MELIADINE GOLD PROJECT

2019 Annual Report

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

Prepared by:
Agnico Eagle Mines Limited – Meliadine Division

April 2020

TABLE OF CONTENTS

SECTION 1. INTRODUCTION....12

SECTION 2. SUMMARY OF ACTIVITIES....13

2.1 2019 Activities....13
2.1.1 Exploration activities....13
2.1.2 Construction activities....13
2.1.3 Mining Activities....13
2.2 2020 Mine WORK Plan....17
2.3 Quarries....17

SECTION 3. WATER MANAGEMENT ACTIVITIES....18

3.1 Water Movement....18
3.1.1 Fresh water obtained from Meliadine Lake....18
3.1.2 Fresh water obtained from Meliadine River....19
3.1.3 Mine Water pumped from underground....19
3.1.4 Water discharged from CP-1 to Meliadine Lake....20
3.2 Water Balance Water Quality Model Reporting Summary....21
3.3 Additional Information....22

SECTION 4. WASTE ROCK MANAGEMENT ACTIVITIES....23

4.1 Geotechnical monitoring....23
4.1.1 Instrumentation at D-CP1....24
4.1.2 Instrumentation at D-CP5....25
4.1.3 Thermistors in the P-Area....25
4.1.4 Thermistors in Berm CP3....26
4.1.5 Thermistors in Berm CP4....26
4.1.6 Other Thermistors....26
4.2 Geochemical Monitoring....27
4.2.1 Mine development waste rock....28
4.2.2 Containment and Sedimentation Ponds....29
4.2.3 Filtered Tailings....30
4.2.4 Filtered Tailings Supernatant....31
4.3 Waste Rock Volume....32
4.4 Tailings Storage Facility....33
4.4.1 Tailings Storage Facility Capacity....33
4.4.2 Tailings Freeze-back and Capping Thickness....33

SECTION 5. WASTE MANAGEMENT ACTIVITIES....34

5.1 Landfill Monitoring, Waste Rock Storage Facility....34
5.2 Incinerator....35
5.3 Additional Information....38

SECTION 6. SPILL MANAGEMENT....39

SECTION 7. MONITORING 46

7.1 Aquatic ecosystem monitoring program (aemp) 46
7.1.1 Peninsula Lakes Summary and Conclusions 47
7.1.2 Meliadine Lake Summary 48
7.1.3 Meliadine Lake Conclusions 48
7.2 MDMER and EEM sampling 50
7.3 Mine site water quality 52
7.3.1 *Licensed Water Sampling Stations* 52
7.3.1.1 MEL-1 Raw water supply intake at Meliadine Lake 52
7.3.1.2 MEL-2 Raw water supply intake at Pump, A8 or other Lakes 52
7.3.1.3 MEL-5 Bermed Fuel Containment Facilities 53
7.3.1.4 MEL-6 Landfarm Treatment Facility 53
7.3.1.5 MEL-7 Effluent from Exploration camp STP 53
7.3.1.6 MEL-8 Point of discharge or runoff from the Non-Hazardous Waste Landfill 53
7.3.1.7 MEL-SR-1-TBD 53
7.3.1.8 MEL-11 Water Intake 54
7.3.1.9 MEL-12 Water treatment plant (Pre-treatment) 54
7.3.1.10 MEL-03-01 Reference area in Meliadine Lake (MDMER reference station) 54
7.3.1.11 MEL-13 Mixing Zone in Meliadine Lake (MDMER exposure station) 54
7.3.1.12 MEL-14 Water treatment plant (Post-treatment) 55
7.3.1.13 MEL-15 Local Lake E3 56
7.3.1.14 MEL-16 Local Lake G2 56
7.3.1.15 MEL-17 Local Pond H1 57
7.3.1.16 MEL-18 Local Lake B5 57
7.3.1.17 MEL-19 CP-2 57
7.3.1.18 MEL-20 CP3 57
7.3.1.19 MEL-21 CP4 57
7.3.1.20 MEL-22 CP-5 57
7.3.1.21 MEL-23 CP-6 57
7.3.1.22 MEL-24 Seepage from the landfill 57
7.3.1.23 MEL-25 Secondary Containment at the Itivia Fuel Storage Facility 57
7.3.1.24 MEL-26 Melvin Bay Final Discharge Point 58
7.3.2 Underground sampling 59
7.3.3 QA/QC Sampling 61
7.4 Seepage 63
7.5 Visual AWAR Water Quality Monitoring 63
7.6 BLAST MONITORING 64
7.7 NOISE MONITORING 65
7.8 AIR 67
7.8.1 Air Quality monitoring 67
7.8.2 Greenhouse Gas Emissions 69
7.8.3 Climate 69
7.9 WILDLIFE MONITORING 69
7.9.1 TEMMP 70
7.9.2 Marine Environment 73
7.10 VEGETATION 73

SECTION 8. CLOSURE 75

8.1 Progressive Reclamation 75
8.1.1 Mine Site 75
8.1.2 AWAR 75

8.1.3 Quarries 75
8.2 Reclamation Costs 75

SECTION 9. STUDIES/REVISIONS/MODIFICATIONS 77

9.1 Summary of Studies 77
9.2 Summary of Revisions 77
9.3 Modifications 78

SECTION 10. OTHERS 79

10.1 Active Permits 79
10.2 Inspections 79
10.3 AWAR 80
10.4 Maritime transportation 81

SECTION 11. PUBLIC CONSULTATION 83

11.1 Community Meetings in Chesterfield Inlet 83
11.2 Community Meetings in Rankin Inlet 84
11.3 Meetings with Rankin KHTO 84
11.4 Community Liaison Committee Meetings 84
11.5 Elders 85
11.6 Site Tours for Rankin Inlet Residents 85
11.7 Community Engagement Initiatives 85
11.8 Community Coordinators Program 86
11.9 Communication 86

SECTION 12. SOCIO ECONOMIC 87

12.1 Socio-Economic Monitoring Program (SEMP, SEMC, SEMWG, SEMR) 87
12.1.1 Socio-Economic Monitoring Report (SEMR) 88
12.2 Workforce 90
12.2.1 Employee retention 91
12.2.2 Summer Student Employment Program 93
12.3 Training 93
12.3.1 Pre-employment training 93
12.3.2 Work Readiness Training Program 94
12.3.3 Mandatory Training (Site Readiness) 94
12.3.4 Training Hours 94
12.4 Training Programs 95
12.4.1 E-learning 95
12.4.2 Cross-Cultural 95
12.4.3 Career Paths 96
12.4.4 Apprenticeship Program 96
12.4.5 Adult Educator 96
12.4.6 Emergency Response Team (ERT) Training 97
12.5 General Socio-Economic Provisions 97
12.5.1 Housing and Home Ownership 97

12.5.2 Labour Force 97
12.5.3 Training and Development 97

LIST OF TABLES

Table 1. Status the construction, undertaken in 2019:....13
Table 2. Volume of Fresh Water, withdrawn from Meliadine Lake and A8 in 2019....18
Table 3. Monthly and annual quantities of freshwater in m3, obtained from Meliadine lake at monitoring stations MEL-1 and MEL-2 in 2019....19
Table 4. Monthly and annual quantities of freshwater in m3, obtained for road dust suppression activities. 19
Table 5. 2019 Monthly and Annual flow volumes of underground mine water pumped to surface....20
Table 6. 2019 Monthly and Annual volumes of water discharged from CP-1 to Meliadine lake 20
Table 7. Surface Pond Storage Capacity....21
Table 8. Summary of 2019 Permanent Dike Geotechnical Monitoring Program....23
Table 9. Ore and waste rock stockpiled on site (Tonnes)....32
Table 10. 2019 Volumes of Material Placed in TSF 33
Table 11. 2019 Volume of waste transferred to the landfarm....35
Table 12. 2019 Stack Testing Mercury and Dioxin and Furan Results 36
Table 13. 2019 Incinerator Ash Monitoring....37
Table 14. 2019 Reportable spills or limit exceedances 39
Table 15. 2019 Non-reportable spills....42
Table 16. MDMER and EEM GPS coordinates 50
Table 17. 2019 Effluent characterization results at MEL-14 and MEL-26 final discharge points 51
Table 18. 2019 MEL-14 Monthly Mean Concentrations, pH Range and Volume of Effluent (Generated) 51
Table 19. 2019 MEL-26 Monthly Mean Concentrations, pH Range and Volume of Effluent (Generated) 52
Table 20. Summary of noise monitoring results in 2019.....66
Table 21. 2019 Monthly climate data....69
Table 22. List of all active permits and authorizations for Meliadine 79
Table 23. Inspections and site visits by regulators 80
Table 24. 2019 AWAR monthly traffic summary....81
Table 25. 2019 cargo ship related to the Meliadine project....81
Table 26. Home communities of Agnico Eagle Inuit employees (by headcount) 91
Table 27. Training hours provided to Agnico Eagle employees at Meliadine....95

LIST OF FIGURES

Figure 1. Meliadine Site 14
Figure 2. Meliadine Site Sampling Locations 15
Figure 3. EEM Receiving Environment Sampling Locations 16
Figure 4. TSS results for MEL-SR samples 53
Figure 5. TSS results for MEL-03-01, MEL-13 and MEL-14 samples 55
Figure 6. TDS results for MEL-03-01, MEL-13 and MEL-14 samples 56
Figure 7. TSS results for MEL-26 samples 58
Figure 8.TDS concentration in DDH water intersect samples – 2019 60
Figure 9. Total metals (As, Cu, Pb, Ni, Zn) concentration in DDH water intersect samples – 2019 60
Figure 10. Surface Monitoring Locations 64
Figure 11. Noise receptors (points of reception - PORs) as identified in the noise impact assessment. 65
Figure 12. Reasons for voluntary terminations 92
Figure 13. Labour Pool Process 93

LIST OF APPENDICES

A-1	Drill Site Locations
A-2	Daily volume of fresh Water obtained from Meliadine Lake (MEL-1 and MEL-2)
A-3	Daily quantities, in cubic meters, of Mine water pumped from the underground
B-1	Annual geotechnical inspection report
B-2	2018 Annual Geotechnical Report Agnico Eagle Reponses and Action Table
B-3	2019 Annual Geotechnical Report Agnico Eagle Reponses and Action Table
B-4	Site wide GTC Locations and Readings
C-1	Geochemical report
C-2	Results of the tailings supernatant sampling
D-1	Hazardous Waste documentation
E-1	Stack Testing report
F-1	Toolbox presentations
F-2	Mock scenario report
F-3	Reportable spills and follow up reports
G-1	AEMP
H-1	Analysis certificates for EEM samples
H-2	Calibration results
H-3	Water monitoring stations results
H-4	Blast monitoring report
H-5	Noise monitoring report
H-6	Air monitoring report
H-7	TEMMP report
H-8	MMSO report
H-9	Raptors Report
I-1	Water Management Plan
I-2	Groundwater Management Plan
I-3	Mine Waste Management Plan
I-4	Ore Storage
I-5	Explosives Management Plan
I-6	Blast Monitoring Plan
I-7	Ammonia Management Plan
I-8	Noise Abatement and Monitoring Plan
I-9	Air Quality Monitoring Plan
I-10	OPEP
I-11	Mine Plan
I-1	Management plans updates
J-1	Daily AWAR users
J-2	Post Oil transfer Report
K-1	Public consultation Report

K-2 Public consultations and engagements
K-3 Socio Economic Monitoring Report
L-1 Training list
M-1 Project Certificate 006 terms and conditions cross-reference table

ABBREVIATIONS

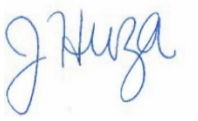
AEMP	Aquatic Ecosystem Monitoring Program
ARD	Acid Rock Drainage
AWAR	All Weather Access Road
CCME	Canadian Council of Ministers of the Environment
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
DFO	Department of Fisheries and Oceans Canada
ECCC	Environment and Climate Changes Canada
EEM	Environmental Effect Monitoring
ERT	Emergency Response Team
FEIS	Final Environmental Impact Statement
GN	Government of Nunavut
GTC	Ground Temperature Cable
KHTO	Kangiqliniq Hunter Trapping Organization
KIA	Kivalliq Inuit Association
Km	Kilometres
LSA	Local Study Area
LOM	Life of Mine
Masl.	Meters above sea level
MDL	Method Detection Limit
MF	Mid-Field
MPA	Maximum Potential Acidity
MDMER	Metal and Diamond Mining Effluent Regulations
NIRB	Nunavut Impact Review Board
NF	Near-Field
NP	Neutralization Potential
NPAG	Non-Potentially Acid Generating
NPR	Net Potential Ratio
NWB	Nunavut Water Board
OMS	Operation, Maintenance and Surveillance
PAG	Potentially Acid Generating
QAQC	Quality Assurance Quality Control
RDP	Relative Percent Difference
REF	Reference Area
SWTP	Saline Water Treatment Plant
TDS	Total Dissolved Solids
TMS	Training Management System
TN	Total Nitrogen
TP	Total Phosphorus
TSF	Tailings Storage Facility
TSS	Total Suspended Solids
STP	Sewage Treatment Plan
WTP	Water Treatment Plan

DOCUMENT CONTROL

Version	Date (YMD)	Section	Page	Comment
1	2020/04/14	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: Meliadine Environment Department

Approved By:



Jessica Huza
Environmental Superintendent

SECTION 1. INTRODUCTION

As required by water license 2AM-MEL1631 Part B Item 2 The Licensee shall file an annual report with the Board no later than March 31st in the year following the calendar year being reported. The annual report shall be developed in accordance with Schedule B.

And

As required by water license 2BB-MEL-1424 Part B Item 6 The Licensee shall file an Annual Report on the Appurtenant Undertaking with the Board no later than March 31st of the year following the calendar year being reported,

The Meliadine Gold Project operated by Agnico Eagle Mines Limited - Meliadine Division (Agnico Eagle) is located approximately 25 kilometres (km) north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson's Bay, the Project site is located on a peninsula between the east, south, and west basins of Meliadine Lake (63°1'23.8''N, 92°13'6.42''W), on Inuit owned land. The project components include the 30 km All Weather Access Road (AWAR) between Rankin Inlet and Meliadine, the Itivia fuel farm and laydown area, and the mine site.

Commercial production began at Meliadine on May 14th 2019.

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 Change Canada (ECCC), Metal and Diamond Mining Effluent Regulations (MDMER); Department of Fisheries and Oceans Canada (DFO), Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC); Kivalliq Inuit Association (KIA) and the Nunavut Impact Review Board (NIRB).

This report is written to address all of the 2019 annual reporting requirements of the project under these authorizations:

- NWB Type A water license 2AM-MEL1631;
- NWB Type B Water License 2BB-MEL1424;
- NIRB Project Certificate No. 6;
- KIA Permit KVCA07Q08;
- KIA Permit KVCA11Q01;
- KIA Production Lease KVPL11D01; and
- The Meliadine IIBA.

Reporting requirements for the MDMER have been submitted directly to ECCC; results are presented herein to comply with the NWB Type A Water License.

