTHWEST TERRITORIES AND NUNAVUT (FISHERIES AND OCEANS CANADA, 2010)

In 2020, winter water withdrawal occurred for the freshwater intake from Nemo Lake only. Withdrawal volumes conformed with the *Protocol for Winter Water Withdrawal from Ice-Covered*

⁶ Faulkner, Sean G., Tonn, William, Welz, Marek, Welz, and Schmitt, Douglas. 2006. Effects of Explosives on Incubating Lake Trout Eggs in the Canadian Arctic. *North American Journal of Fisheries Management*. 26:833-842.

Waterbodies in the Northwest Territories and Nunavut (Fisheries and Oceans Canada, 2010) – i.e. total under-ice withdrawal did not exceed 10% of the available water volume.

As described in Agnico's response to DFO's Technical Comment 2.2.2 on the Whale Tail Pit Expansion Project Water License Amendment application (October 7, 2019), the available under-ice volume of Nemo Lake was calculated as 6,169,226 m³. For calculating under-ice volumes, hydrological statistics were extracted from the elevation-volume table (Table A-19) provided in Appendix 6-M of the Final Environmental Impact Statement (FEIS) for the Whale Tail Pit Project. The calculations assumed a 2-m ice thickness during winter.

Estimated total under-ice water withdrawal from Nemo Lake for the winter of 2019-2020 (conservatively, September – June, inclusive) was 37,528 m³, which is less than 10% of the available under-ice volume (10% of 6,169,226 m³ = 616,923 m³).

2.6 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 BEARING STREAMS AND RIVERS, UNLESS OTHERWISE AUTHORIZED BY FISHERIES AND OCEANS CANADA.

Further: The Proponent shall provide detailed engineering plans to DFO for review and approval for construction works that have the potential to impact fish and fish habitat, at least 90 days prior to the commencement of the works

As discussed in Section 2.1.1, Design Reports are provided to the NWB for review at least 60-d prior to any construction activity, and these reports are available for DFO comment. Following construction, Construction Summary Reports are provided to the NWB, providing details of the final construction methods.

The Design Reports and Construction Summary Reports provided to the NWB in 2020 are discussed in Section 2.1.1. No comments from DFO were received.

SECTION 3 • SUMMARY OF MONITORING PROGRAMS

As described in Section 2 of FAAs 16HCAA-00370 and 20HCAA-00275, the following programs were implemented in 2020 to assist in the monitoring and management of impacts to fish and fish habitat.

As recommended by DFO through email communication (October 1, 2020) following consultation on the 2019 version of this report, this section focuses on objectives of the programs and results as they relate to understanding the effectiveness of mitigation measures.

Results of these and other monitoring programs are reviewed by the Project team on an ongoing basis to identify instances when mitigation is not functioning properly. Any contingency mitigation measures that were implemented to prevent further impacts based on the results of these monitoring and management programs are discussed in Section 4 of this report.

3.1 CORE RECEIVING ENVIRONMENT MONITORING PROGRAM (CREMP)

3.1.1 Objective

The CREMP focuses on identifying changes in limnology, water and sediment chemistry, primary production (phytoplankton) and secondary production (benthic invertebrate community) in the receiving environment that may be associated with mine development activities. This is accomplished through use of quantitative site-specific trigger values and statistical analysis of the data using a Before-After-Control-Impact (BACI) design to identify statistically significant mine-related changes relative to baseline/reference conditions.

Formal comparison of the data for decision-making purposes is done by comparing the yearly mean measured parameter concentrations to trigger values. For parameters where the yearly mean was equal to or exceeded the trigger value, results were formally tested using a one-tailed test of the null hypothesis (significance level of $p=0.05$) using the BACI statistical model.

Finally, monthly water quality data for Whale Tail Lake (South Basin) and Mammoth Lake were compared against applicable water quality predictions presented in the FEIS Addendum for the Whale Tail Pit – Expansion Project (“FEIS Addendum”) (Agnico Eagle, 2018⁷).

3.1.2 2020 Results

The CREMP study lakes in 2020 are shown in Figure 4. Complete results of the 2020 CREMP are provided in the 2020 Annual Report to the NIRB.

Briefly, some statistically significant water quality trigger exceedances were observed in near field areas for ionic compounds, 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 have CCME effects-based guidelines for the protection of aquatic life. Specific FEIS predictions for monthly concentrations in WTS and MAM were exceeded for ammonia, nitrate, total phosphorus (only WTS), sulphate, total alkalinity, TDS, and several ionic compounds and total metals in one or more sampling events. However, all water quality results were consistent with FEIS-assigned levels of significance (i.e. $<1\times$ CCME guideline, or $1-10\times$ CCME guideline for total phosphorus). Overall, despite some early warning triggers and monthly FEIS predictions being exceeded in 2020, the absolute concentrations of these parameters remain low and far lower than concentrations associated with adverse to aquatic life.

⁷ Agnico Eagle Mines Ltd. (Agnico Eagle) 2018. FEIS Addendum for the Whale Tail Pit Project. December, 2018.

Within the FEIS Addendum, an increase in nutrient concentrations and associated shift in aquatic production was anticipated for WTS, MAM, and some downstream lakes during the operations phase (FEIS Addendum; Section 6.5.4.3). For phytoplankton biomass, some increases and decreases relative to reference/baseline conditions were observed in 2020, but none were statistically significant. In contrast to 2019, when the biomass effect size suggested that mine activities were influencing primary productivity at WTS (as predicted in the FEIS Addendum), patterns observed at WTS in 2020 were consistent with natural seasonal blooms in phytoplankton productivity. The notable increase in biomass observed for WTS and MAM in 2019 was likely due to a surge in nutrients associated with inputs from the flooded tundra after impoundment. In 2020, this surge seems to have mostly subsided. Statistically significant declines in phytoplankton taxa richness were observed in WTS in 2020, but not for other lakes. Since this is the first year of the observed effect, there is uncertainty as to whether this is mine-attributable, or is the result of natural variation. Monitoring in subsequent years will help to determine causation.

For sediment, lakes in the Whale Tail study area have naturally high concentrations of some metals (arsenic, cadmium, chromium, copper, zinc), which was considered in the development of trigger values. Sediment coring in 2020 indicated some instances of statistically significant increases above trigger values (arsenic, chromium, copper), but changes were determined to be likely a result of natural spatial heterogeneity. Results will be formally reviewed following the next round of sediment core sampling (2023), though sediment grab samples in 2021 will help inform the analysis.

No mine-related impacts to the benthic invertebrate community were observed.

Since there are now two seasons of after data (i.e., 2019 and 2020), it is becoming more certain that the spike in productivity in MAM was a short-term pattern. The narrower chlorophyll-a peak for WTS in 2020 suggests that the productivity spike may have been short-term for this lake as well. Statistical analysis suggested a decrease in biomass at both WTS and MAM, which may indicate that the system is stabilizing. Phytoplankton productivity, biomass and richness, as well as associated patterns in key nutrients will continue to be tracked closely in 2021.