SECTION 2. SUMMARY OF ACTIVITIES

2.1 2019 ACTIVITIES

2.1.1 Exploration activities

As required by water license 2BB-MEL-1424 Part B Item 6i: A summary of drilling/trenching activities and progressive reclamation of drill/trench sites;

No trenches were dug in 2019 under this water licence and a total of 267 holes were drilled. Amongst these, 200 were located inside the production lease KVPL11D01 and are conducted under NWB water license 2BB-MEL-1424 . The drill site locations are located in Appendix A-1.

The contractor for the drilling was Sarliaq Orbit Garant and drilling was conducted using a diamond drill between January to October 2019. Activities included both on ice and on land drilling. Drill sites reclamation included the removal of remaining material and drill casings at each site once drilling was completed. Casings were cut at ground level when they could not be removed.

2.1.2 Construction activities

2019 Construction activities are summarized in Table 1 below:

Table 1. Status the construction, undertaken in 2019:

Activity	Status as of Dec 31, 2019
Installation of Landfarm Oil Separator System	Completed 2019
Construction of Tailings Storage Facility	Completed 2019
Start multi-year construction of Process Plant	Completed 2019
Start multi-year construction of Paste Plant	Completed 2019
West exhaust	Completed in 2019
Construction of Channels 7 and 8	Completed in 2019
Construction of Berm 1	Completed in 2019
Construction of CP-4 Pond	Completed 2019
Construction of CP-4 Channel	Completed 2019
Construction of Ore Pad 2 (OP-2)	Completed 2019
Installation of Culverts 7, 8, 10, 11, 14 and 19	Completed in 2019
Construction of SP2 and SP3	Completed 2019
Construction of SETP	Completed 2019
Construction of SWTP	Completed 2019

2.1.3 Mining Activities

In 2019, the Meliadine Gold Mine began commercial gold production on May 14th 2019.. A total of 482,735 tonnes of waste was excavated, 4,331 tonnes was used as underground rockfill and the rest was used for construction purposes. A total of 143,634 tonnes of marginal and 925,537 tonnes of ore was excavated, with 144,088 tonnes stockpiled.

The following Figures 1 to Figure 3 show the Meliadine site and sampling locations.

Figure 1. Meliadine Site

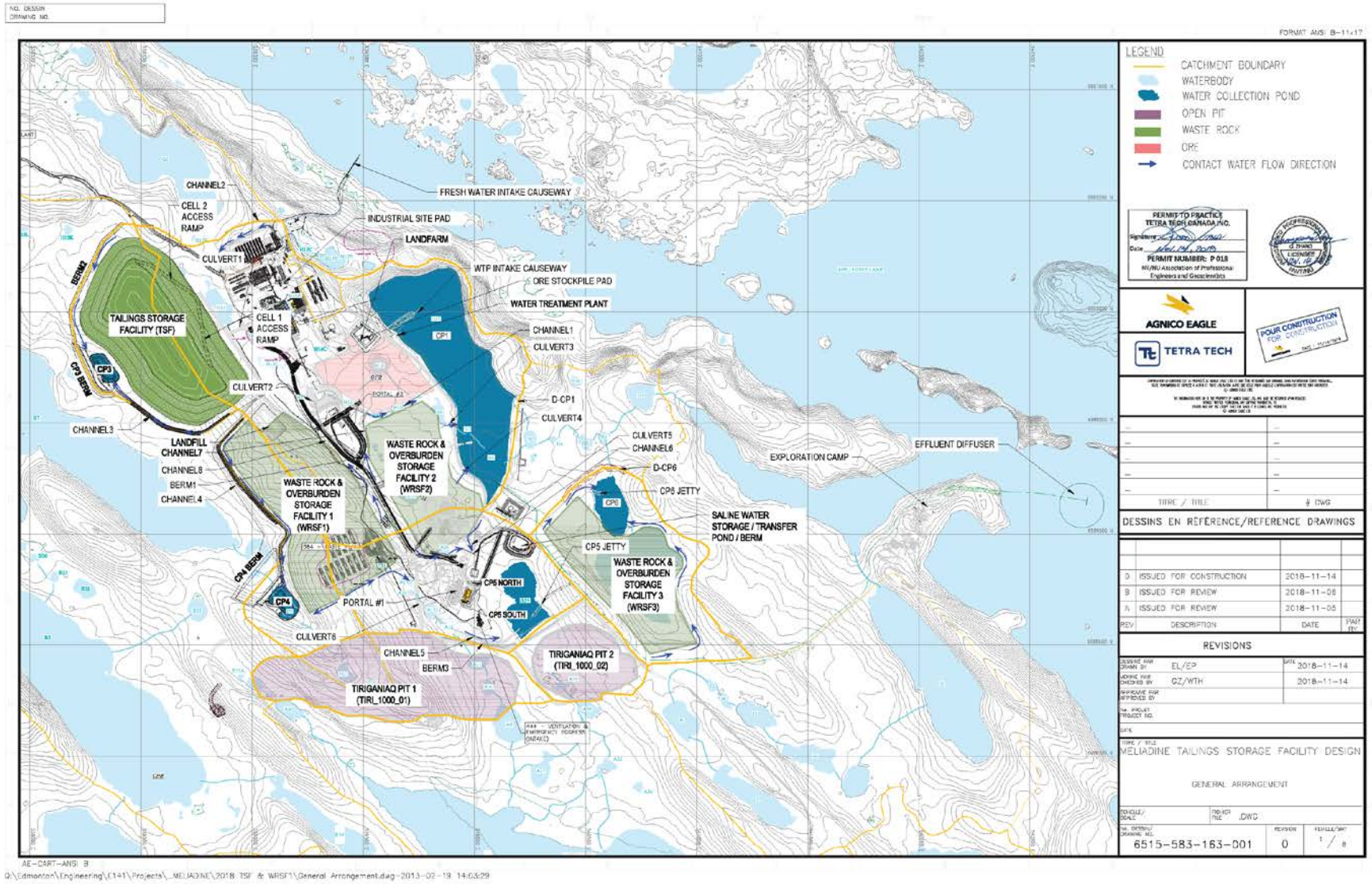


Figure 2. Meliadine Site Sampling Locations

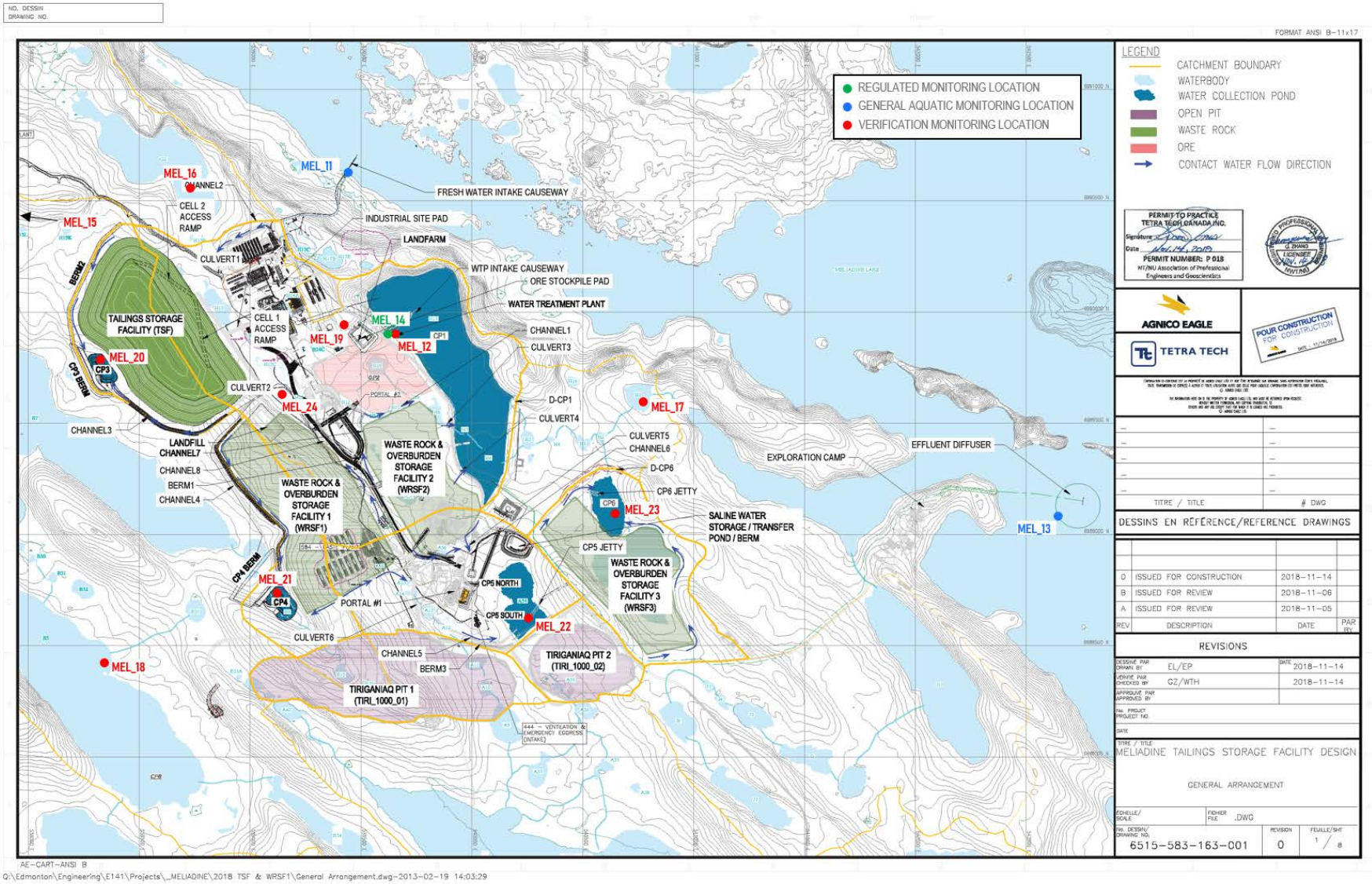
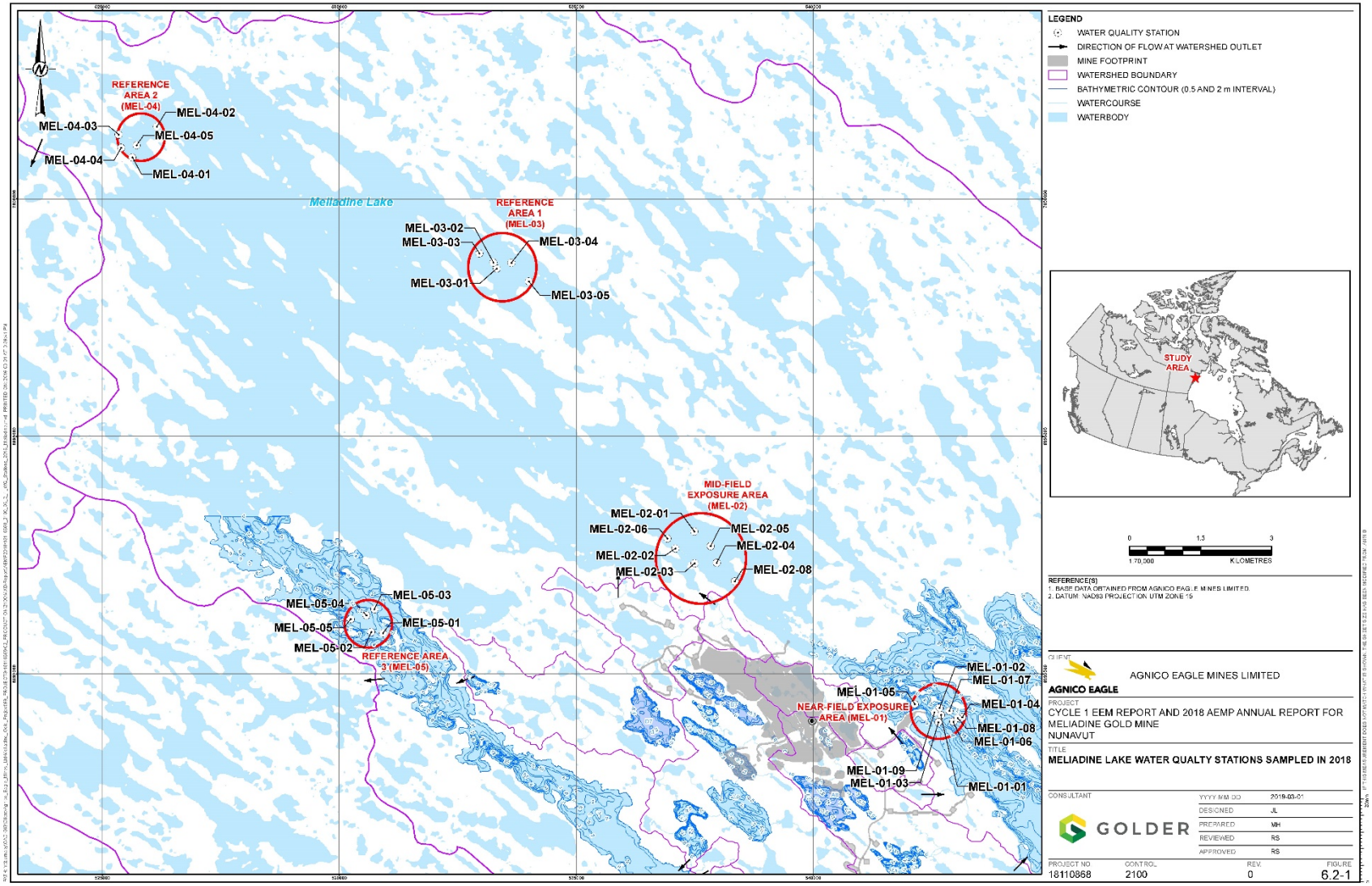


Figure 3. EEM Receiving Environment Sampling Locations



2.2 2020 MINE WORK PLAN

The 2020 Mine Plan for the Meliadine Gold Project, prepared for the Kivalliq Inuit Association as required by Production Lease KVPL11D01 is in Appendix I-11 and outlines the activities planned for the project throughout the 2020 year.

In 2020, Agnico mining plan is to operate Tiriganiaq underground mine and Tiriganiaq open pit#2 at the Meliadine mine site. A total of 2,260,000 tonnes of rock will be extracted from underground and 4,500,000 tonnes for the open pit over the year. The mine plan consists of hauling 528,000 tonnes of waste rock, 70,000 tonnes of marginal and 1,322,000 tonnes of ore to surface. Furthermore, 445,000 tonnes of tailings will be returned underground, and 348,000 tonnes of waste will remain underground as rockfill.

Waste rock and overburden will be trucked to the waste rock storage facilities (WRSFs) until the end of the mine operation, with distribution according to the operation schedule. In 2020, 1,680,000 tonnes of solid tailings will come from the Mill: 445,000 tonnes of solid tailings will be used as underground backfill and 1,235,000 tonnes will be placed in the dry stacked within the Tailings Storage Facility (TSF).

Environmental monitoring (wildlife, aquatic effects, groundwater, noise and air) will continue through 2019 in support of all operational undertakings at the Meliadine site as required by the NWB Type A Water License 2AM-MEL1631, NWB Type B Water License 2BB-MEL1424, NIRB Amended Project Certificate No.006, and MDMER regulations.