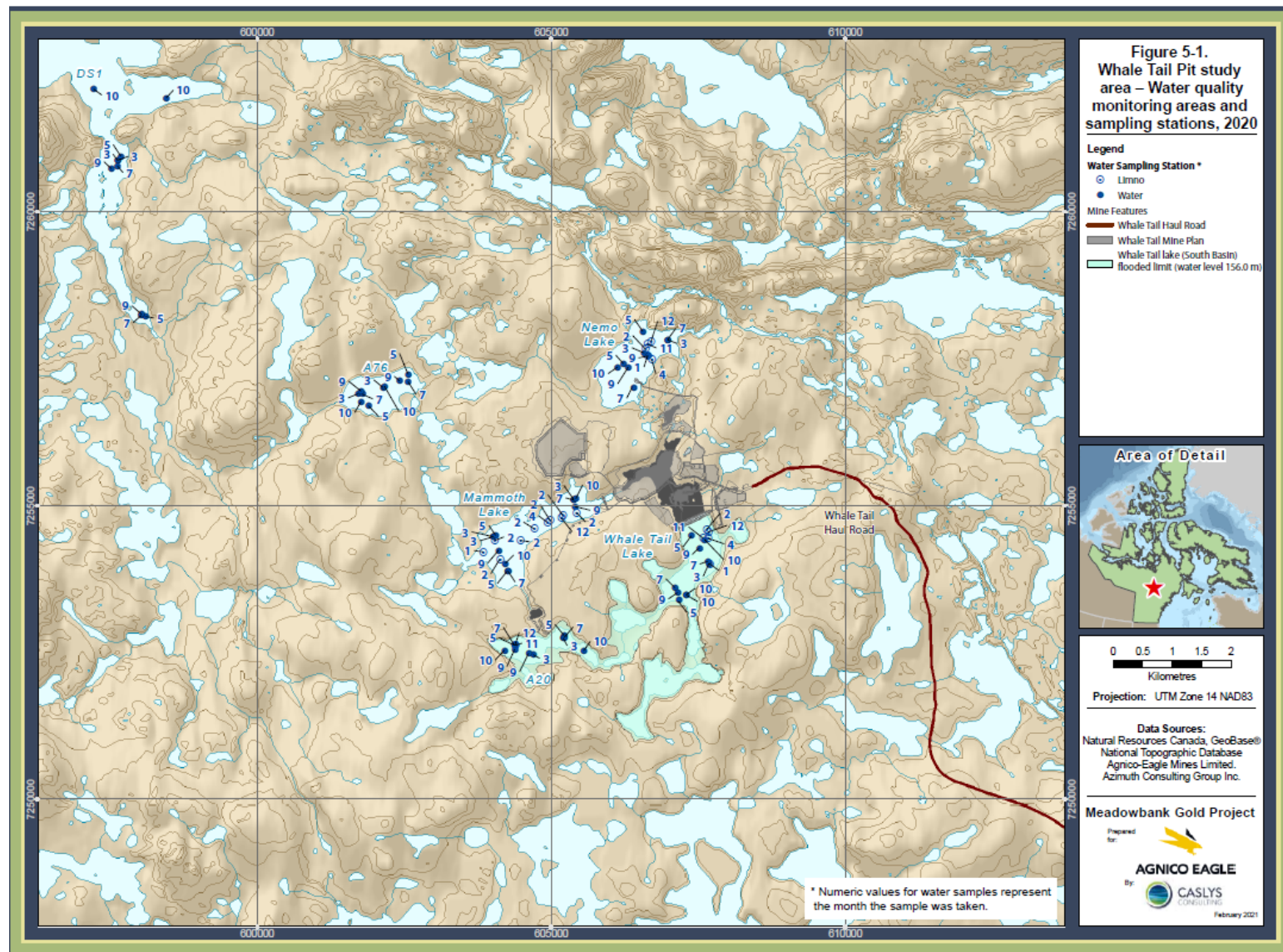


Figure 4. 2020 Whale Tail area CREMP study lakes for water quality (from the 2020 CREMP Report, an appendix of the 2020 Meadowbank Complex Annual Report to the NIRB).

3.2 WATER QUALITY AND FLOW MONITORING PLAN

3.2.1 Objectives

Whereas the CREMP assesses impacts of the mine on the receiving environment's aquatic systems, the Water Quality and Flow Monitoring Plan is primarily focused on assessing onsite flows and water quality.

The purpose of the Water Quality and Flow Monitoring Plan is to monitor the performance of the waste and water management systems at the Meadowbank Complex. The program includes:

- Verifying and validating the predicted water quality values with empirical measurements of the mine site water quality and flows;
- A comparison of measured water quality data to compliance requirements stipulated in the Nunavut Water Board Type A Water License; and
- A framework for adaptive management that allows the identification and rectification, where necessary, of unexpected trends or non-compliance in water quality and flows.

The Plan summarizes the monitoring locations, sampling frequency, monitored parameters, and compliance discharge criteria for water quality at the Meadowbank Complex.

3.2.2 2020 Results

Full results of the Water Quality and Flow Monitoring Plan are presented in Section 8.5 of the 2020 Annual Report to the NIRB.

Results are discussed here briefly for seepage/runoff monitoring, and for monitoring locations with NWB/MDMER criteria (regulated discharge) with the exception of water quality monitoring for lake dewatering, which is discussed in Section 3.3, below. For parameters that are not regulated (i.e. do not have NWB/MDMER criteria), impacts to the receiving environment are assessed through the CREMP, and discussed in Section 3.1, above.

For the Whale Tail site (other than lake dewatering), three effluent monitoring locations and two non-contact water management location were regulated in 2020:

- Whale Tail Attenuation Pond discharge to Mammoth Lake (May, June, July, August, September, October)
- Whale Tail Attenuation Pond discharge to Whale Tail South (May, June, October, November, December)
- Quarry 1 discharge to Mammoth Lake (April)
- Northeast Pond water discharge to tundra in the Nemo Lake watershed (June and July)

- A53 water discharge to WTS (June and July)

In all cases, water quality analyses of the source water are collected and reviewed prior to and during discharge, to determine need for TSS treatment. Compliance samples are collected following treatment, if treatment is required. In 2020, no exceedances of MDMER/NWB Water License criteria occurred.

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 2020, monitoring and mitigation related to seepage and runoff included:

- *Seepage through dewatering dikes*
 - o None observed other than Whale Tail Dike (see next bullet point).
- *Seepage through Whale Tail Dike*
 - o First noticed in July 2019, and a detailed investigation was conducted along with an intensive dike grouting campaign to reduce seepage flow.
 - o A pumping system is being installed to collect non-contact water, planned to be completed in 2021.
 - o To date, managed as Whale Tail North dewatering effluent (up to May 15) and as part of the Whale Tail Attenuation Pond (Section 3.3 below).
- *Seepage and runoff from the landfill*
 - o None observed.
- *Subsurface seepage and surface runoff from waste rock piles*
 - o In August 2019, Agnico informed regulators that flow at the toe of the WRSF Dike was observed to be entering Mammoth Lake.
 - o Management actions were initiated immediately (August 24, 2019), by pumping the WRSF collection pond to halt the flow. In addition, an access road to the toe of the dike was constructed to allow installation of a water collection system, which was operated until freeze-up (September 30, 2019).
 - o Water quality analyses from the source and receiving environment were collected daily to weekly (August and September, 2019) and showed no toxicity and no exceedance of MDMER criteria.
 - o In October 2019, the KIA conducted a sample analysis of the lake bed sediments in Mammoth Lake. The report concluded the seepage did not have a measurable

impact on metal quantities of the Mammoth Lake sediments. In 2020, follow-up lake bed sediment samples were analyzed and support the 2019 conclusions.

- Receiving environment water quality monitoring in Mammoth Lake is ongoing under the CREMP (Section 3.1 above), and through this analysis it was determined that any potential change in water quality caused by the WRSF pond leaking into Mammoth Lake had an indistinguishable effect on water quality.
 - Overall, results of the 2020 environmental monitoring indicates that there were negligible effects from the WRSF pond seepage on the water quality and sediments in Mammoth Lake. This coincides with the conclusions from the 2019 Mammoth Lake Sediment Sampling Report completed by the KivIA in November 2019.
 - Mitigation measures in 2020 consisted of:
 - Maintained low water level in the WRSF Pond (per Meadowbank Dike Review Board recommendation).
 - Promotion of permafrost penetration in the WRSF Dike through strategic snow removal, additional thermal cover material, freeze back performance review.
 - Construction of a water collection system.
 - These measures appear to have been effective, and no flow was observed at the toe of the WRSF Dike in 2020.
 - Future mitigation measures will include maintaining a low water level in the WRSF Pond again in 2021, along with measures to monitor permafrost penetration in the WRSF Dike.
- *Seepage at pit wall and pit wall freeze/thaw and permafrost aggradation*
- Seepage has been observed from the south and west walls in Whale Tail Pit.
 - Pumping of this seepage along with pit inflows to Quarry 1 occurred from January – April, followed by pumping to the Whale Tail Attenuation Pond (June – December).
 - Instrumentation (piezometers and thermistors) have been installed in the south wall for monitoring water levels and permafrost aggradation.

3.3 WATER QUALITY MONITORING AND MANAGEMENT PLAN FOR DIKE CONSTRUCTION AND DEWATERING

3.3.1 Objectives

The Water Quality Monitoring and Management Plan for DiKE Construction and Dewatering (the Plan; Version 1, January, 2017) was developed to provide details of water quality monitoring and management actions for dike construction and dewatering activities for the Whale Tail Pit Project. Activities monitored and reported under this plan include the construction of two dewatering dikes (Whale Tail DiKE and Mammoth DiKE, in 2018 and 2019), and the dewatering of Whale Tail Lake – North Basin (Whale Tail North; 2019 – 2020).

Version 3 of this Plan (May 2020) describes monitoring and management actions associated with the Whale Tail Pit Expansion Project. Activities monitored and reported under Version 3 of the Plan include construction of the IVR Dikes, dewatering of Lake A53 for the construction of the IVR attenuation pond and dewatering of various waterbodies to construct the IVR Pit and Waste Rock Storage Facility.

Water quality monitoring includes several parameters (e.g., nutrients and metals), but TSS and turbidity (primarily as a surrogate for TSS) are the major drivers of management and mitigation actions during dike construction and dewatering. The Plan is designed to prompt mitigation measures to control the releases of Total Suspended Solids (TSS) and to reduce unacceptable changes to water levels in the receiving environment.

A report on Water Quality Monitoring for DiKE Construction and Dewatering is provided annually. The objective of this report is to:

- Describe the implementation of mitigation measures that were planned in conjunction with dike construction and dewatering to control the release of total suspended solids (TSS) in the environment and thereby avoid and mitigate serious harm to fish and fish habitat;
- Describe results of water quality and lake level monitoring that were conducted in accordance with the Plan (effluent and receiving environment); and
- Describe any supplemental management actions that were implemented based on monitoring results to ensure impacts to fish and fish habitat remain within predictions.

3.3.2 2020 Results

Complete results of the 2020 Water Quality Monitoring Report for DiKE Construction and Dewatering are provided in the 2020 Annual Report to the NIRB and summarized below.

In 2020, no dike construction activities occurred.

Dewatering of Whale Tail North began in 2019 and was completed on May 15, 2020, so water quality monitoring results from January – May 2020 are reported here. However the fish-out of this area was complete in 2018 so mitigation measures for the protection of fish at the location of the intake are not discussed here. Dewatering of the IVR area waterbodies also occurred in 2020

(August and September) and results of associated water quality monitoring and mitigation are described.

During dewatering, standards for the protection of fish and fish habitat (mitigation measures) were implemented according to the Plan. These mitigation measures consisted of locating intake pipes at a sufficient distance from shore (minimum 10 m) and in the deepest water areas. Photos of the dewatering process are available in the construction summary report for IVR dewatering⁸. According to the Plan, additional mitigation measures or adaptive management actions are implemented as required during dewatering, based on daily monitoring results. As described below, no exceedances of monitoring thresholds or regulatory criteria occurred, so no adaptive management actions were required and sediment/erosion control measures were considered to be effective.

Water quality monitoring for dewatering effluent from Whale Tail North and the IVR waterbodies that was sent directly to Whale Tail South (with or without TSS treatment, as required) occurred daily using a sampling valve located onshore just prior to the discharge point (Whale Tail South). No exceedances of NWB Type A Water License criteria for the Short-Term Maximum (STM) or the Maximum Monthly Mean (MMM) occurred. Based on standard operating procedures identified in the Plans, supplemental management actions or mitigation measures were therefore not required in 2020.

Receiving environment monitoring at the discharge location (Whale Tail South; location ST-DD-8 in Figure 5) was also conducted approximately weekly for TSS, according to the Plans. No NWB Water License criteria apply in this location, and results are reviewed against CCME guidelines, for reference. No exceedances of the long-term exposure guideline (background + 5 mg/L) occurred.

Water level monitoring for Whale Tail South and Mammoth Lake is also reported under these Plans while dewatering activities are ongoing. In 2019, pumping of water from Whale Tail South to Mammoth Lake was required to manage water levels after record rainfall occurred in that year. Construction of the South Whale Tail Channel between Lake A20 and Mammoth Lake was completed in April 2020, and this channel now passively manages water levels in Whale Tail South. Flooding of Whale Tail South was complete in 2019, when a peak water level of 155.8 masl was reached. Maximum water levels in Whale Tail South in 2020 reached 155.7 masl following freshet (June 17), and declined to a low of 155.1 masl on December 27, 2020 (Figure 6a and b). This range is slightly lower than FEIS Addendum modelling results, which predicted that a water level near 156.0 masl would be maintained throughout the operations phase. This change follows an amendment to the final design of the South Whale Tail Channel prior to construction in early 2020. In order to help preserve integrity of the Whale Tail Dike, the inlet invert elevation was lowered by 0.5 m, to 155.3 masl. Peak operational water levels moving forward are therefore predicted to be lower than the 156.0 masl mark, and are expected to continue to vary seasonally as observed in 2020.

⁸ Construction Summary Report for Whale Tail Phase 2 Dewatering - Available here: <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1830%20Agnico/3%20TECH/D%20CONSTRUCTION/D16/210204%202AM-WTP1830%20Whale%20Tail%20Dewatering%20Phase%202%20Construction%20Summary%20Report-IMLE.pdf>

Figure 6a 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. Figure 6b more closely examines this variability for the period since flooding began (2019), and demonstrates in particular how the very rapid flood peak that is observed during freshet with daily water level measurements is substantially smoothed when monthly means are plotted for better comparison with FEIS models.

In 2020, water levels for Mammoth Lake (Figure 7) ranged from 152.2 masl (August 14 and November 12) to 153.0 masl (May 28). A detailed water balance with water level predictions for Mammoth Lake was not a component of FEIS documents, precluding a quantitative comparison to measured water levels. However, to date, water levels have not declined below available baseline measurements.

A discussion of changes in water levels in relation to FEIS predictions for impacts to fish and fish habitat is provided in Section 5.2.