In 2020, Agnico Eagle is planning to conduct the following activities under production lease KVPL11D01:

- Completion of Saline Pond 4 (SP4);
- Construction of Pond CP6 and associated infrastructures (Berm CP6);
- Expansion of existing camp facilities (possible);
- Expansion of the Multi-Services Building facility (MSB) (possible);
- and
- Finalize existing site roads.

2.3 QUARRIES

In 2019,12,178 m^3 was taken from the quarries under permit KVCA11Q01. The total amount of material taken to date under this permit is 415,817 m^3 and the maximum allowed quantity to be taken is 650,000 m^3.

In 2019, 10,549 m^3 was taken from quarries under permit KVCA07Q08 for a total of 414,188 m^3. The maximum allowed quantity is 690,000 m^3.

As required under condition 16 for permit KVCA11Q01 and KVCA07Q08, monthly reports and payments were completed in 2019.

SECTION 3. WATER MANAGEMENT ACTIVITIES

3.1 WATER MOVEMENT

3.1.1 Fresh water obtained from Meliadine Lake

***As required by water license 2AM-MEL1631, Schedule B, Item 2: Monthly and annual volume of fresh Water obtained from Meliadine Lake*.**

Monthly and annual volume of fresh Water obtained from Meliadine Lake (MEL-11 and A-8) under License type A.

A total of 299,470.70 m³ of freshwater was withdrawn from Meliadine Lake in 2019, or approximately 94.17% of the maximum allowed (318,000 m³) under the License and indicated in Table 3.

Table 2. Volume of Fresh Water, withdrawn from Meliadine Lake and A8 in 2019

	January	February	March	April	May	June	July	August	September	October	November	December	**2019 Total**
Water withdrawn, m³	3,278	12,714	19,181	20,230	25,249	23,896	28,763	35,630	30,357	32,616	32,808	34,748	**299,470.70**

As required by Water License 2BB-MEL1424 Part B, Item 6a The Licensee shall obtain the daily, monthly and annual quantities in cubic meters of all freshwater obtained from Meliadine Lake at Monitoring Station MEL-1 and MEL-2;

Monthly and annual volumes of fresh Water obtained from Meliadine Lake (MEL-1 and MEL-2) under License type B.

Daily freshwater consumption details from Meliadine Lake (MEL-1 and MEL-2) under License type B can be found in Appendix A-1.

The monthly and annual water usage volumes from MEL-1 and MEL-2 are summarized in Table 4 below; a total of 25,588.05 m³ or 24.14% of the authorized amount (290 m³/ day ~ 106,000 m³/ year) was consumed in 2019.

Table 3. Monthly and annual quantities of freshwater in m^3, obtained from Meliadine lake at monitoring stations MEL-1 and MEL-2 in 2019.

	January	February	March	April	May	June	July	August	September	October	November	December	**2019 Total**
Water withdrawn, m^3	1,292	1,819	2,294	2,374	2,462	2,074	2,445	1,676	2,518	2,582	2,714	1,337	**25,588.05**

3.1.2 Fresh water obtained from Meliadine River.

As required by Water License 2AM-MEL1631 Schedule B, Item 4: Monthly and annual volume of fresh Water obtained from Meliadine River for road dust suppression activities.

In 2019, no water was obtained from the Meliadine River for road dust suppression activities; instead, water (1,233 m^3) was withdrawn from other permitted locations, including small ponds, proximal to the All-Weather Access Road (AWAR) as indicated in Table 5.

Table 4. Monthly and annual quantities of freshwater in m^3, obtained for road dust suppression activities.

	January	February	March	April	May	June	July	August	September	October	November	December	**2018 Total**
Water obtained, m^3	-	-	-	-	-	747	396	90	-	-	-	-	**1,233**

As required by Water License 2AM-MEL1631 Schedule B, Item 3: Monthly and annual volume of fresh Water transferred to Meliadine Lake as a result of dewatering activities.

No dewatering activities where water was transferred to Meliadine Lake took place in 2019.

3.1.3 Mine Water pumped from underground

As required by Water License 2BB-MEL1424 Part B, Item 6b The Licensee shall obtain the daily, monthly and annual quantities, in cubic meters, of Mine water pumped from the underground;

And

As required by Water License 2BB-MEL1424 Part B, Item 6j: Report all artesian flow occurrences

There was no occurrences of artesian flow in 2019. The monthly and annual volumes of mine water pumped from the underground is summarized in Table 6 below.

Table 5. 2019 Monthly and Annual flow volumes of underground mine water pumped to surface

	January	February	March	April	May	June	July	August	September	October	November	December	**2019 Total**
Water pumped, m³	2718.4	1628.9	1296.7	2697.0	4062.8	5736.7	8063.9	5416.6	4303.9	47.2	244.6	814.3	**37,031**

3.1.4 Water discharged from CP-1 to Meliadine Lake

The monthly and annual volumes of water discharged from CP1 to Meliadine Lake over 2019 is summarized in Table 7 below.

Table 6. 2019 Monthly and Annual volumes of water discharged from CP-1 to Meliadine lake

	January	February	March	April	May	June	July	August	September	October	November	December	**2019 Total**
Water pumped, m³	-	-	-	-	-	-	30,614	107,540	157,912	10,707	-	-	**306,773**

Agnico Eagle was not able to complete the drawdown of CP1 in 2019. The current accumulation of contact water in CP1 meets all discharge criteria under the Metal and Diamond Mining Effluent Regulations (MDMER) and the Water Licence, with the exception of the TDS discharge criteria set out at Part F, Item 3 of the Water Licence. The current TDS discharge criteria in the Water Licence of 1,400 mg/L (i.e., maximum average concentration) referenced at Part F, Item 3 is lower than necessary to remain protective of the receiving environment (i.e., required to minimize adverse effects on aquatic ecosystems), and thereby limits the management of waters at site in an appropriate manner.

The accumulation of the contact water in CP1 is primarily contributed to the high volume of precipitation during the 2019 season and the discharge constraint related to the current TDS water licence. To ensure we have capacity moving forward and to comply with the operational criteria of the design of D-CP1, CP1 is to be drawn down every year prior to freeze-up, to ensure the site has capacity for the following freshet.

3.2 WATER BALANCE WATER QUALITY MODEL REPORTING SUMMARY

As required by Water License 2AM-MEL1631 Schedule B, Item 5: Summary of reporting results for the Water Balance and Water Quality model as required in Part E Items 11-12.

Water Quantity

The Meliadine water balance model was updated in January 2019 to provide a forecast of monthly inflows, outflows, and cumulative volumes for the 2019 calendar year in CP1, CP3, CP5, Saline Pond, Underground Mine, and P-Area (P1, P2, and P3). The update to the model occurred prior to Agnico Eagle receiving ministry approval for saline effluent discharge to sea at the Meliadine site. As such, the framework of the model does not account for discharge to Melvin Bay. The model is currently undergoing further revision to account for these and other changes to the water management strategies, and to cover the mine life duration. The updated model will be provided with the 2020 Annual Report, as per Part E Item 12 of the Licence. A list of key assumptions will be provided with the updated model.

After completion of the model update, Agnico Eagle will provide year-over-year comparisons of actual volumes of water reporting to water retaining structures versus those predicted in the model. These comparisons will be provided in future annual reports. To provide a summary of current water storage on site, surface pond total storage capacities and current stored volumes are presented in Table 8.

Table 7. Surface Pond Storage Capacity

Containment Ponds	Capacity (m^3)	Occupied storage capacity at 2019 freeze-up (m^3)
CP-1	742,075*	642,514
CP-3	44,848	21,688
CP-4	48,995	20,187
CP-5	46,674*	16,639
CP-6	32,757**	-
Saline Water Storage	**Capacity (m^3)**	**Occupied storage capacity at 2019 freeze-up (m^3)**
Saline Pond 1 (SP1)	32,686	27,227
Saline Pond 2 (SP2)	78,862	76,000
Saline Pond 3 (SP3)	7,895	Emptied for winter
Saline Pond 4 (SP4)	233,122**	121,689†
P1	20,781	3,158§
P2	6,828	237§
P3	2,912***	1,821§

* Maximum operating level to allow 1:1000 24-hour rainfall

** Based on Design, subject to change based on As-Built

*** Adjusted for volume reduction due to Saline Pond 3 construction (Water Management Plan).

† Accounting for emptying of SP2 and underground storage in developments required to allow advancement of the mine plan (more information within Groundwater Management Plan).

§ No saline water additions to P-Area planned for 2020 to support potential decommissioning of P-Area (more information within Groundwater Management Plan).

Water Quality

The water quality model was updated in January 2019 to provide a forecast of monthly average TDS concentrations for the 2019 calendar year in CP1, CP3, CP5, Saline Pond, Underground Mine, and P-Area (P1, P2, and P3). This update was generated by means of a mass balance applied to the water balance model update. As such, the water quality results are limited to the framework of the model and therefore do not account for discharge to Melvin Bay. Similar to the water balance update, the water quality model is currently undergoing further revision to account for these and other changes to the water management strategies, and to cover the mine life duration. The water quality model update will be submitted with the 2020 Annual Report, as per Part E Item 12 of the Licence. A list of key assumptions will be provided with the updated model.

3.3 ADDITIONAL INFORMATION

As required by Water License 2AM-MEL1631 Schedule B, Item 23: ***Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.***

And

As required by water license 2BB-MEL-1424 Part B Item 6n: Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported

No additional information was requested in 2019.

SECTION 4. WASTE ROCK MANAGEMENT ACTIVITIES

4.1 GEOTECHNICAL MONITORING

As required by water license 2AM-MEL1631 Part I, Item 15: ***The Licensee shall submit to the Board as part of the Annual Report required by Part B, Item 2, a Geotechnical Engineer's Inspection Report. The Report shall include a cover letter from the Licensee outlining an implementation plan addressing each of the Geotechnical Engineer's recommendations.***

And as required by water license 2AM-MEA1631, Schedule B, Item 1:

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

The performance of the permanent dikes (D-CP1 and D-CP5) is assessed according to the guidelines provided in the Operation, Maintenance and Surveillance (OMS) manual for the facilities. This program consists of both documented visual inspections and geotechnical instrumentation monitoring. In 2019, visual inspections were conducted according to the following schedule:

- Bi-daily (every two days) - Conducted during freshet by a qualified engineer or technician;
- Weekly - Conducted during open water season by a qualified engineer or technician;
- Monthly – Conducted during open water season by the Agnico Eagle Geotechnical Engineer; and
- Annual – Conducted by a third party consulting engineer (Tetra Tech) during open water season.

All visual inspections are documented and include observations of cracking, settlement, seepage and deformation in addition to photographs. Any areas of movement are marked both physically on the dikes themselves by spray painting the locations and on plan drawings of the facilities in order to track changes in conditions.

In addition to the monthly documented visual inspection (during open water), a review of the operational performance and assessment of the geotechnical monitoring instrumentation is conducted every month by the Geotechnical Engineer. The schedule of collecting monitoring data in 2019 generally followed the OMS guidelines and is summarized in Table 9.

Table 8. Summary of 2019 Permanent Dike Geotechnical Monitoring Program

Instrumentation	Frequency of Data Collection
Thermistors	Bi-daily (freshet); Weekly (Open water); Monthly (Ice)
Survey Monuments	Monthly
Upstream Water/Ice Elevations	Daily (Open water); Monthly (Ice)

The performance of all other water management and earthworks structures were assessed in 2019 during the Annual Geotechnical Inspection conducted by Tetra Tech. The results of this inspection are available in Appendix B-1.

b. A comparison of measured versus predicted performance;

Based on the visual inspections and geotechnical monitoring data, the permanent water retention dikes (D-CP1 and D-CP5) are generally performing as expected, with no significant geotechnical concerns identified in 2019. Deformation, seepage and geothermal response will continue to be monitored as per the OMS guidelines throughout 2020.

No significant geotechnical concerns were noted with any other water management infrastructure during the annual inspection. The results of this inspection and detailed analysis are available in Appendix B-1 to B-4.

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

At the time of the 2019 freeze-up, water levels in CP1 were significantly higher than design specified guidelines (65.84 m October 29, 2019 versus 63.0 m OMS end of October guideline). As such, dike D-CP1 was placed into a High Risk operational situation as per the terms of the OMS in November 2019 due to the elevated risks to the structure.

Increased instrumentation monitoring occurred until freeze-back of the D-CP1 key trench was confirmed. In addition, multiple workshops and risk assessments have been held to evaluate different discharge strategies and Agnico Eagle is currently in discussion with the regulatory authorities regarding the various options.

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

No mitigation works were undertaken during 2019.

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

As-built condition was evaluated during the Annual Geotechnical Inspection (Appendix B-1). Any deviations from design and the potential impact of those deviations are discussed during the construction record (as-built) reporting completed by the Design Engineer and submitted for review as per regulatory requirements.

At the time of the Annual Inspection, all three (3) survey monuments on D-CP5 had been damaged and non-functional. In October 2019, these monuments were repaired. In addition, prisms were installed on the monuments at both D-CP5 and D-CP1 in order to improve the accuracy of the monthly surveys.

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

4.1.1 Instrumentation at D-CP1

Horizontal ground temperature cable plots (Appendix B-1) indicate a continuing warming trend in the base of the key trench over 2019, with an average increase of +0.2°C occurring over the past year. Temperatures in the key trench ranged from an average low of -8.8°C in early June 2019 to an average high of -4.3°C at the end of December 2019. Generally, the horizontal ground temperature cable nodes at the base of the

key trench have remained below -2.0°C throughout the year with the exception of HGTC-2 which experienced an equipment malfunction in June and July 2019. Some of the nodes that are located on the downstream slope of the key trench and along the foundation of the dike below the downstream slope had temperatures that rose above 0 °C, particularly HGTC-5 which has beads that extend below and possibly downstream of the rockfill shell. These nodes have less cover and are therefore more influenced by ambient temperatures.

Vertical ground temperature cable plots (Appendix B-1) indicate that the dike and foundation remained below 0 °C after November 2018 throughout the winter until June/July of 2019. The maximum depth of 0°C temperature readings ranged from approximately 2.4 m to 2.7 m in late fall of 2019. The greatest depth of 0 °C temperature readings at 2.7 m was observed in both VGTC-01 (located upstream of the liner and key trench at the end of November) and VGTC-04 (located downstream at the end of September). Similar depths and locations were observed in 2018, although warming (+0.2°C to 0.5°C) was seen in 2019. All the vertical thermistors indicate that the foundation and the lower 1 to 2 m of the dike (both upstream and downstream of the liner) remained below 0 °C during the reporting period.

D-CP1 survey monitoring points M-1 to M-6 indicate a range of total vertical displacement between 18 and 65 mm since the baseline survey using the total station in September 2017, with most of the displacement occurring in the first year after construction. The maximum vertical displacement was observed at survey marker M-1 (station 1+160) and the minimum vertical displacement was observed at survey marker M-2 (station 1+230). The measured displacement is less than the design expected maximum of 120 mm.