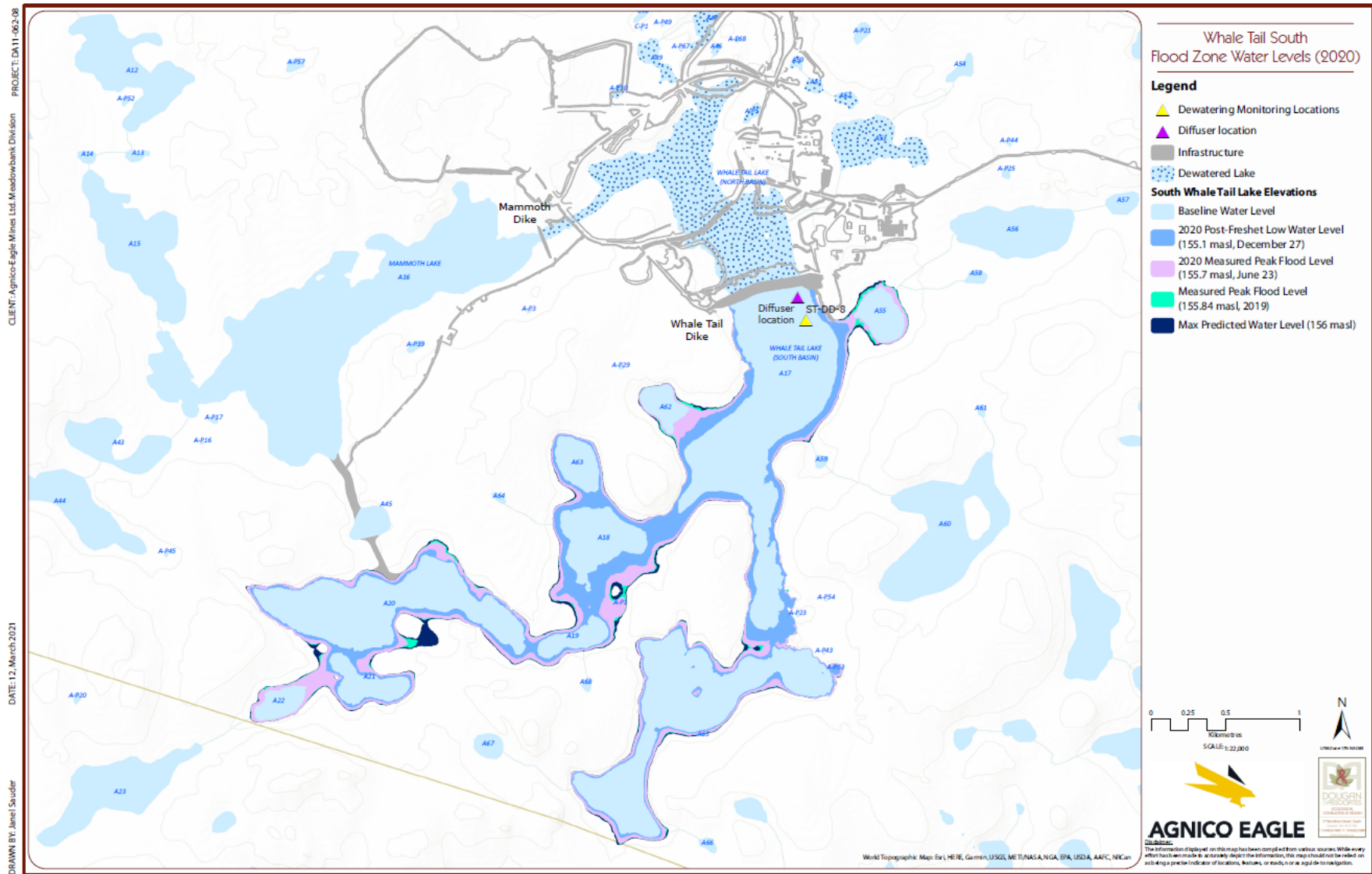


Figure 5. Whale Tail South flood zone water levels and water quality monitoring stations in 2020 (from the 2020 Water Quality Monitoring Report for Dike Construction and Dewatering, an appendix of the 2020 Meadowbank Complex Annual Report to the NIRB).

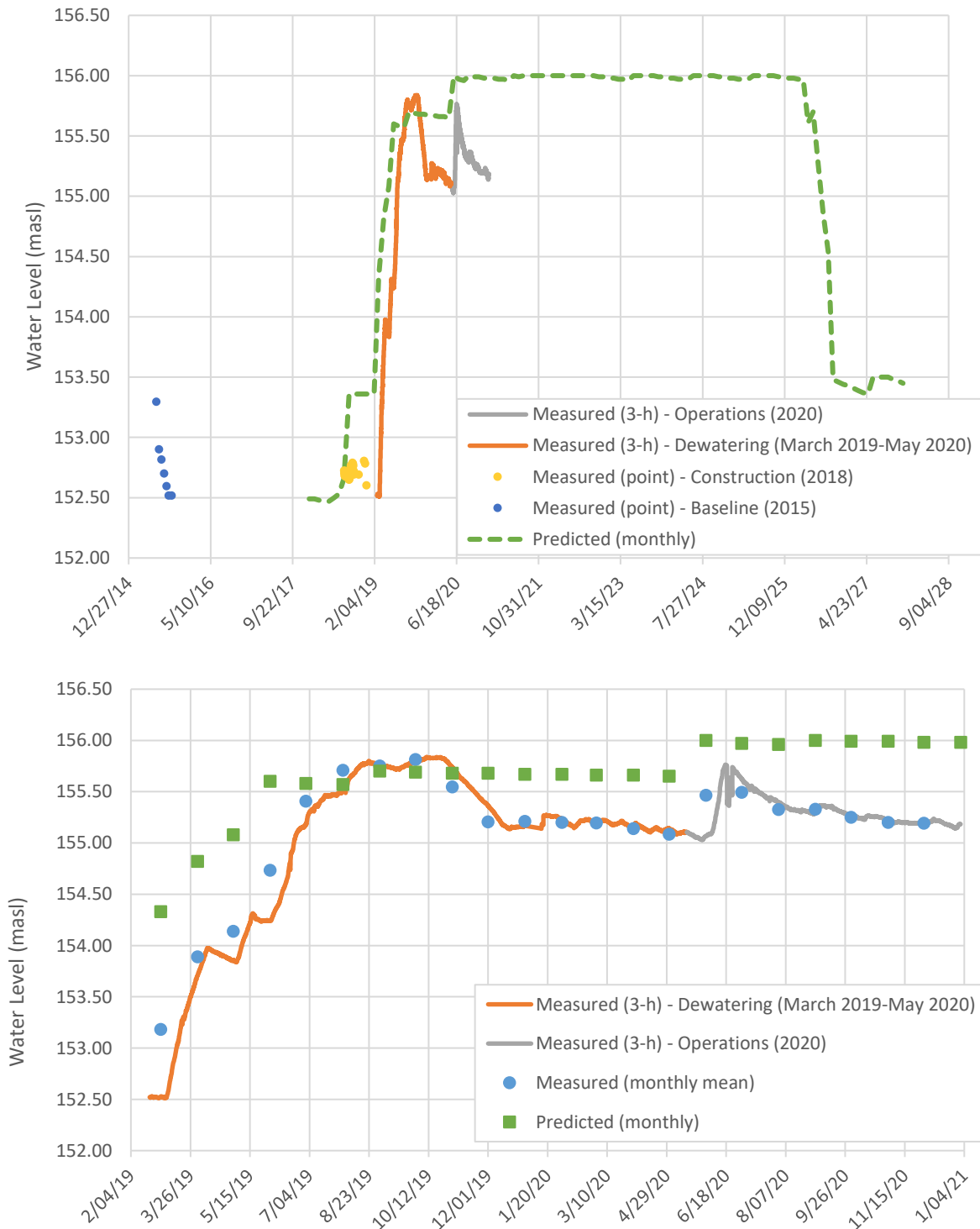
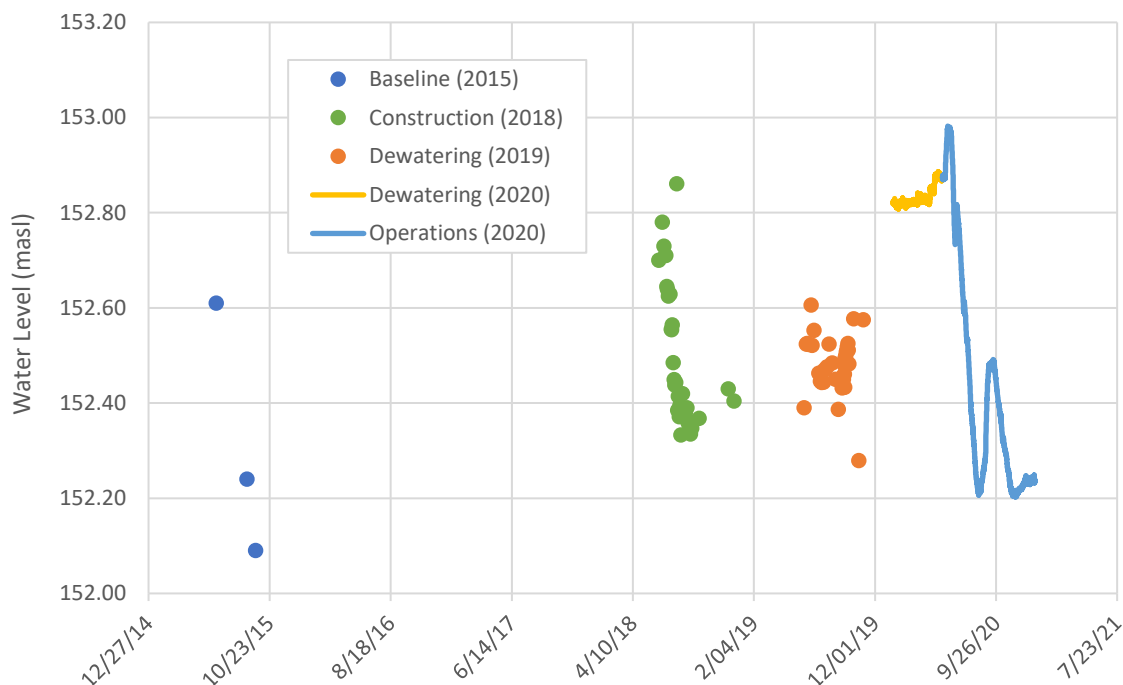