4.1.2 Instrumentation at D-CP5

Horizontal ground temperature cable plots (Appendix B-1) indicate a slight overall warming trend in the base of the key trench over 2019, particularly in HGTC-1 (located on the southern end of the dike). Temperatures in the key trench ranged from an average low of -7.9°C in early June 2019 to an average high of -2.4°C at the end of December 2019. All temperatures at the base of the key trench have remained below -2.0°C throughout the year.

Vertical ground temperature cable plots (Appendix B-1) indicate that the dike and foundation remained below 0 °C after November 2018 throughout the winter until June/July of 2019. The maximum depth of 0°C temperature readings ranged from approximately 2.0 m (downstream) to 3.7 m (upstream) in late fall of 2019. Similar depths and locations were observed in 2018.

D-CP5 survey monitoring points M-1 to M-3 indicate total vertical displacement between 25 mm and 54 mm since the baseline survey using the total station in September 2017. The maximum vertical displacement was observed at survey marker M-3 (station 1+240 at the northern end of the dike) and the minimum vertical settlement was seen at M-2 (station 1+210 near the middle of the dike). The measured displacement is less than the design expected 100 mm over the life of the structure.

4.1.3 Thermistors in the P-Area

DP1B thermistor (DP1B-1 and DP1B-2) data shows a maximum depth of temperatures above 0℃ at 3.7 m (elevation 67.2 m) recorded in October 2019, which is a greater penetration of thaw than was observed

in 2018. Similar volumes of water were retained in the pond during 2019 as in 2018. The nodes below the foundation remained below -1℃ during 2019.

DP2A thermistor (DP2A-1) data shows a maximum depth of temperatures above 0℃ of 3.0 m (66.64 m) in early September 2019. The maximum depth of thaw in 2019 is less than has been observed in previous years and reflects the lower volumes of water retained in the pond. The nodes within the dike foundation remained below -1℃ in 2019.

DP3A thermistor data (DP3A-1, DP3A-2, and DP3A-3) shows the maximum depth of temperatures above 0℃ varies between the three locations. The greatest depth of 0℃ was measured at the central thermistor (DP3A-2 at station 0+150); this thermistor recorded temperatures greater than 0℃ at a depth of 3.7 m at the end of October 2019. Thermistors DP3A-1 (station 0+050) and DP3A-3 (station 0+250) identify a maximum depth of 0℃ measured at 2.7 m (elevation 66.4 m), and 3.4 m (elevation 65.7 m), respectively. Reflective of the decommissioning of the P3 pond in the spring of 2019, and the subsequent consistent pumping of water from the area throughout the year, much less thaw was observed in DP3A-1 and DP3A-2 than in previous years. Slightly greater depth of thaw than in 2018 was observed in DP3A-3; although the location of this thermistor is adjacent to the newly constructed SP3.

4.1.4 Thermistors in Berm CP3

Three (3) vertical GTCs were installed in Berm CP3 after construction of the structure was completed in February 2019. The active layer within the berm (thaw depth from the top of the berm) ranged from 1.8 m to 2.1 m. Temperatures in the original ground underlying the berm remained below 0°C throughout 2019 and varied from -3.2°C to -8.7°C (as of December 31, 2019).

4.1.5 Thermistors in Berm CP4

Two (2) vertical GTCs were installed in Berm CP4 after construction of the structure was completed in May 2019. The maximum depth of thaw within the berm was approximately 1.5 m. Temperatures in the original ground underlying the berm remained below 0°C throughout 2019 and varied from -5.5°C to -12.6°C (as of December 31, 2019).

4.1.6 Other Thermistors

In addition to recently installed thermistors to monitor temperatures in and below critical water management infrastructures, numerous other thermistor cables have been installed around the mine site to monitor natural ground temperatures as part of previous ground investigation campaigns. A program to verify the working conditions of these “background” thermistors was undertaken in 2019, in order to re-focus the monitoring program now that the operational phase has commenced. Top priority (P1) is now given to reading thermistors installed in existing infrastructure, with these readings typically taken on a monthly basis. Shallow GTCs installed in areas of potential future expansion are given the next priority (P2) with a quarterly reading frequency, followed by deep thermistors in expansion areas which are read bi-yearly (P3). Also read twice per year are any additional cables located around the site (P4). The updated location of these thermistors is provided in Appendix B-4.

Only nine (9) of the previously installed site thermistors were functional in 2019. Readings taken in 2019 in the remaining operational site-wide thermistors are generally consistent with previous trends.

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

No maintenance work was undertaken in 2019 on any dikes, dams or berms as a result of settlement or deformation.

4.2 GEOCHEMICAL MONITORING

In accordance with Water License 2AM-MEL1631 Schedule B, Item 6: ***Geochemical monitoring results including:***

a. Operational acid/base accounting and paste pH test work used for waste rock designation (PAG and NPAG rock);
The acid/base accounting and paste pH test work used for waste rock designation is in the report located in Appendix C-1 and summarized below.

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;

All of the waste rock was used for construction in 2019, or temporarily stored around SP2 when it was built, as the Waste Rock Storage Facilities were not constructed.

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

All data (mine site and sedimentation/ saline ponds) can be found in the report located in Appendix C-1.

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

No leaching observations were detected on dike exposures and no pit slopes were present. Open rock slopes were visible at SP1, SP2, CP3 and CP4. No leaching was observed.

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

No environmental impact implied, as all test are NPAG with the exception of one sample and this sample was crushed and used as roadbed material underground. The results are within project predictions for no metal leaching impact.

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;

The Geochemical data associated with the Filtered Tailings is included in Appendix C-1 with a summary explained below in section 4.2.3. A discussion of the tailings supernatant, cyanide leach residue, and bleed from the cyanide destruction process is included in section 4.2.4 concurrent with the tailings supernatant.

The potential for Acid Rock Drainage (ARD) from Filtered Tailings collected in 2019 was assessed by the same approach described for waste rock, where Neutralizing Potential (NP) was provided by carbonate (NP-Ca) and Acid Potential (AP) was estimated based on total sulphur. NP-Ca ranged from 29 to 76 kg CaCo3/t, with a median of 61 kg CaCO3/t. The total sulphur ranged from 1.4% to 2.5%, with a median of 1.7%.

Based on the more conservative NP-Ca and total sulphur, all of the samples collected to date are primarily classified as uncertain with regards to ARD potential using an NPR ratio of 2, with all but two of the samples above an NPR of 1. The median was 1.4.

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

There was no rock removed from the road quarries in 2019 but there was some development of some small ponds in 2019 (CP3, CP4, and SP2). All results related to the ponds can be found in the report located in Appendix C-1.

In 2019, Agnico Eagle conducted geochemical testing on waste rock material from underground development and from the ponds that were constructed. Representative samples of this material were analyzed for Acid Rock Drainage (ARD) and metal leaching at the accredited third-party laboratory (SGS). Geochemical sampling program at Meliadine is comprised of two parts: mine development waste rock and pond material in 2019.

4.2.1 Mine development waste rock

ARD Potential

Neutralization Potential
Neutralization potential (NP) is expected to be primarily provided by calcite and dolomite, with some ankerite (Golder 2014). As a result, carbonate analysis alone would likely be appropriate for determining NP, although both methods were used (i.e. titration and direct carbonate analysis). Complete results are provided in Appendix C-1. Golder (2014) indicated that NP from carbonate analysis (NP-Ca) was the more conservative method to determine buffering capacity of the rock and this was used as input into the ARD calculation. The relationship was checked in 2019, and the relationship generally held, especially at low NP values and therefore the continued use of NP-Ca was considered conservative for estimating ARD potential.

Acid Potential
Project prediction studies indicated that the main sulphide minerals in the waste rock was pyrite, but also included arsenopyrite, lesser pyrrhotite, and chalcopyrite (Golder 2014). As a result, the main consideration for acid potential (AP) is the presence of sulphide minerals at Meliadine.

Project prediction studies were confirmed in 2019 sampling with acid-base accounting testing showing that sulphur is primarily present in the sulphide form. Sulphur ranged from below detection 0.01% to a maximum of 2.2%, with a median of 0.23%.

ARD Assessment
The potential for ARD was assessed using NP-Ca/AP ratios (or neutralization potential ratios, (NPR). AP was calculated from total sulphur. Ratios below 2 were used to indicate potential for ARD (PAG or potentially ARD generating), whereas ratios above 2 indicate low potential for ARD (NPAG).

The classification of all Meliadine waste rock samples from underground since testing began in 2017 are provided in Appendix C-1. As predicted by Golder (2014), the majority of operational muck samples collected to date were NPAG. Samples from 2017 and 2018 have also been included for ease of comparison to historical results. The one exception was a sedimentary sample with an NPR of 1.8 in 2019. This sample is not considered a risk as there is excess buffering in all other samples collected and it is only marginally below the NPAG criterion. Given the carbonate mineralogy of the Meliadine samples, the threshold for a sample to produce ARD is likely closer to an NPR of one and this sample is unlikely to produce ARD even without the buffering of any other samples. Refer to table 4.2 for the summary of ARD Guidelines to classify Meliadine Waste.

Table 4.2. Summary of ARD Guidelines used to classify Meliadine Waste

Initial Screening Criteria	ARD Potential
NPR< 1	Likely Acid Generating (PAG)
1 < NPR < 2	Uncertain
2 < NPR	Acid Consuming Non Potentially Acid Generating (NPAG)

Metal Leaching

Metal leaching was predicted by Golder (2014) to be low enough that management of waste rock to inhibit leaching was not required. However, based on project screening studies, arsenic was determined to be the main element of interest and analysis of this element (and all regulated elements) were part of operational monitoring since mining began. A statistical summary for arsenic with complete element composition results is provided in Appendix C-1. To ensure arsenic concentrations were within project predictions, results have been compiled and compared against average and maximum arsenic concentrations reported by Golder (2014). Solid phase arsenic concentrations mainly fall within or below the average concentration, with no samples exceeding the maximum concentration reported by Golder (2014).

4.2.2 Containment and Sedimentation Ponds

ARD Potential

The potential for ARD from Containment and Sedimentation Ponds samples collected in 2019 was assessed by the same approach described above for waste rock, whereby NP was provided by carbonate (NP-Ca) and AP was estimated based on total sulphur. Complete results are provided in Appendix C-1. NP-Ca ranged from 25 to 96 kg $CaCO_3$/t, with a median of 50 kg $CaCO_3$/t. Total sulphur ranged from 0.1%

to 0.4%, with a median of 0.21%. The potential for CP or SP facilities to produce ARD was based on NPR ratios, but also a sulphur limit of 0.1%, meaning that any samples with 0.1% or less sulphur would be NPAG regardless of the NPR ratio. Based on the two criteria, one of the pond samples collected was classified as PAG. However, this sample had relatively minor sulphur (~ 0.2%), would be surrounded by other rocks with excess NP, and was also crushed and used as road bedding underground. After operations cease, waterflooding will inhibit further oxidation. As a result, the risk from this one sample is assumed negligible.

Metal Leaching

The same approach taken for waste rock was applied to pond samples in terms of comparing against project prediction studies. All regulated elements were analysed in solid samples and are included in Appendix C-1. Arsenic concentrations ranged from a minimum of 12 mg/kg to a maximum of 370 mg/kg, with a median of 59 mg/kg. These values are relatively low compared to waste rock and were within project prediction studies as the maximum value reported by Golder (2010) was 8000 mg/kg. A statistical summary of all results is provided in Appendix C-1.

Based on geochemical characterization results obtained to date for the waste rock and pond samples, there is low risk for ARD or metal leaching from the materials. Results are within project prediction studies for the project. Sampling will continue in 2020, with results reviewed internally as soon as they are available and provided with the 2020 annual report.

The complete geochemical report is in Appendix C-1

4.2.3 Filtered Tailings

ARD Potential

The potential for Acid Rock Drainage (ARD) from Filtered Tailings collected in 2019 was assessed by the same approach described for waste rock where Neutralizing Potential (NP) was provided by carbonate (NP-Ca) and Acidizing Potential (AP) was estimated based on total sulphur. NP-Ca ranged from 29 to 76 kg $CaCo_3$/t, with a median of 61 kg $CaCO_3$/t. The total sulphur ranged from 1.4% to 2.5%, with a median of 1.7%. The higher sulphur in the filtered tailings compared to waste rock is a result of the sulphides associated with the gold.

Based on the more conservative NP-Ca and total sulphur, all of the samples collected to date are classified as Potentially Acid Generating (PAG) or uncertain using a NPR ratio of 2, with all but two of the samples above an NPR of 1 with a median of 1.4.

Project prediction studies in the FEIS estimated a NPR of 2.7 for the tailings, although that estimate was done using NP from titration (i.e. modified Sobek), which is slightly less conservative than the approach used herein. When the modified Sobek NP is use for the operational studies, the NPR is 1.8, slightly higher than 1.4.

Despite the PAG classification for the operational tailings samples, Agnico Eagle does not consider the tailings to pose an ARD risk for the site for a number of reasons:

- the tailings are being stored in a facility that will freeze back (i.e. re-develop permafrost) and inhibit water movement within a few years post-operations;
- placement of the tailings includes compacting by a vibrator packer and sloping to shed water off the facility, which will lower oxygen diffusion into the tailings and limit water contact, both established mechanisms to reduce ARD;
- there is enough carbonate in the tailings that ARD may never occur as the actual ratio that ARD onset is expected is much closer to 1.0;
- if ARD could develop, permafrost will develop at least one hundred years before the onset of ARD due to the amount of carbonate in the tailings and arctic climate slowing reaction rates; and
- progressive reclamation is a part of the facility management for closure, meaning a cover will be placed over most of the tailings before the mine ceases operations.

Metal Leaching

All regulated elements were analyzed in solid sample and are included in Appendix C-1. Given the presence of arsenic in the ore rock and background concentrations in the area, results for this element are summarized in the Appendix.

Arsenic concentrations ranged from a minimum of 7900 mg/kg to a maximum of 14,000 mg/kg, with a median of 10,000 mg/kg. These values are higher when compared to waste rock and the containment ponds and this is not unexpected as the ore is associated with sulphides, most predominately pyrrhotite and arsenopyrite.

Monthly monitoring of CP-3 (sampling location MEL-20) in 2019, which collects the drainage from Tailings Storage Facility (TSF), indicates that the effluent met all regulatory requirements for effluent discharge to the environment with the exception of Total Suspended Solids (TSS). The pond was designed as a collection and settling basin for TSS prior to the water being pumped to CP1. Arsenic, which is the metal of concern, had a maximum value of 0.24 mg/L, median value of 0.082 mg/L and a minimum value of 0.025 mg/L in CP-3.

4.2.4 Filtered Tailings Supernatant

Sampling of the filtered tailings supernatant began in June of 2019 with sampling occurring on a regular basis. Since this water is recycled through the mill, it also contains cyanide leach residue and the bleed from the cyanide destruction circuit. Water is filtered off the tailings from the filter press and samples are collected from the effluent downstream of the filter press. Since this effluent is recycled through the mill and is not discharged, with the exception of minor effluent associated with the filtered tailings, it is not surprising to see the metals and general parameters becoming concentrated as the mill uses little fresh water to make up the water that is entrained with the filtered tailings.