Figure 6a and b. Measured (3-h interval and monthly mean, as indicated) and predicted water levels in the Whale Tail South flood zone. Predicted water levels from FEIS Addendum for the Whale Tail Pit Expansion Project, Appendix 6-O, Table D-14. Monthly mean water levels are plotted by the month start date.



concerns (installation of culverts along Road 24). Since actual erosional concerns causing impact to a fish-bearing waterway were not observed, this is not considered a contingency mitigation measure, but is reported for transparency.

Under the Blast Monitoring Plan, four exceedances of blast monitoring thresholds occurred, and mitigation measures as described in the Plan were effective at eliminating ongoing exceedances, so no contingency mitigation measures were required.

Under the Water Quality Monitoring and Management Plan for Dike Construction and Dewatering, no monitoring thresholds were exceeded and therefore no supplemental management actions (e.g. cessation of discharge) as described in the Plan were required.

Under the Water Quality and Flow Plan, no exceedances of criteria for regulated discharge occurred, so no supplemental management actions (e.g. cessation of discharge) were required. No new issues related to seepage/runoff were identified in 2020, but seepage issues related to WRSF Dike and Whale Tail Dike were identified in 2019, and mitigation measures were implemented in 2019 and 2020. As described in Section 3.2.2, in 2020 these consisted of:

- 2020 WRSF Dike seepage mitigation
 - o WRSF pond pumping to maintain low water head.
 - o Promotion of permafrost penetration in the WRSF Dike through strategic snow removal, additional thermal cover material, freeze back performance review.
 - o These measures appear to have been effective, and no flow was observed at the toe of the WRSF Dike in 2020.
- 2020 Whale Tail Dike seepage mitigation
 - o Intensive dike grouting campaign to reduce seepage flow.
 - o A pumping system is being installed, planned to be completed in 2021.

Results of the CREMP are synthesized annually in the CREMP Report. According to this report, no unpredicted, mine-related changes were observed with the potential to adversely affect aquatic life, so no supplemental monitoring or other adaptive management actions are recommended for 2021 beyond routine monitoring.

Overall, no new contingency mitigation measures outside of the scope of existing management plans or previously identified seepage events were required in 2020 for the protection of fish and fish habitat.

SECTION 5 • VALIDATION OF FEIS-PREDICTED IMPACTS

According to Condition 3.1.1 of 16-HCAA-00370, the following sections are intended to assess the effectiveness of the monitoring programs in validating changes to fish and fish habitat predicted in the Project FEIS.

This is accomplished through a review of the impacts to fish and fish habitat predicted in the Whale Tail Pit Project FEIS (Agnico Eagle, 2016; Volume 6, Section 6.5) and FEIS Addendum for the Whale Tail Pit Expansion Project (Agnico Eagle, 2018; Section 6.5), along with a comparison to the actual impacts measured through various relevant monitoring programs. Where monitoring was able to address all potential causes of impacts identified in the FEIS for this phase of the Project, the monitoring programs are considered effective.

5.1 SUMMARY OF PREDICTED AND MEASURED RESIDUAL IMPACTS

The FEIS for the Whale Tail Pit Project (Agnico Eagle, 2016) and FEIS Addendum for the Whale Tail Pit Expansion Project (Agnico Eagle, 2018) assessed potential direct and indirect effects to fish and fish habitat from Project activities. Predicted residual impacts are those expected to occur after all reasonable mitigation and avoidance measures are in place. Mitigation measures are listed in Appendix A, along with a commentary on current implementation.

For the Whale Tail site, potential residual impacts were associated with dike construction, lake dewatering, water diversion (terrestrial 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 (i.e. measured impacts) to date (2019 and 2020) are provided in Table 2.

Table 2. 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 Table 3-C-7). *Effects Pathways specific to the Expansion Project are in italics.* NA = not assessed. *FEIS values differ slightly from those calculated under the Whale Tail Pit Fish Habitat Offsetting Plan (March, 2018) due to a difference in assumed baseline water levels.

Effects Pathway	FEIS Proposed Monitoring	Current Monitoring	Predicted Impact		Measured Impact	
					2019	2020
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	<i>FEIS values</i> (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)	<i>Offsetting Plan values</i> (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. See discussion Section 5.2.
<i>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 loss or alteration of fish habitat.</i>	None	As-built Reports for IVR Pit, WRSF, Attenuation Pond	<i>FEIS Addendum values</i> (Section 6.5.4.2.2): total losses of 7.9 ha of lake/pond area; 1,155 m of stream length	<i>Offsetting Plan values</i> (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). See discussion Section 5.2.