Appendix C-2 indicates the results of the tailings supernatant sampling in 2019. As can be seen from the data, as the water is recycled through the mill, the metals, TDS and other parameters have initially increased and then have stabilized while others have slowly increased. Dissolved metals are discussed below rather than total metals as there may be some interference from the solid tailings if the filter press is not functioning as per design.

For dissolved arsenic, initial values were approximately 5 mg/L when sampling was initiated and then the arsenic values generally increased until December when the arsenic values were around 13 mg/L. The

minimum value of dissolved arsenic occurred in September 2019 at 3.49 mg/L with the maximum value occurred in occurred in October at 13.4 mg/L. The dissolved arsenic median for 2019 was 8.06 mg/L. These elevated numbers are not unexpected as the gold is associated with sulphides such as arsenopyrite and the water is recycled through the mill. Total cyanide values were elevated at the start of sampling with values being as high as 910 ppm in June and decreasing to 16 ppm in December. The decrease in values are a result of the process plant commissioning the milling process and becoming more efficient in cyanide destruction. The highest value for Total Cyanide was recorded in June 23 at 910 ppm and the lowest Total Cyanide being recorded on August 25 at 5.4 mg/L. The median for 2019 was 25.0 mg/L.

It is important to state again that the water in the mill is recycled and only a small portion of the mill effluent is entrained in the filtered tailings. As discussed in section 4.4.3, Agnico Eagle is monitoring the water quality in CP-3 and the results have indicated that the effluent have met all regulatory requirements for effluent discharge to the environment with the exception of Total Suspended Solids (TSS). This water is transferred to CP-1 and is treated for TSS prior to it being discharged to the environment.

4.3 WASTE ROCK VOLUME

In accordance with Water License 2BB-MEL-1424 Part B Item 6c An estimate of the current volume of waste rock and ore stockpiled on site;

An estimate of waste rock and ore stockpiled on site is provided in the below Table 10. The monthly cumulative stockpiles vary (and can go down) according to production and construction needs.

Table 9. Ore and waste rock stockpiled on site (Tonnes)

	Ore cumulative	Waste pile cumulative
January	176,779	101,661
February	170,116	148,632
March	138,423	195,971
April	117,832	208,337
May	105,348	123,660
June	125,705	20,280
July	127,396	16,966
August	113,351	22,843
September	118,412	12,360
October	123,236	18,384
November	129,868	49,420
December	144,088	499,600

4.4 TAILINGS STORAGE FACILITY

4.4.1 Tailings Storage Facility Capacity

As required by Water License 2AM-MEL1631 Schedule B, Item 7: ***An update on the remaining capacity of the Tailings Storage Facility.***

Active tailings placement into the tailings storage facility (TSF) began February 2, 2019 and continued throughout the year. A total of 507,538 m^3 (862,815 t) of tailings were placed in the facility in 2019 for a remaining design capacity of 5,916,066 m^3 (10.06 Mt).

In addition to tailings, a total of 75,082 m^3 (141,154 t) of waste rock was placed as progressive cover material around the side-slopes of the facility in 2019. According to design specifications, an additional 1,200,043 m^3 (2.2 Mt) of rock remains to be placed.

Table 10. 2019 Volumes of Material Placed in TSF

	Tailings Placed (m3)	Waste Rock Placed (m3)
February 2019	33.383	13,826
March 2019	51,760	8,715
April 2019	51,138	10,094
May 2019	50,557	10,333
June 2019	27,860	7,550
July 2019	53,752	2,316
August 2019	51,378	5,149
September 2019	41,193	8,773
October 2019	48,269	2,624
November 2019	37,858	--
December 2019	60,390	5,702
Total 2019	**595,202**	**89,272**
Design Total	**6,423,604**	**1,275,125**
Remaining Capacity	**5,916,066**	**1,200,043**

4.4.2 Tailings Freeze-back and Capping Thickness

As required by Water License 2AM-MEL1631 Schedule B, Item 16: ***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.***

No field trials to determine effective capping thickness for the TSF were undertaken in 2019. Tailings freeze-back however, was monitored monthly through the four (4) thermistors installed in 2019 and one (1) historic GTC. The data indicates that tailings material placed during the winter months generally unfroze during the summer season but was freezing back by the end of December 2019. Freeze-back was observed to be taking longer at the location of TSF-GTC-02, where approximately 6.0 m of tailings had been placed over the year and tailings underlying the top 3.0 m of material were observed to be near 0°C at the end of the year. Temperatures in the original ground below the TSF were generally noted to be below 0°C by December 2019. Figures displaying the GTC data from the various TSF thermistors are located in Appendix B-4.

An assessment of freeze-back of the waste rock storage facilities was not conducted in 2019, as construction of WRSF1 had just commenced.

SECTION 5. WASTE MANAGEMENT ACTIVITIES

5.1 LANDFILL MONITORING, WASTE ROCK STORAGE FACILITY

As required by Water License 2AM-MEL1631 Schedule B, Item 8*: Summary of quantities and analysis of Seepage and runoff monitoring from the Landfill, Landfarm, Waste Rock Storage Facilities, Borrow pits and Quarries.*

Landfill and Landfarm were commissioned in November 2017. No seepage was observed from either facilities in 2019. Monitoring and inspection will continue on a regular frequency.

No seepage was observed around operating quarries and borrow pits located on site and along the AWAR as per regular inspections completed by the Environment Department.

All waste, produced at Meliadine, falls into 4 major categories:

1) Hazardous waste;
2) General (dry, non-hazardous) waste;
3) Food waste; and
4) Contaminated soil.

Hazardous waste, such as waste coolant, used oil filters, waste grease, used batteries, sewage sludge etc. is segregated according to material type, stored in sea containers, and shipped south during the sealift season. All hazardous waste on site was shipped by Nunavut Sealink and Supply Inc., to Qikiqtaaluq Environmental Services (QE) facility in Quebec, via Port of Bécancour. Documentation for the transfer of hazardous waste can be found in Appendix D-1.

In 2019 a total of 809.984 tonnes of hazardous waste was shipped from Meliadine via one sealift from Rankin Inlet to the Port of Bécancour. A total of 25.637 tonnes of non-hazardous material was shipped south for recycling, including electronic e-waste and used tires.

At the port, hazardous and non-hazardous waste was managed by QE and Terminaux Portutaires du Quebec (QSL) on behalf of Agnico Eagle before being transported to *Ministère de l'Environnement et de la Lutte contre les changements climatiques,* authorized disposal facilities.

A total of 131 marine containers containing hazardous waste were transported to Solva-Rec Environment inc. and Veolia ES Canada. In addition, used tires from 9 containers were transported to Revalorisation TPOL Inc.

General waste, such as glass, concrete, wood and ash is landfilled on-site and off-site. Type A landfill was commissioned in November 2017, and in September 2018, the landfill was expanded to contain an extra 11,000 m³ (landfill stage 2). The volume of landfilled waste is estimated through periodic surveys, and the waste placed into Type A landfill during 2019 is estimated to be 4,705 m³. In 2020, various options to lower the amount of material (namely wood pallets) being sent to the landfill will be investigated.

In 2019 remediation activities took place in Landfarm A to remediate the soils. A temporary screening pad was build beside Landfarm A and all the material was screened, windrowed and nutrient amendment was applied. An estimate of 16.85 m^3 of contaminated soil was placed in Landfarm A in 2019 from spill clean up, monthly volumes are indicated in Table 12.

Table 11. 2019 Volume of waste transferred to the landfarm

Month	Volume of contaminated soil placed in Landfarm A (m^3)
January	3
February	1.5
March	0
April	5.4
May	2.95
June	1
July	0
August	0
September	0
October	0
November	0.5
December	2.5
Total	**16.85**

Food waste, including food packaging, was incinerated to avoid landfilling the material, and attracting the wildlife. Produced ash was landfilled when Guideline for Industrial Waste Discharge were met or put into hazmat material when chromium exceedances occurred. In 2019, due to some maintenance work (refractory rebuilt), the incinerator was down from mid September to Mid November.

5.2 INCINERATOR

As per Water License 2AM-MEL1631 Schedule B, Item 10: ***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.***

Agnico Eagle hired Consulair to perform an atmospheric emission characterisation program at the outlet of the incinerator. The objectives of this atmospheric emission characterisation campaign, which took place from December 15th to December 19th, 2019, were as follows:

- Evaluate the physical characteristics of the stack's gas flow;
- Evaluate the concentration and the emission rate of the main contaminants emitted by the incinerator;
- Compare the emission results to the applicable standards; and
- Ensure that the sampling work respects the recognized quality control criteria.

As can be observed in Table 13, the applicable standards for dioxins and furans (PCDD/F) were met for all tests, as well as the applicable standard for mercury (Hg). The standards originate from the "Environmental Guideline for the Burning and Incineration of Solid Waste" published by the Department of Environment of the Government of Nunavut based on the Canadian Council of Ministers of the Environment (CCME) Canada - Wide Standards for Dioxins and Furans and Mercury Emissions. The complete report can be found in Appendix E-1.

Table 12. 2019 Stack Testing Mercury and Dioxin and Furan Results

Applicable Standards		
Contaminants	Test Results	Standards
Mercury (Hg)	0.376 µg / Rm³ @ 11 % v/v O2	20 µg / Rm³ @ 11 % v/v O2
Dioxins ans Furans (PCDD/F)	0.0551 ng / Rm³ @ 11 % v/v O2	0.08 ng TEQ / Rm³ @ 11 % v/v O2

Agnico Eagle also proceeded with incinerator ash testing, the results are provided in the Table 14. Quarterly sampling was planned, however, after noticing some chromium exceedances in April, monthly sampling took place. Once results of samples meet all parameter guidelines for Industrial Waste Discharge for three consecutive months, quarterly sampling resumed. Ash was packed away and shipped south instead of placed in the landfill when chromium exceedances were observed.

The material being burnt, for instance metal food cans could explain higher chromium results. Lower chromium results, meeting the Guideline for Industrial Waste Discharge have been observed at the end of the year, coinciding with improvements in waste segregation.

Table 13. 2019 Incinerator Ash Monitoring

Parameter	Unit	Guideline for Industrial Waste Discharge (mg/L)*	***Annual Average***	2/10/2019	4/7/2019	4/21/2019	5/4/2019	5/26/2019	6/10/2019	6/24/2019	8/14/2019	11/10/2019	12/19/2019	12/31/2019
Arsenic	mg/L	2.5	***0.25***	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.7
Barium	mg/L	100	***0.57***	0.7	1.3	1	0.4	< 0.2	0.6	0.3	1	0.4	< 0.2	< 0.2
Cadmium	mg/L	0.5	***0.095***	< 0.05	< 0.05	< 0.05	< 0.3	< 0.05	< 0.05	< 0.3	< 0.05	< 0.05	< 0.05	< 0.05
Chromium	mg/L	**5**	***6.25***	3.3	**20**	**6.4**	**12**	4.4	4.4	**7.4**	**9.5**	0.8	0.4	0.2
Lead	mg/L	5	***0.10***	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Mercury	mg/L	0.1	***0.0010***	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	mg/L	1	***0.10***	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Silver	mg/L	5	***0.010***	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Zinc	mg/L	500	***0.10***	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

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

5.3 ADDITIONAL INFORMATION

As required by Water License 2AM-MEL1631 Schedule B, Item 23: ***Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.***

And

As required by water license 2BB-MEL-1424 Part B Item 6n: Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported

The Board did not request any additional details on waste disposal in 2019.

SECTION 6. SPILL MANAGEMENT

As per Water License 2AM-MEL1631 Schedule B, Item 11 *A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.*

And

As required by water license 2BB-MEL-1424 Part B Item 6f: A list of unauthorized discharges and a summary of follow-up actions taken

In 2019, a total of 25 reportable spills including 5 license exceedances (highlighted in grey) occurred at Meliadine, compared to 22 in 2018. All spills were reported to the 24-hour spill reporting line as required by the Government of Nunavut's, Environmental Protection Act, paragraph 5.1(a), the conditions under the Nunavut Water Board License 2AM-MEL1631 Water Licence, part H, item 8(b) or the conditions under the Nunavut Water Board License 2BB-MEL1424, Part H, item 4. For all reportable spills, a follow up report was submitted 30 days or less following the event as required under the Nunavut Water Board License 2AM-MEL1631 Water Licence, part H, item 8(c).

All 2019 reportable spills/exceedances are summarized in Table 15, and complete spill reports and follow up reports can be found in Appendix F-3. Non-reportable spills are summarized in Table 16.

Table 14. 2019 Reportable spills or limit exceedances

Date of spill/exceedance	Hazardous Material	Quantity for spills or analyses results for exceedance	Unit	Location	Cause of the spill
January 18, 2019	Emulsion	100	L	Portal	Equipment Failure
January 20, 2019	Contaminated water	200	L	Site Roads	Equipment Failure
March 20, 2019	Sewage	4500	L	MSB Retention Drain Pipe	Pipe Failure
April 12, 2019	Hydraulic Oil	1	L	Orbit Loader	Equipment Failure
April 16, 2019	Oil	5	L	Orbit Drill 3	Equipment Failure
April 24, 2019	Oil	1	L	Orbit Drill 6 and 1, Lake B7	Equipment Failure
April 24, 2019	Sewage	10000	L	Main Camp STP Untreated effluent 10 m3	Equipment Failure
April 24, 2019	Diesel	0.5	L	Orbit Pump Shack Diesel	Human Error
May 12, 2019	Treated STP Water	10000	L	Main Camp STP Treated Water	Equipment Failure
May 16, 2019	Treated STP Water	8000	L	Main Camp Lift Station Spill	Equipment Failure
May 18, 2019	Waste Oil	200	L	Punctured Tote Hazmat Seacan	Human Error
July 7, 2019	Diesel Exhaust Fluid	150	L	DEF Fluid Dome 3	Improper Storage
August 19, 2019	Suspended Sediment	53	mg/L	TSS Exceedance at Mel 26	Environmental factor
August 23, 2019	Treated Effluent	52	m^3	Meliadine Saline Water Discharge	Equipment Malfunction

				Volume Exceedance	
September 2, 2019	Treated Effluent	64	m^3	Melvin Bay Discharge Volume Exceedance	Human Error
September 14, 2019	Tailings/Process Water	8000	L	Process Water Spill	Equipment Malfunction
September 25, 2019	Total Dissolved Sediment	1430	mg/L	EWTP Mel 14 TDS Exceedance	Equipment Malfunction
September 28, 2019	Copper Sulphate	40	L	Copper Sulphate Spill	Improper Storage
October 10, 2019	Partially treated sewage	20	L	Main camp STP	Equipment failure
October 31, 2019	TSS month avg exceedance	15	mg/L	TSS Exceedance at Mel 26	Equipment Malfunction
November 7, 2019	Sewage	25	L	MSB Lift Station	Human Error
November 25, 2019	Emulsion Spill	330	L	Portal 1	Human Error
December 16, 2019	Treated STP Water	8	m^3	Exploration camp retention tank	Equipment Malfunction
December 21, 2019	Sodium hydroxide	25	kg	SWTP Entrance	Human Error
December 31, 2019	Hydraulic Oil	280	L	Portal 2 high grade pad	Equipment Failure

A risk assessment for spills was initiated in 2018; Agnico Eagle identified and rectified deficiencies related to fuel spills. In areas of higher risk for spills, such as the fuel dispensing system at Itivia, a lined secondary containment was put in place to lower the risk of spills causing an offsite impact. Another example of Agnico Eagle lowering the risk of exceedances is that all treated effluent from the Exploration camp STP is trucked to CP1 – a containment pond. In 2019, a risk assessment occurred with raw and treated sewage sludge as a result of some of the incidents over the previous years. The result of the assessment was that transferring wastes from the exploration camp to the main camp would be minimized but if it was to occur then the transfer would take place over low effluent generation times when the Sewage Treatment Plant had maximum storage or retention available. In addition to this mitigation, the assessment reviewed the general handling of sewage sludge waste and developed methodologies to minimize the risk. The risk assessment process continued in 2019 as new systems were commissioned.

Improvements to the training program led to a better overall understanding of spill reporting procedures. It is believed that employee's increased spill management awareness leads to more events being properly identified as spills and reported as such.

To prevent and ensure all spills are reported internally, spill prevention training continued to be provided to employees in 2019. 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.

- Toolbox talks on spill management are regularly conducted by the environment department, with focus on high risk departments.

- All site personnel receive quarterly updates on environmental performance including total reportable and non-reportable spills.

- Intelex spill reporting software training is provided to department managers on a monthly basis where required.

- A mock spill exercise was completed on July 12, 2019 at the Itivia refueling station and tank farm as per required regulations. The mock scenario involved a compromised expansion joint, exterior to the fuel tank containment berm, which leaked 10 liters of fuel per minute for 50 minutes, for a total of 500 L of diesel spilled. Agnico Eagle's Environmental staff led the exercise, which included Agnico Eagle emergency response (ERT) members, Petro-Nav Inc. ships captain, Intertek personnel, Sarliaq operators and, the Rankin Inlet Fire Chief and crew attended the event. The exercise allowed participants to gain experience on spill intervention and awareness of spill management equipment. Overall, the reaction of participants was satisfactory and lessons learned from the event will ensure a more efficient response in the future, if needed. The detailed mock scenario report can be found in Appendix F-2.

Table 15. 2019 Non-reportable spills

Date of spill	Hazardous Material	Quantity (l)	Location	Cause of the spill	Describe immediate corrective actions
1/23/2019	Hydraulic Oil	10	Batch Plant	Hydraulic leak.	Spill was contained and contaminated soil picked up and disposed of appropriately.
1/24/2019	Glycol	10	Powerhouse	Coolant leak	Contaminated snow picked up and disposed of adequately.
2/1/2019	Oil	10	South of MSB	Breather froze, oil cap popped off	Backhoe brought into shop for corrective maintenance. Contaminated material picked up and taken to Landfarm.
2/2/2019	Reagent dye	0.5	Northern side of Process Plant building	The frost rim on the extraction vent stack, which showed traces of the red substance, fell to the floor.	Brought product back into plant and back into the process.
2/6/2019	Diesel	20	Behind paste plant Surface Drill 1	Diesel spill	Contaminated ice cleaned up and brought it to the Landfarm.
2/21/2019	Hydraulic Oil	15	Esker	Hydraulic oil spill	Spill was contained and contaminated soil picked up and disposed of appropriately.
2/24/2019	Engine Oil	10	Other	Oil spill	Spill was contained and contaminated soil picked up and disposed of appropriately.
3/9/2019	Coolant	1	Lake Hole M192525	Coolant leaked from drill onto ice bellow drill	Shovel all of the contaminated snow into a bucket sent to HAZMAT.
3/16/2019	Hydraulic oil	3	FW 150 E	Busted hydraulic hose	Absorbent pad placed under the hose and picked up contaminated material.
3/19/2019	Diesel	20	Itivia Area	Leak from fuel pump A	Contaminated snow picked up and disposed of adequately .
4/1/2019	Diesel	75	West of main camp boiler room	Expansion due to rising temperatures causing the fuel to leak from the overflow	Snow cleaned from the area around the tank with a backhoe, loaded directly into a loader, and transported to the snow cell, where the fuel will be separated in the summer months.
4/1/2019	Power Steering Fluid	5	Warehouse parking area	Power steering leak.	Contamination was picked up and disposed properly.
4/2/2019	Oil	3	TSF west berm	Oil leak.	Adsorbent sheets installed underneath dozer and disposed of properly.
4/16/2019	Fuel	20	Surface fueling station "gas boy"	Nozzle mishandling.	Employee reached his supervisor, who then immediately dispatched the upper level supervisor to inspect the level of contamination.
4/21/2019	Hydraulic Oil	8	Main Camp	Leaking hose.	Absorbent pads were used to soak up oil. Contaminated soil was brought to the landfarm.
4/27/2019	Power Steering Fluid	0.05	MSB Parking Lot	Power steering fluid leak.	Operator cleaned up with absorbent pads.
4/28/2019	Engine Oil 10W-30	2	MSB In front of Door 3	Engine oil leak	Absorbent pads placed on the spill area and disposed of them in the hazmat bin, contaminated area scraped.

4/28/2019	Oil	3	Exploration Laydown	Leaking tote.	Absorbent pads were placed on the oil that had leaked onto the ground. Absorbent pads were also placed at front end of the sea can to ensure no more oil dripped onto the ground. The contaminated snow was removed with a shovel.
5/16/2019	Water oil glycol	84	Beside powerhouse	Leaking tote	Backhoes dug out the contaminated soil and stored it another tote that was labeled "Waste, Oily Solids". It was brought to the environment laydown along with the tote that had leaked.
5/19/2019		5	Cell 6 TSF		stopped immediately and used spill kit to absorb material on tailings. 1/4 bucket of tailings removed and taken to Landfarm.
5/21/2019	Used Oil	10	Explo Laydown	Leaking tote	Absorbent pads were placed on the ground. Some of the oil entered a puddle, a small berm was created to ensure the oil did not seep anywhere else. Absorbent material was placed in the water to collect the oil and then the contaminated soil was scraped up.
5/23/2019	Transmission Fluid	8	South side on construction office	Transmission fuel leak	Absorbents were placed on the contaminated area. Contaminated soil was removed.
5/26/2019	Copper Sulfate	3	North Door of Mill	Bag fell and content spilled.	Spill cleaned immediately, scooped material off ground.
6/13/2019	Oil	0.5	Outside power plant at G2 crankcase vent, near radiator module	The electric motor on the generator 2 oil mist separator module failed, causing a small quantity of engine oil to drip from the crankcase vent pipe.	Area cleaned.
6/13/2019	Hydraulic Oil	1	On picket TIR-213, Hole #M19-2675	Hose leak.	Installed material on the ground, installed absorbents booms as well.
6/14/2019	Hydraulic Oil	15	From MSB Bay #4 to Portal 2	Hydraulic leak.	Spill cleaned and material disposed of adequately.
7/11/2019	Oil	5	Warehouse Laydown	Loose plug for wheel oil.	Spill cleaned and material disposed of adequately.
7/19/2019	Oil	15	Drill rig #1 SH-102	Hydraulic oil leak.	Contain and pick-up spill into hazmat material containment.
7/25/2019	Hydraulic Oil	5	In front of Church	Damaged hydraulic steel pipe.	Contained the spill with an oil tub and absorbent pads.
7/28/2019	Diesel	90	Hole Number M19-2684	Distribution pump was not tight causing a spill from the top when pump kicked on to distribute fuel to drill	Contaminated soil picked up and disposed of in the Landfarm.
7/30/2019	Fuel	1	Landfarm A	Nozzle malfunctioned	Kill switch was activated, spill pads deployed. Spill was immediately cleaned with mini excavator. Nozzle was replaced.
7/31/2019	Oil	20	Ramp 2	Plug from the front diff let go.	Spill cleaned with spill kit and material disposed of adequately.
8/4/2019	Diesel	15	Surface Dome 3	Leak in diesel hose.	Operator placed spill pads on ground and cleaned up spill.

8/9/2019	Diesel	25	gas boy / msb mechanic parking	Fuel leak.	Used spill kit and clean up material.
8/10/2019	Hydraulic Fluid	5	East Side of Construction Offices	Hydraulic hose broke.	Spill pads were placed on the ground and disposed of in a quatrex bag and brought to the hazardous waste area. A 20 L pail of contaminated soil was brought to the Landfarm.
8/15/2019	Hydraulic Oil	25	MSB Shop in the front parking lot	Hydraulic oil leak.	Put absorbing pad immediately on the spill to contain it, contaminated material disposed of adequately,
8/21/2019	Hydraulic Oil	35	North side of church	Hose busted.	Spill was contained and cleaned up adequately.
8/25/2019	Hydraulic Oil	2	km15 Quarry, AWAR road	Leak near main cylinder of the boom.	All hydraulic oil was picked-up and disposed of in a quatrex bag.
9/2/2019	Hydraulic Oil	15	On the road between MSB and P2	Hydraulic hose busted.	Picked up the contaminated material and brought it to the landfarm.
9/5/2019	coolant	20	surface portal 2	Coolant hose broke and caused leak	Employee immediately placed spill pads below the leak and called the mechanic.
9/7/2019	Fuel	< 10 litres	Near Orbit garage	Overflow while fueling	Area cleaned adequately
9/8/2019	Oil	1	Outside wall, west side of powerhouse, Gen #4	Oil mist separator failed	Switched generator and cleaned the spill.
9/11/2019	Hydraulic Oil	40	East Side of MSB	Hose blew	Material cleaned up and disposed of adequately.
9/12/2019	Hydraulic Oil	5	Drill #3 Sh-77	Spill from a hydraulic fitting.	Spill cleaned-up, alll hazmat material and waste were disposed properly.
10/4/2019	Hydraulic Oil	0.5	Drill #4 SH-89	Small leak during maintenance	Picked-up residue and cleaned area.
10/5/2019	Hydraulic Oil	5	In front of Dome 1 garage	Hydraulic oil spill.	Absorbent pads installed around spill.
10/11/2019	Fuel	20	Front of maintenance shop	Jerry can left open and fell on the side.	Spill was contained using absorbent pads and contaminated material was brought to the Landfarm.
10/13/2019	Contaminated water	20	SETP	Water containing diluted sodium hypochlorite was drained onto the ground	Diluted chemical dissipated into air, no further action was needed.
10/22/2019	Contaminated water	20	Main camp	Pipe overflow.	Spill was pumped right away with the vacuum truck (ground was frozen so the spill didn't have time to infiltrate ground).
10/26/2019	Hydraulic Oil	1	North process plant	Hydraulic hose leak	Spill rags were deployed around hose which was sent to maintenance.
10/27/2019	Hydraulic Oil	50	OP2 on surface	Busted hydraulic oil hose	Absorbent pads were used to clean up spill and contaminated material was brought to the land farm.

11/1/2019	TSS	N/A	MEL-26 Melvin Bay Discharge	During the discharge to sea, two regulatory samples were collected at compliance point (MEL-26) in October 2019. The results from the samples for TSS are 14 mg/L and 17 mg/L, which are below the MDMER "Maximum authorized concentration in a grab sample". However, the discharge to sea ceased mid-October following the second sample due to winter conditions. As a result, no additional samples were collected in October resulting in the monthly mean being above the maximum allowable value of 15 mg/L (actual measured value was 15.5 mg/L).	As per MDMER 24(1)(a), Agnico Eagle notified the inspector and decided to follow up on the incident by submitting a spill report for due diligence. The discharge to sea ceased prior to the reception of the sample results so no mitigation measures were taken following the event.
11/2/2019	Oil	3	Outside dome 1 Garage	Tilted unit.	Operation stopped, and oil was picked-up right away
11/3/2019	Hydraulic oil	4	Oxygen Plant Pad Expansion	Hydraulic hose busted.	Spill pads were used. The oily snow was collected and brought to the Landfarm.
11/11/2019	Hydraulic Oil	15	SP-2 Rock Stockpile	Loose flange bolts on a hydraulic hose.	Spill pads were placed under equipment, the leak was fixed, and oil contaminated soil was brought to the Landfarm. The spill pads were disposed of in a quatrex bag.
11/12/2019	Hydraulic Oil	30	MSB outside (between door 5 & 6)	Hydraulic hose leak,	Spill pads were used, and the machine was brought inside the shop to replace the hose by steel piping (OEM part).
11/15/2019	Oil	1	MSB parking lot	Loose engine oil filter.	Operator noticed the spill during pre-op. Supervisor was notified, spill was cleaned and disposed of in proper areas.
11/25/2019	Emulsion	330	Portal 1	Tote slid off the lift.	The operators involved removed the contaminated material which was placed into quatrex bags. The contaminated material was sent to the emulsion plant. Emulsion suitable for salvage will be reused. Unsuitable material will be neutralized using an emulsion destruction process and shipped as hazmat.
12/8/2019	Hydraulic Oil	3	Front of the warehouse	Hydraulic hose broke.	Contaminated snow picked up and disposed of adequately.
12/13/2019	Hydraulic Oil	8	TSF	Hydraulic hose busted.	Contaminated tailings were loaded in loader bucket and disposed of at land farm.
12/13/2019	Fuel	40	Tiriganiaq esker	Nozzle malfunction.	Spill pads were placed on the ground and disposed of adequately.
12/13/209	Hydraulic Oil	2	Industrial Pad	Hydraulic oil leak.	Contaminated snow picked up and disposed of adequately.
12/14/2019	Hydraulic Oil	3	Rig 1 Hole #m19-2731	Hydraulic oil leak.	Crew cleaned up oil and dispose in proper location.

SECTION 7. MONITORING

As required by Water License 2AM-MEL1631 Schedule B, Item 14:
The results of monitoring related to the Environmental Management and Protection including:

a. Aquatic Effects Monitoring Program;

Refer to section 7.1, all results can be found in Appendix G-1.

b. Metal and Diamond Mining Effluent Regulation (MDMER) Monitoring;

Refer to section 7.2, all results can be found in Appendices H-1 and H-2.

c. Mine site Water quality monitoring, including groundwater monitoring; and

Refer to section 7.3, all results can be found in Appendix H-3.

d. Visual AWAR Water quality monitoring

Refer to section 7.4.

and

As required by Water License 2BB-MEL-1424 Part B Item 6d: ***Tabular summary of all data generated under the Monitoring Program,***

Sampling is no longer required from the water Licence 2BB-MEL-1424, explanation is provided in section 7.3.1.