Effects Pathway	FEIS Proposed Monitoring	Current Monitoring	Predicted Impact		Measured Impact	
					2019	2020
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. <i>Extension of flooding period for Whale Tail South due to the Expansion Project.</i>	None	Water level monitoring	Northeast Flood Zone <i>FEIS operations phase prediction (2019):</i> 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. <i>FEIS Addendum operations phase prediction (2020+):</i> Dewatered to permit construction of IVR Pit	Northeast Flood Zone <i>Offsetting Plan(s) operations phase assumption:</i> Northeast flood zone is assumed lost fish habitat.	Flooded to +3.5 m prior to pumping (see 2019 report).	Dewatered to permit construction of IVR Pit.
			Whale Tail South Flood Zone <i>FEIS Addendum operations phase prediction (2020+):</i> +3.5 m (to 156 masl); surface area increase from 369 ha (all flood zone lakes) to 513 ha, consuming Lakes A18, A19, A20, A21, A22, A55, A62, A63, A65, Pond A-P1, and Pond A-P53. 1988 m of stream habitat flooded.	Whale Tail South Flood Zone <i>Offsetting Plan(s) operations phase assumption:</i> +3.5 m (to 156 masl), resulting in 130.9 ha of flooded terrestrial zone. However, this temporary habitat was not considered part of offsetting.	NA – flooding not complete in 2019	+3.2 m to 155.7 masl (peak). See discussion, Section 5.2
The dewatering of the diked area in Lake A17 (Whale Tail Lake) and Lake A16 (Mammoth Lake) and smaller waterbodies in the	None	2018 Whale Tail Lake Fishout Report	Whale Tail Lake est. loss: 870 kg or 3346 fish IVR area waterbodies est. loss: A46 – 2.9 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

Effects Pathway	FEIS Proposed Monitoring	Current Monitoring	Predicted Impact	Measured Impact	
				2019	2020
<i>northeast area for the Expansion Project</i> will result in the removal and subsequent mortality of fish from the area during the proposed fish-out.		2020 Whale Tail Expansion Project Fishout Report	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		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
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 Trout, Arctic Char, and Round Whitefish.	None	Fish Habitat Offsetting Plan – Complementary Measures	Minor effect on fish populations (not quantified).	NA (post-flooding hydroacoustic surveys planned prior to drawdown)	
During the construction 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.	Water level monitoring	Water level monitoring	Change in Mammoth Lake mean monthly water level from baseline during open water: Construction: up to -0.16 m Dewatering: up to -0.12 m Operations: up to +0.05 m Construction Phase: Short-term (8 months) reduction in water levels causing moderate effect to population abundance and distribution of VC fish species.	Mammoth Lake water levels have not declined below baseline (see discussion Section 5.2)	
Release of treated mine effluent (including sources from sewage, WRSF pond, and attenuation pond contact) may change trophic status in Mammoth Lake, <i>Whale Tail Lake</i> , and <i>downstream waterbodies</i> in operations and closure.	Total phosphorus through 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. See discussion Section 5.2, below.
		CREMP	Phytoplankton: Increase in phytoplankton biomass and possibly altered species composition in Mammoth Lake, Whale Tail	Significant increase in phytoplankton biomass.	Significant reduction in taxa richness in WTS.

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Effects Pathway	FEIS Proposed Monitoring	Current Monitoring	Predicted Impact	Measured Impact	
				2019	2020
			Lake, A15, A12, A76 and potentially further downstream to DS1.		See discussion, Section 5.2, below.
		None (not feasible due to high variability – see 2019 report)	Zooplankton: Increase in secondary production (zooplankton) and altered species composition in Mammoth Lake and downstream lakes.	NA	
		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 2020 Fish Habitat Offset Monitoring Report (2020 Meadowbank Complex Annual Report to the NIRB) (complete results planned for 2022)	

5.2 DISCUSSION

Where impacts are exceeded or potentially exceeded based on monitoring results (as identified above), or for pathways where further details are warranted, a discussion is provided here.

5.2.1 Direct 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, plus the dewatered area between them (Whale Tail North and Mammoth Lake). 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 will be completed in 2021.

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).

5.2.2 Mammoth Lake and Downstream Water Levels

Since residual impacts on fish and fish habitat due to reduced water levels in Mammoth Lake were predicted, but those predictions were not quantitative, a discussion is provided here.

FEIS and FEIS Addendum predictions indicated that during the construction and closure phases, water diversions would result in reduced water levels in Mammoth Lake and downstream locations, affecting fish and fish habitat (FEIS Addendum, Section 6.5.4.3.2).

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, though this effect was not further quantified. The duration of impacts (reduced water levels) was expected to last up to 8 months during the construction phase, and up to 19 years during the closure phase, after which time baseline flows would be fully re-established.

Since this qualitative determination of impacts to fish and fish habitat was based on predicted changes to water levels, it can be assessed through a comparison of measured water levels in the impacted system (Mammoth Lake) with the FEIS model predictions.

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 7 (Section 3.3.2), along with available baseline measurements (2015) and 2020 piezometer-based monitoring results.

As shown in Table 3, FEIS predictions (Agnico Eagle, 2016 - Appendix 6-E) indicated that mean monthly water levels in Mammoth Lake would decline up to 16 cm below baseline during the construction phase (2018), and 12 cm below baseline values during the dewatering phase (2019). Predictions for the operations phase (2019 – 2025) 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, prior to a decline during closure (2026 – 2051).

Modeled mean monthly baseline water levels were not specified in the FEIS documents, and measured baseline data for Mammoth Lake is only available for 3 time points in 2015. As a result, quantitative comparison of measured values to FEIS predictions is difficult using available data. However, to date, measured water levels have not declined below baseline values measured in 2015.

Table 3. Predicted change in water levels from baseline in Mammoth Lake during the construction and dewatering phases (from FEIS Appendix 6-E) and operations and closure phases (from FEIS Addendum Section 6.3.3.1.4.2, Table 6.3-3) under mean monthly discharge scenarios.

Project Phase	June	July	August	September	October
Construction (m)	-0.16	-0.16	-0.11	-0.14	-0.13
Dewatering (m)	-0.12	-0.04	-0.05	-0.09	-0.10
Operations (m)	+0.05	+0.02	+0.03	+0.04	+0.03
Closure (m)	-0.20	-0.20	-0.14	-0.14	-0.13

5.2.3 Lake Ecosystem Productivity

Since residual impacts on fish and fish habitat from 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 water management and effluent discharge. Increased phytoplankton biomass and possibly altered species composition were 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). Concentrations were predicted to be largely within the

mesotrophic range for WTS during operations, to a maximum of 20 µg/L (in 2026). Predicted values are shown in Figure 8. In 2019 and 2020, concentrations of nutrients were generally elevated compared to baseline values in Mammoth Lake and WTS (2020 CREMP Report, Section 5.3.2). While some measurements of phosphorus exceeded monthly FEIS predictions (particularly in WTS; Figure 9 below), all were within one order of magnitude (the level of uncertainty assigned to these predictions in the FEIS), and all concentrations were below or within predicted trophic levels.

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 10, 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.

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. Given that 2020 was the first year with a significant decrease in richness at WTS, there is uncertainty as to whether this is a mine-attributable effect, or is the result of natural variation. Ongoing monitoring will help to determine if changes in phytoplankton community metrics are mine-related.

No significant mine-related changes in benthic invertebrates were observed in 2019 or 2020, 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. Those results are expected in 2022.

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.