7.1 AQUATIC ECOSYSTEM MONITORING PROGRAM (AEMP)

Volume 7 of the FEIS for the Meliadine Gold Project (Mine) predicted inputs of nutrients, metals, and major ions to Meliadine and Peninsula Lakes. It was predicted that these inputs would result in minor changes to water and sediment quality in Meliadine Lake, and that any corresponding effects on fish and fish habitat would be negligible (Agnico Eagle 2014). The component sections of the annual AEMP report are designed to characterize changes in measures related to contaminant and nutrient input, and related responses in phytoplankton, benthos, and fish. The purpose of the integrated summary is to synthesize the results for each component to evaluate the overall direction of change to the aquatic ecosystem. The objective of the synthesis is to:

- integrate AEMP findings from all components
- determine the strength of support for each impact hypothesis and effects on the ecosystem
- support decision making for management responses

The integrated summary is part of the overall objective of the AEMP to assess potential mine-related effects on the aquatic ecosystem and to meet regulatory requirements outlined in the Type A Water License (2AM-MEL1631) and MDMER (EEM), while also meeting commitments made during the environmental permitting process. The specific objectives of the AEMP are to:

- determine the short and long-term effects of the Project on the aquatic receiving environment
- evaluate the accuracy of predictions made in the FEIS, including the final significance statements regarding impact to the aquatic ecosystem
- assess the efficacy of planned mitigation incorporated into the Project design
- collect data required to identify the need for potential additional mitigation of Project effects within a management response framework

The 2019 AEMP program consisted of water quality, , and a phytoplankton targeted study in Meliadine Lake, and water quality monitoring in selected peninsula lakes. There was no sediment quality, benthic invertebrate community and fish survey completed in 2019 with the next AEMP fish health and fish tissue chemistry program scheduled for 2021.

The results of the 2019 AEMP study in Meliadine Lake and the peninsula lakes (water quality and phytoplankton only) were evaluated in the context of the key questions proposed for each core component in the AEMP Design Plan (Golder 2016). The key questions and a summary of the results for each component are presented in Appendix G-1 and discussed below. The results of the effluent chemistry and toxicity testing program are also discussed in the context of the results of the AEMP components, where relevant.

7.1.1 Peninsula Lakes Summary and Conclusions

Results from 2019 demonstrate that changes in water quality at the Peninsula Lakes (A8, B7, and D7) align with the predictions in the FEIS: some parameters have increased relative to the baseline period, but do not exceed FEIS predicted ranges and current conditions support freshwater aquatic life and human uses. Minor year-over-year changes in water quality that were detected for some parameters do not warrant management actions or mitigation strategies beyond those currently in place to address loadings from dust, on-site water management, or aerial emissions.

There is clear evidence of changes in water quality coinciding with activities in the pre-construction and construction years in 2016 and 2017. Recent data from the 2018 and 2019 monitoring programs indicate that concentrations for most parameters have either decreased in the years since peak on-site construction, or remained stable in 2018 and 2019. There were no exceedances of aquatic life or human health drinking water quality guidelines reported for samples collected in 2019. These results align with the predictions in the FEIS.

7.1.2 Meliadine Lake Summary

Several parameters were elevated at the Near-Field (NF) and Mid-Field (MF) areas in 2019 relative to baseline and reference conditions for Meliadine Lake. Normal range concentrations were used to single out parameters at the NF and MF higher than the upper limit (90th percentile) of concentrations measured during the baseline period (pre-2015) and at the reference areas in recent AEMP cycles (2015 to 2019). In general, the same list of parameters exceeded in 2018 also exceeded in 2019, however some elements decreased (aluminum, barium and mercury) in 2019 as compared to 2018, signaling an improvement in water quality for these parameters in 2019. Nitrogen (ammonia, nitrate, and TKN) and phosphorus were all below their respective normal range concentrations in 2019. There was one exceedance of one TDS value in September at MEL-14 which is the discharge location from CP-1 to Meliadine Lake.

As predicted in the FEIS, some water quality parameters have increased in the NF area due to potential activities at the mine. TDS, some major ions, lithium, and strontium were higher in concentrations at the NF area relative to the MF and reference (REF) areas in 2019, but remain below low-level action limits. The increase in concentration at the NF area relative to the MF and reference area corresponds to less than a 20% increase for TDS and most major ions (chloride = 34% increase at NF vs. reference). The magnitude of the difference in metals concentrations between the NF and reference areas in 2019 tended to be greater. Arsenic, cobalt, and iron, for example were 80%, 130%, and 150% higher at the NF area in 2019 compared to the pooled locations. For all three parameters, the difference in concentration between the NF and reference areas were statistically significant, implying concentrations of some metals are different between the east basin and west/south basins of Meliadine Lake. The difference between areas constitutes a change, but concentrations remain well below levels associate with effects to aquatic life or human drinking water consumption.

The 2019 AEMP monitoring program focused on water quality monitoring in Meliadine Lake and the Peninsula Lakes, as well at the phytoplankton study in Meliadine Lake. Benthic invertebrate and fish studies in Meliadine Lake are completed on the 3-year monitoring time frame for the Environmental Effects Monitoring (EEM) Program. The next study is scheduled for 2021.

Low Action Levels for toxicological impairment or nutrient enrichment were not triggered by the 2019 AEMP results.

7.1.3 Meliadine Lake Conclusions

The observed changes to conventional parameters (e.g., conductivity) and major ions aligns with predictions in the FEIS, namely, that some minor changes relative to baseline conditions are expected, but water quality will meet guidelines for the protection of aquatic life and human drinking water at the edge of the mixing zone.

Discharge of treated mine effluent is likely to be the biggest contributor to changes in water quality observed in 2018 and 2019; potential changes caused by non-point sources (i.e., dust or aerial emissions) are likely minor relative to effluent. Subtle increases in the concentration of major ions such as sodium, chloride, and magnesium have occurred throughout the pre-construction, construction, and early operations period,

consistent with predictions in the Final Environmental Impact Statement (Agnico Eagle 2014). For most conventional and nutrient parameters, there has been no discernable increase in concentration in 2018 and 2019 relative to the baseline and pre-construction phases, and in some cases, concentrations appear to be decreasing (see total phosphorus).

Lithium and strontium have increased in the NF and MF area since the start of AEMP monitoring in 2015. However, the pattern of the increase is matched at the reference areas dating back to the on-set of reference area sampling in 2016, suggesting the changes at the NF and MF may be related to wider, regional change. Importantly, other metals that exceeded their respective normal range concentrations in 2019 do not appear to be increasing over time. Arsenic and iron both demonstrate how concentrations can exceed the normal range concentration (calculated based on lake-wide samples) but not show evidence of an increasing temporal trend. For both parameters, concentrations measured in 2013 are within the range reported between July and September in 2019. These results demonstrate that, at least for some metals, the inter-annual variability in water chemistry at the NF area is less than the intra-annual variability in concentration (difference between seasons).

What is clear from the 2019 results is that increases relative to the baseline period related to the mine are easy to identify (see lithium and strontium). For those parameters that have increased, the concentrations reported in 2019 are consistent with last year's results.

The low action level was not exceeded at Meliadine Lake in 2019:

1) Effluent was non-toxic in the monthly sublethal tests with the aquatic plant *Lemna minor*. No inhibitory or stimulatory responses were observed for the full-strength effluent tests in 2019.

2) Some minor changes in water quality in the NF area of Meliadine Lake have occurred due to mining-related activities, but current concentrations are well below levels associated with toxicological effects to aquatic life.

3) Water quality in Meliadine Lake met the human health-based criteria for safe drinking water.

4) Total phosphorous in Meliadine Lake was below the concentration of 0.0075 mg/L (75% of the AEMP benchmark of 0.01 mg/L) used in the nutrient enrichment assessment. Supporting information for the nutrient enrichment assessment collected during the phytoplankton study is summarized below.

5) **Recommendations for 2020** – Spatial and temporal trends in water quality will continue to be monitored as part of the annual AEMP in 2020.

A phytoplankton targeted study was conducted as part of the 2018 AEMP monitoring program and was continued in the 2019 season. This program is not a formal component under the AEMP Design Plan (Golder 2016) but was planned as a targeted study prior to 2019 to evaluate the usefulness of plankton monitoring for future monitoring. The following are the results of the study.

Overall, concentrations of Total Nitrogen (TN) and Total Phosphorus (TP) remain fairly low. Monitoring results since 2015 show increases in TN (dissolved and total fractions) at NF, and to a lesser extent the MF area, relative to the REF areas of Meliadine Lake. Despite the apparent pattern of increase in TN at NF since 2015, the observed concentrations appear reasonably consistent with baseline results for Meliadine Lake collected from 1997 to 2013. The observed pattern of increasing concentrations of TN at NF points to the influence of mining-related activities; however, the comparison to the historical baseline suggests that

the magnitude of change thus far remains within the range of natural conditions. Trends for TP are less obvious, although it looks like concentrations at the NF area may generally be slightly higher than in the rest of the lake. In summary, results to date indicate that changes in nutrient concentrations, particularly for TN, have occurred at the NF area since 2015 (i.e., the pattern is consistent with mining activities). However, the magnitude of that change appears to be within the range of conditions measured during the baseline period. Overall, these trends should continue to be watched.

The total biomass, density and taxa richness of the phytoplankton, while generally higher at the NF area relative to the rest of Meliadine Lake, have not changed appreciably since 2015. Given that the pattern has been fairly constant over time, the change in community metrics may be related to natural variability, despite the increases in nutrients observed at the NF area since 2015. The multivariate community analysis supports a similar pattern, with the NF area being slightly different from the other sampling areas, but the biggest year-to-year changes are driven by taxa shifts that occurred at all the areas (NF, MF, and REF).

Phytoplankton biomass was tracked by two metrics: volumetric-based biomass (direct measure of the community) and chlorophyll-a (surrogate measure). The metrics were weakly, but positively, correlated across years, with differential photosynthetic pigment content among phytoplankton taxa, a likely important source of the variability. Ultimately, direct measurement of the community is a better indicator of biomass, but chlorophyll-a provides complementary, yet independent, information that is easy to collect. As in previous years, neither measure of biomass was correlated to either TN or TP, suggesting that mining-related nutrient inputs do not appear to be responsible for the observed differences in phytoplankton biomass or chlorophyll-a.

Collectively, the phytoplankton community and nutrient data provide useful information to help detect potential effects to primary productivity resulting from nutrient enrichment in Meliadine Lake. Continued monitoring in 2020 should improve the understanding of the relative importance of these factors.

The complete AEMP report can be found in Appendix G-1.

7.2 MDMER AND EEM SAMPLING

This section relates to the monitoring programs conducted under the Metal and Diamond Mining Effluent Regulations (MDMER) and its Environmental Effects Monitoring (EEM) Studies. Reporting requirements for MDMER have been submitted directly to Environment and Climate Change Canada; results are presented herein to comply with the NWB Type A Water License A list of the sampling location GPS coordinates can be found in Table 17. Certificates of Analysis for EEM are included in Appendix H-1.

Table 16. MDMER and EEM GPS coordinates

Station ID	GPS coordinates
MEL-14 (Effluent characterization)	63˚2'15.5"N 92˚13'06.3"W
MEL-13 (Water Quality Monitoring Exposure Area)	63˚01'44.6"N 92˚09'14.6"W
MEL-03-01 (Water Quality Monitoring Reference Area)	63˚06'52.2"N 92˚20'23.6"W
MEL-26	62˚48'01.99"N 92˚06'00.05"W
MWE-1/WC (Water Quality Monitoring Exposure Area)	62°47'49,24"N 92°05'52,97"W
MWREFA-2	62°46'55,38"N 92°07'0,43"W

In 2019, discharge of treated effluent from CP-1 to Meliadine Lake started July 9th and ended October 5th. The Melvin Bay final discharge point (MEL-26) was in operation between August 1st and October 11th .

As requested in Schedule 6 of the Metal and Diamond Mining Effluent Regulations, monthly mean concentrations, pH range and volume of effluent (generated) were submitted. Monitoring results for MDMER discharge are in Tables 18 to Table 20.

In 2019, ECCC was informed of a TSS concentration in excess of the MDMER grab sample limit and two failed acute lethality tests, as well as an TSS monthly mean concentration exceedance for the MEL-26 final discharge point. As required, following these events, spill reports and spill follow-up reports were submitted to ECCC, describing their causes, as well as associated remediation actions and corrective measures.

Table 17. 2019 Effluent characterization results at MEL-14 and MEL-26 final discharge points

	Arsenic		Copper		Cyanide		Lead		Nickel		Zinc		TSS		Ra226		pH
	mg/L		mg/L		mg/L		mg/L		mg/L		mg/L		mg/L		Bq/L		
Effluent characterization (63˚2'15.5''N 92˚13'06.3''W) (Mel-14)																	
9-Jul-19		0.00243		0.00139	<	0.005	<	0.0002		0.0034		0.0067		4	<	0.005	7.23
6-Aug-19		0.0009		0.00062	<	0.005	<	0.0002		0.0022		0.0055		2	<	0.005	7.26
3-Sep-19		0.002	<	0.0025	<	0.005	<	0.001	<	0.005	<	0.025		5	<	0.005	7.53
1-Oct-19		0.00104		0.00072		0.0054	<	0.0002		0.0034		0.0145		2	<	0.005	7.36
Effluent characterization (62°48'01,99'' N 92°06'00,05''W) (Mel-26)																	
5-Aug-19		0.012		0.0087	<	0.005	<	0.002	<	0.01	<	0.05		19		0.17	7.69
2-Sep-19		0.0091	<	0.025		0.0084	<	0.01	<	0.05	<	0.25		9		0.07	7.14
9-Sep-19		0.0107	<	0.005		0.0072		0.0022		0.022	<	0.05		11		0.13	7.44
1-Oct-19		0.0055	<	0.01		0.057	<	0.004		0.045	<	0.1		14		0.07	6.46

Table 18. 2019 MEL-14 Monthly Mean Concentrations, pH Range and Volume of Effluent (Generated)

Month	As	Cu	CN	Pb	Ni	Zn	TSS	Ra 226
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L
January	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
February	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
March	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
April	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
May	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
June	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
July	0.00175	0.000903	0.0025	0.0001	0.002675	0.004575	3.63	0.0025
August	0.001528	0.00098	0.0025	0.00013	0.00295	0.00325	3.75	0.0025
September	0.001798	0.000905	0.0025	0.0002	0.00343	0.00343	3.25	0.0025
October	0.00104	0.00072	0.0054	0.0001	0.0034	0.0145	2	0.0025

November	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
December	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP

NDEP: No deposit

Table 19. 2019 MEL-26 Monthly Mean Concentrations, pH Range and Volume of Effluent (Generated)

Month	As	Cu	CN	Pb	Ni	Zn	TSS	Ra 226
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L
January	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
February	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
March	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
April	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
May	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
June	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
July	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
August	0.02542	0.01124	0.04278	0.00400	0.0334	0.1	27.00	0.178
September	0.008167	0.005833	0.0282	0.003233	0.02600	0.02600	10.67	0.10
October	0.006	0.00655	0.0935	0.0027	0.0515	0.0375	15.5	0.0655
November	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
December	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP

NDEP: No deposit

7.3 MINE SITE WATER QUALITY

As required by Water Licence 2AM-MEL Schedule B-13: The results and interpretation of the Monitoring Program in accordance with Part D and Part I and Schedule I.