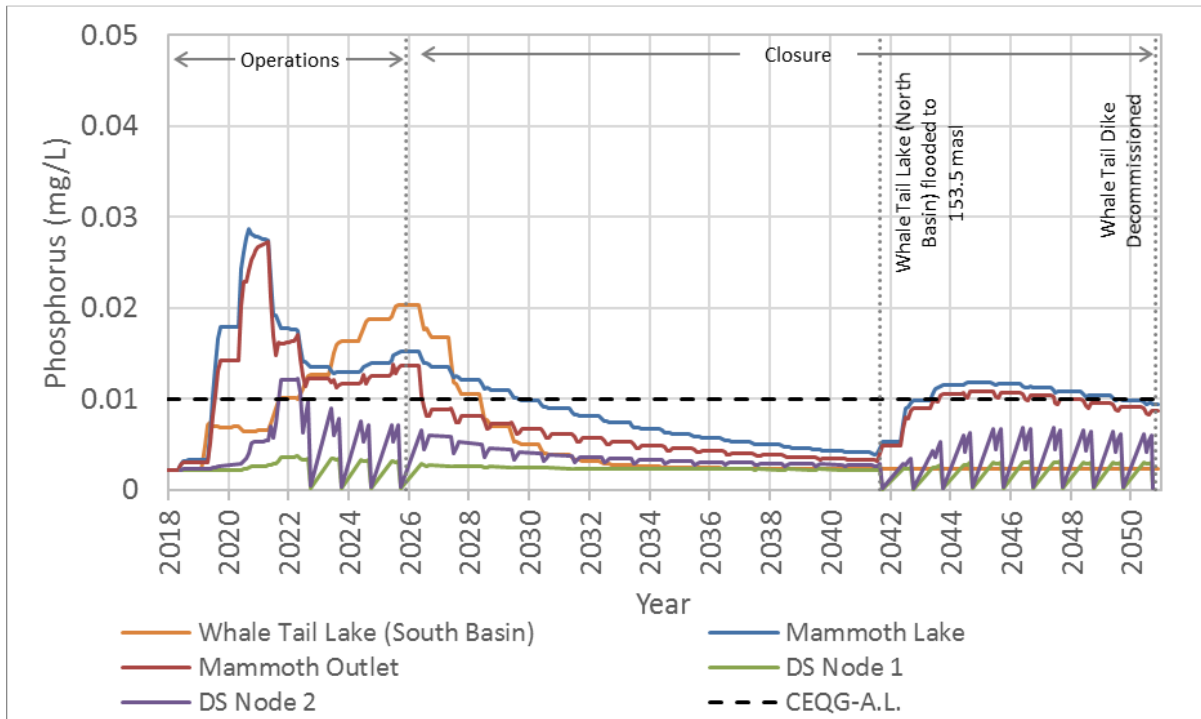


Figure 8. Predicted concentrations of phosphorus for various receiving environment locations (from FEIS Addendum for Whale Tail Pit Expansion Project – Appendix 6-H, Section 4.1.3).

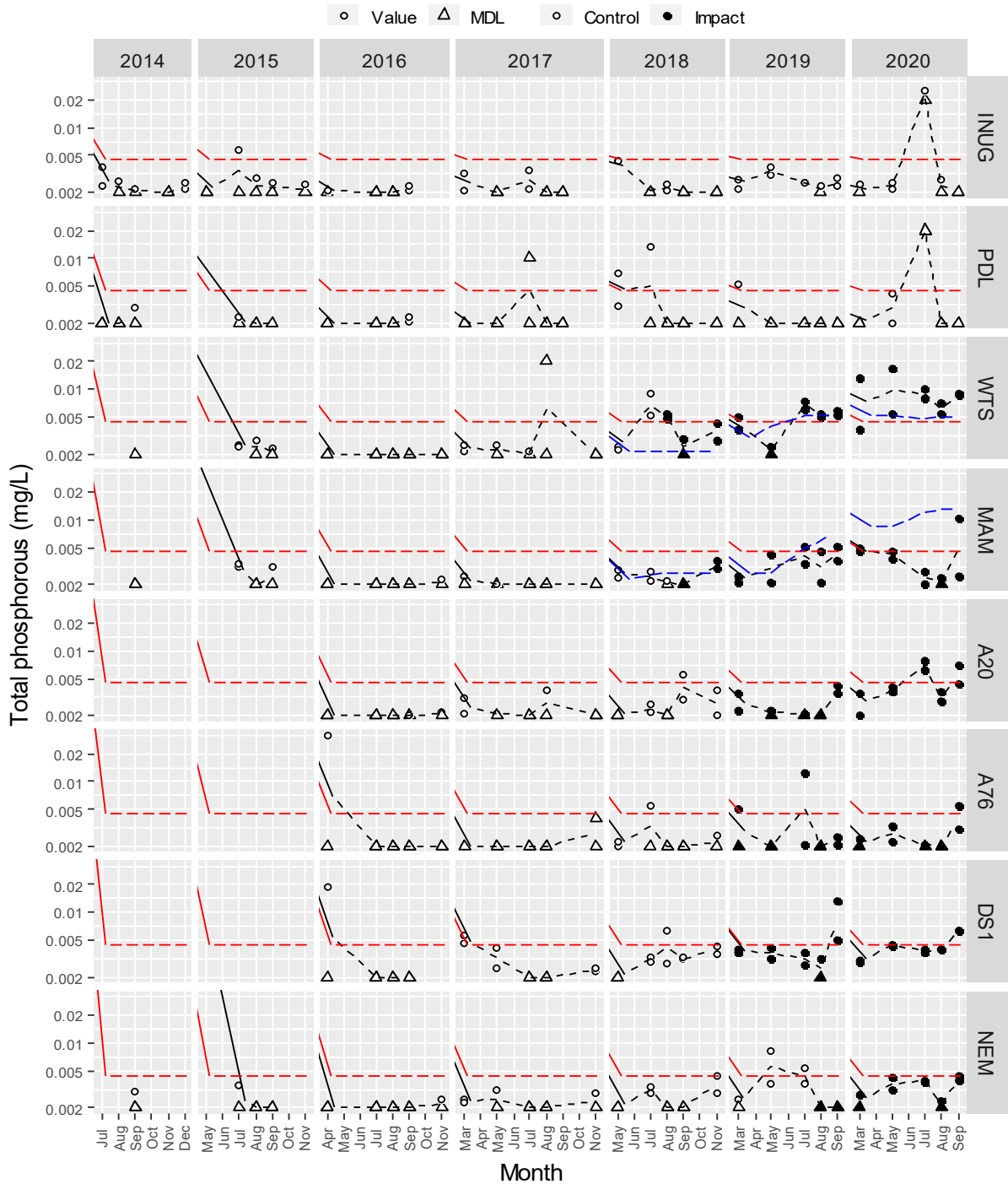


Figure 9. Total phosphorus in water samples from Whale Tail study area lakes since 2014. Red dashed line indicates CREMP trigger value. Blue dashed line indicates FEIS Addendum model prediction. The detection limit was adjusted for some July 2020 samples from 0.002 mg/L to 0.010 mg/L or 0.020 mg/L. From the 2020 CREMP Report, an Appendix of the 2020 Meadowbank Complex Annual Report to the NIRB.

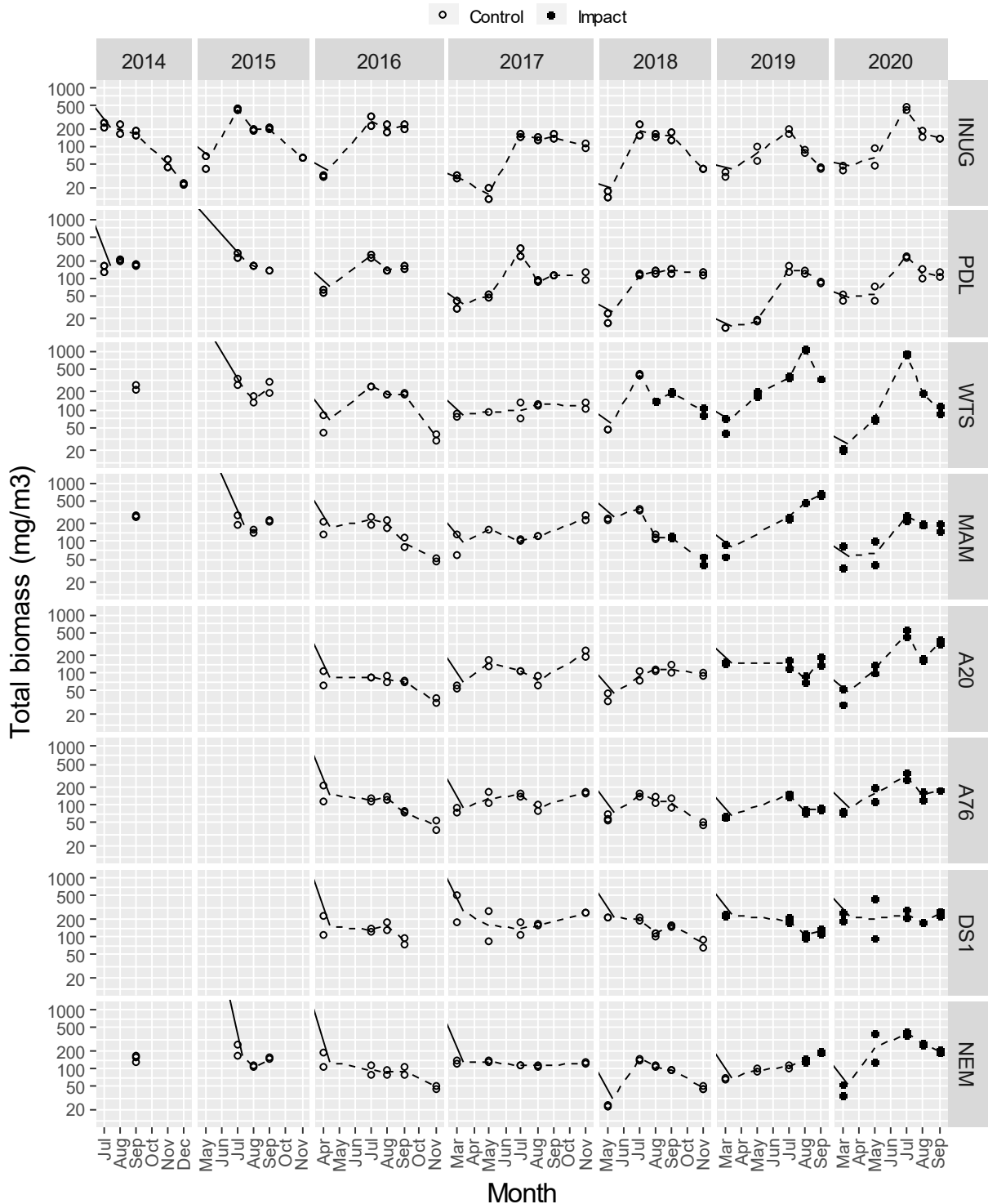


Figure 10. Total phytoplankton biomass (mg/m³) from the Whale Tail Pit study lakes since 2015. From the 2020 CREMP Report, an appendix of the 2020 Meadowbank Complex Annual Report to the NIRB.

5.2.4 Whale Tail South Flooding

Impacts to fish and fish habitat were predicted as a result of terrestrial flooding in the Whale Tail South area.

FEIS (Agnico Eagle, 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 6 (Section 3.3.2). To help preserve integrity of the Whale Tail Dike, construction designs for the South Whale Tail Channel were changed in early 2020. The inlet invert elevation was decreased by 0.5 m from the original plans, to an elevation of 155.3 masl. As a result, operational water levels in the Whale Tail South area are lower than the FEIS prediction of 156.0 masl. In 2020, measured peak water levels reached 155.7 masl on June 17, and post-freshet low water levels declined to 155.1 masl on December 27, 2020. Similar seasonal variations are expected moving forward. 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.

To fulfill conditions of the *Fisheries Act* Authorization 20-HCAA-00275 for the Whale Tail Pit Expansion Project, Agnico will develop a pre-offsetting ecological monitoring program to assess the suitability of flood zones in Whale Tail South as fish habitat, prior to construction of the A18 sill that will be used to maintain elevated water levels permanently.

5.3 EFFECTIVENESS OF MONITORING

Based on the results in Table 2, 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 was discussed in the 2019 report.

SECTION 6 • CONCLUSION

As described in **Section 2** of this report, all of the measures and standards to avoid and mitigate serious harm to fish, as identified in Section 2 of FAA 16HCAA-00370 and 20HCAA-00275 were implemented in 2020.

Based on the results of the associated monitoring programs (**Section 2 and 3**), no new contingency mitigation measures outside of the scope of existing management plans or previously identified seepage events were required in 2020 for the protection of fish and fish habitat (**Section 4**).

These and other mitigations measures (see Appendix A) were therefore considered effective in limiting impacts to fish and fish habitat to those predicted (**Section 5**) and authorized.

APPENDIX A

Summary of FEIS-Designed Mitigation Measures

A complete list of the Project's mitigation measures related to fish and fish habitat, as designed in the FEIS is provided in Table A-1, along with a commentary on implementation in 2020.

Table A- 1. Mitigation measures described in the FEIS Addendum (Agnico Eagle, 2018; Table 3-C-7) to reduce impacts of the project to fish and fish habitat, and commentary on current implementation.

Project Activity	Planned Mitigation Measure (FEIS Addendum, Table 3-C-7)	Implementation (2020)
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.	Yes (winter construction of SWTC)
	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
	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 - Mine Waste Rock Management Plan
	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	Yes - Mine Waste Rock Management Plan

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Project Activity	Planned Mitigation Measure (FEIS Addendum, Table 3-C-7)	Implementation (2020)
	results used to determine appropriate mitigation measures (e.g., prevent runoff from entering waterbody or watercourse).	
	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
	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
	In-stream works will be in winter, when possible, to avoid increased TSS and turbidity, and changes to water quality	Yes
	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)	N/A
	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.	Yes (winter construction of SWTC)
	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	N/A – no bridge installation
	Disturbed areas along the streambanks will be stabilized and allowed to revegetate upon completion of work	Yes – streambanks allowed to revegetate
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 – Water Quality Monitoring Plan for Dike Construction and Dewatering
	Best management practices for erosion and sedimentation control (e.g., ground cover, silt fences and curtains, runoff management), where needed.	Yes – Water Quality Monitoring Plan for Dike Construction and Dewatering
	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 – Water Quality Monitoring Plan for Dike Construction and Dewatering
	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 – Water Quality Monitoring Plan for Dike Construction and Dewatering
	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	Yes – Water Quality Monitoring Plan for Dike Construction and Dewatering

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Project Activity	Planned Mitigation Measure (FEIS Addendum, Table 3-C-7)	Implementation (2020)
	thresholds, a review of local conditions and activities will be conducted.	
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
	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
	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

Project Activity	Planned Mitigation Measure (FEIS Addendum, Table 3-C-7)	Implementation (2020)
	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 Plan
	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 stored at least 31 m away from the high water mark of any waterbody.	Yes
	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	Adherence to Water Management Plan	Yes – Water Management Plan

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Project Activity	Planned Mitigation Measure (FEIS Addendum, Table 3-C-7)	Implementation (2020)
Management – effluent release	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