7.3.1 *Licensed Water Sampling Stations*

Below is a short description of each of the monitoring stations from the Water Licences 2AM-MEL1631 and 2BB-MEL-1424. All water sampling results can be found in Appendix H-3. For stations with sufficient data, an interpretation of the data is given. Also, for stations regulated by MDMER or Water Licence limits, graphs with critical parameters are presented.

7.3.1.1 *MEL-1 Raw water supply intake at Meliadine Lake*

MEL-1 is the raw water supply intake at Meliadine Lake for the exploration camp. No sampling is required, only volume records as provided in section 3.

7.3.1.2 *MEL-2 Raw water supply intake at Pump, A8 or other Lakes*

MEL-2 is the raw water supply intake at A8 or other lakes. No sampling is required, only volume records as provided in section 3.

7.3.1.3 ***MEL-5 Bermed Fuel Containment Facilities***

MEL-5 was the point of discharge for the bermed fuel containment facilities for the exploration camp. Since it was decommissioned, sampling is not required anymore.

7.3.1.4 ***MEL-6 Landfarm Treatment Facility***

MEL-6 is the effluent from the Landfarm Treatment Facility prior to release. The landfarm is not decommissioned yet but no water was released since 2016 as the water is transferred to the landfarm oil separator system and treated before being discharged in CP-1.

7.3.1.5 ***MEL-7 Effluent from Exploration camp STP***

MEL-7 is the final effluent discharge from the biodisk at the exploration camp. Since November 2017, the treated water from the exploration STP is trucked to CP1 or to the Main Camp STP depending on recent water quality trends. Monitoring for this station still occurs to ensure the efficiency of the treatment system but discharge directly to Meliadine Lake no longer occurs.

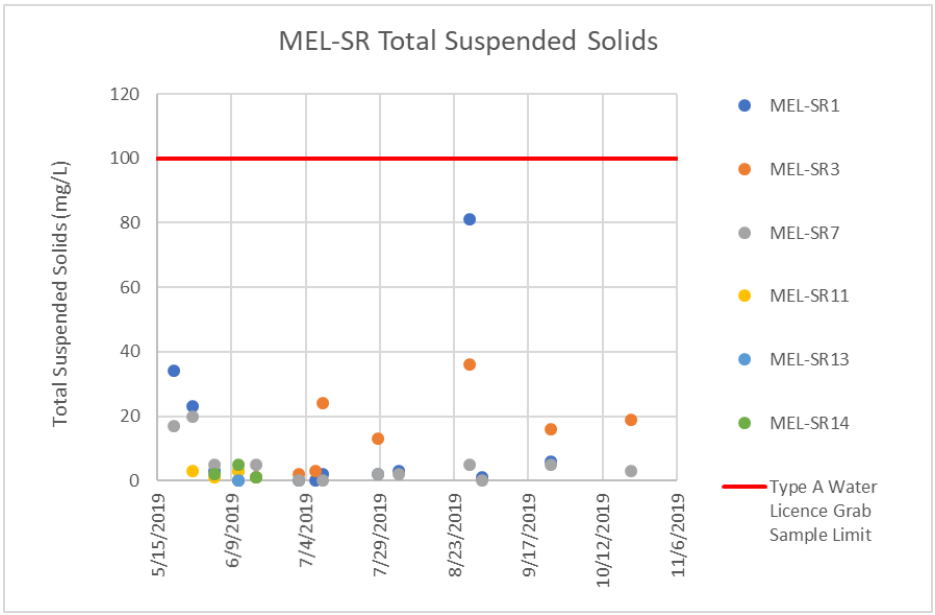
7.3.1.6 ***MEL-8 Point of discharge or runoff from the Non-Hazardous Waste Landfill***

MEL-8 was the point of discharge from the non-hazardous waste landfill for the exploration camp. Since it was decommissioned, sampling is not required anymore.

7.3.1.7 ***MEL-SR-1-TBD***

MEL-SR-TBD are surface runoff – runoff downstream of construction areas at Meliadine Site and Itivia Site, seeps in contact with roads, earthworks and any runoff and/or discharge from borrow pits and quarries. These are regulated monitoring stations in the Water Licence which includes discharge limits that must be achieved to maintain compliance.

Figure 4. TSS results for MEL-SR samples



In 2019, no TSS exceedances occurred at stations MEL-SR-TBD at Meliadine and Itivia sites. All TSS concentrations were below the Type A Water Licence maximum concentration of any grab sample of 100 mg/L. Furthermore, average concentrations (of four consecutive sampling events) for each MEL-SR station did not exceed the allowable maximum average concentration of 50 mg/L TSS.

Prior to freshet in 2019, Agnico Eagle constructed two rock check dams at the Itivia site as a means to mitigate TSS transport through and off the Itivia site. These rock check dams were strategically placed to avoid major impact to the skidoo trail that had been identified by local users. The check dams are placed upstream of the main culvert at Itivia, in the flow path of the bulk of flow moving through and off the Itivia site. An as-built of the check dams was submitted in the October 2019 amendment to the Rankin Inlet Itivia Site Fuel Storage and Containment Facility Construction Report. Furthermore, straw logs were installed upstream and downstream of the site. The snow management plan was also revised to improve the TSS management in 2019. It is likely that the implemented measures have contributed in the reduction of the TSS concentrations in 2019 as upstream samples of water prior to entering Itivia are elevated.

The collected samples also showed pH values within the compliant range, and no visible sheen of oil and grease were observed.

7.3.1.8 ***MEL-11 Water Intake***

MEL-11 is the water intake from Meliadine Lake. It is an aquatic monitoring location which is subject to compliance assessment to confirm that sampling is carried out using established protocols, including quality assurance/quality control provisions, and addresses identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB.

7.3.1.9 ***MEL-12 Water treatment plant (Pre-treatment)***

MEL-12 is sampled in the effluent water treatment plant (EWTP) (pre-treatment) sampling port with the water coming from CP1. The sample is not taken directly in the pond. It is a verification monitoring program, which is to be carried out for operational and management purposes by the Licensee. Monitoring parameters and locations are internal for Licensee.

7.3.1.10 ***MEL-03-01 Reference area in Meliadine Lake (MDMER reference station)***

MEL-03-01 is sampled in Meliadine Lake. It is also the MDMER reference station for final discharge. It is a general aquatic monitoring location which is subject to compliance assessment to confirm sampling is carried out using established protocols, including quality assurance/quality control provisions, and addresses identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB. Figure 7.2 and 7.3 below show the analytical trends of interest (TSS and TDS concentrations) for MEL-03-01 for 2019.

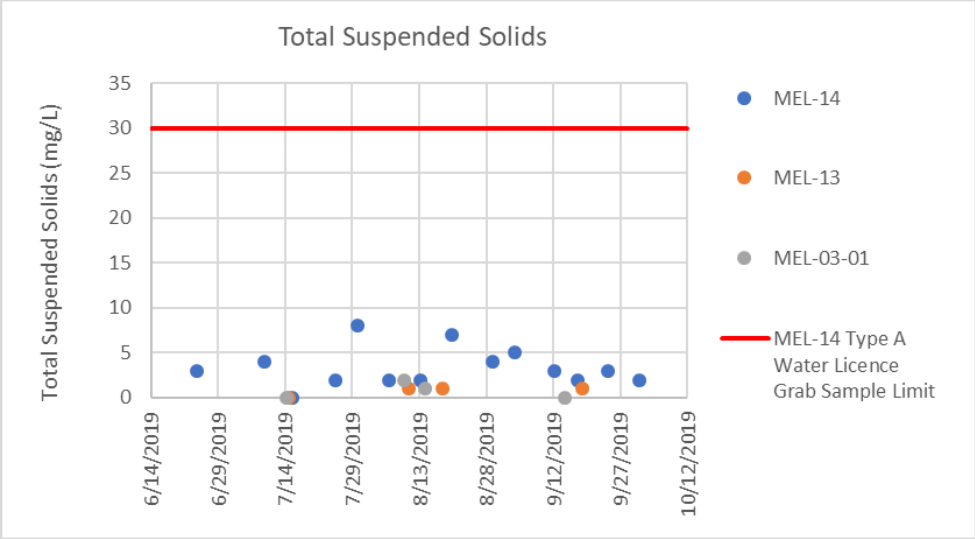
7.3.1.11 ***MEL-13 Mixing Zone in Meliadine Lake (MDMER exposure station)***

MEL-13 is sampled in the mixing zone in Meliadine Lake. It is also the MDMER exposure station for final discharge. It is a general aquatic monitoring location which is subject to compliance assessment to confirm sampling is carried out using established protocols, including quality assurance/quality control provisions, and addresses identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB. Figure 5 and Figure 6 below show the analytical trends of interest (TSS and TDS concentrations) for MEL-13 for 2019.

7.3.1.12 ***MEL-14 Water treatment plant (Post-treatment)***

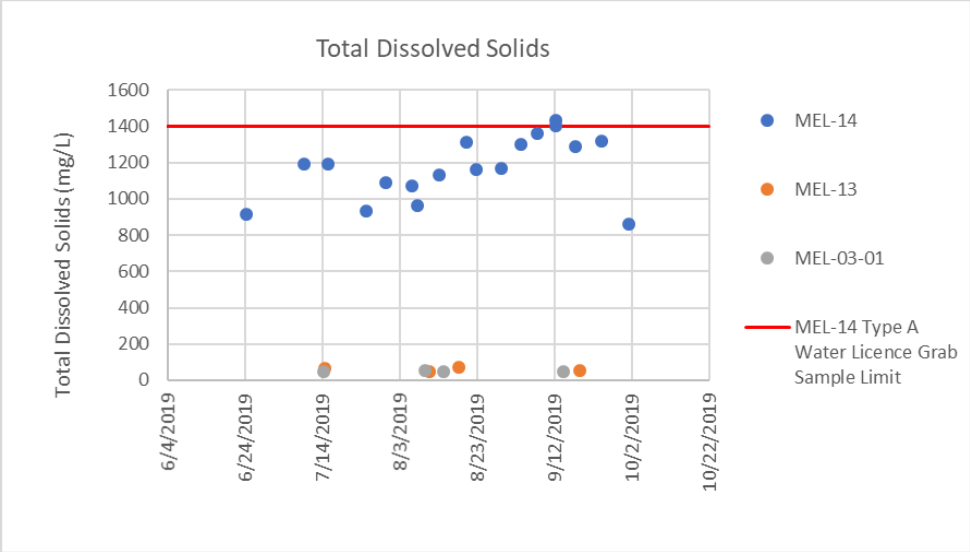
MEL-14 is the final discharge point monitoring station and is sampled in the effluent water treatment plant (EWTP) (post-treatment) prior to the water being discharged to the environment. It is a regulated monitoring station in the Water Licence and in the MDMER regulation. It includes discharge limits that must be achieved to maintain compliance. Figure 5 and Figure 6 below show the analytical trends of interest (Total Suspended Solids, TSS, and Total Dissolved Solids, TDS, concentrations) for MEL-14 for 2019.

Figure 5. TSS results for MEL-03-01, MEL-13 and MEL-14 samples



In 2019,TSS results for MEL-14 did not show any particular trend, with no significant increase or decrease of concentration. The yearly average concentration was 3.39 mg/L and the highest result was 8 mg/L. No exceedance occurred in 2019 for this parameter with all grab sample and average concentrations within permitted limits. For MEL-13, all TSS results were equal to or below the laboratory detection limit (of 1 mg/L) and for MEL-03-01, results ranged between <1 mg/L and 2 mg/L.

Figure 6. TDS results for MEL-03-01, MEL-13 and MEL-14 samples



With regards to TDS, one sample collected on September 13th at station MEL-14 showed a TDS concentration of 1430 mg/L, exceeding the Type A Water Licence maximum concentration of any grab sample of 1400 mg/L. The exceedance was reported to the 24-hour spill reporting line as required by the Government of Nunavut's Environmental Protection Act, paragraph 5.1(a), and by the conditions under the Nunavut Water Board Licence 2AM-MEL1631 Water Licence, part H, item 8(b). The cause for this exceedance was identified as drift of the electrical conductivity probe internal to the EWTP, which is applied to trigger stoppage of discharge if TDS calculated with an electrical conductivity-TDS correlation reaches an assigned threshold. To mitigate recurrence of this issue in 2020, a more rigorous probe cleaning/calibration schedule and record keeping procedure is being developed and will be implemented.

The average TDS concentration at MEL-14 in 2019 was 1186 mg/L (not including pre-discharge sampling) and the highest measured concentration was, as mentioned above, 1430 mg/L. For station MEL-13, the average TDS concentration in 2019 was 59 mg/L and the highest result was 70 mg/L. Finally, the average TDS concentration at MEL-03-01 in 2019 was 50 mg/L and the highest result was 55 mg/L.

No other exceedance of the Water Licence requirements was observed in 2019 at station MEL-14. Monthly toxicity tests also demonstrated the effluent was non-acutely lethal.

7.3.1.13 ***MEL-15 Local Lake E3***

MEL-15 is sampled in lake E3 located west of the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee.

7.3.1.14 ***MEL-16 Local Lake G2***

MEL-16 is sampled in lake G2 located north west from the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee.

7.3.1.15 ***MEL-17 Local Pond H1***

MEL-17 is sampled in lake H1 located east from the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee.

7.3.1.16 ***MEL-18 Local Lake B5***

MEL-18 is sampled in lake B5 located south-west from the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee.

7.3.1.17 ***MEL-19 CP-2***

MEL-19 was a containment pond identified as CP2 in the 2015 Water Management Plan and in the License. This was planned as a small pond for the collection of the natural catchment drainage from the outer berm slopes of the Landfarm and industrial pad. CP2 was not required under the actual construction of the site and resultant runoff pathways and accumulation areas. In the License, MEL-19 was identified as a verification monitoring location which would have been sampled for operational and management purposes by Licensee. As it is not in place, MEL-19 was not sampled in 2019.

7.3.1.18 ***MEL-20 CP3***

MEL-20 is sampled in CP3 (collection pond) which is the collection of drainage from the Tailings Storage Facility (dry stack tailings) located west of the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee.

7.3.1.19 ***MEL-21 CP4***

MEL-21 is sampled in CP4 (collection pond) which is the collection of the drainage from the Waste Rock Storage Facility (WRSF1) located west of the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee.

7.3.1.20 ***MEL-22 CP-5***

MEL-22 is sampled in CP5 (collection pond) which collects the drainage from WRSF1 and WRSF2. CP-5 is located in the previous footprint of Lake A54 and is located south of the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee.

7.3.1.21 ***MEL-23 CP-6***

MEL-23 is sampled in Lake H19 and will be sampled in CP6 (collection pond) once construction is completed. CP6 will consist of the drainage from WRSF3 located east of the mine site. It is a verification monitoring location which is sampled for operational and management purposes by Licensee.

7.3.1.22 ***MEL-24 Seepage from the landfill***

MEL-24 is seepage from the landfill between the landfill and Pond H3. The natural depression at this location can also drain water not related to seepage from the landfill. It is a verification monitoring location which is sampled for operational and management purposes by Licensee.

7.3.1.23 ***MEL-25 Secondary Containment at the Itivia Fuel Storage Facility***

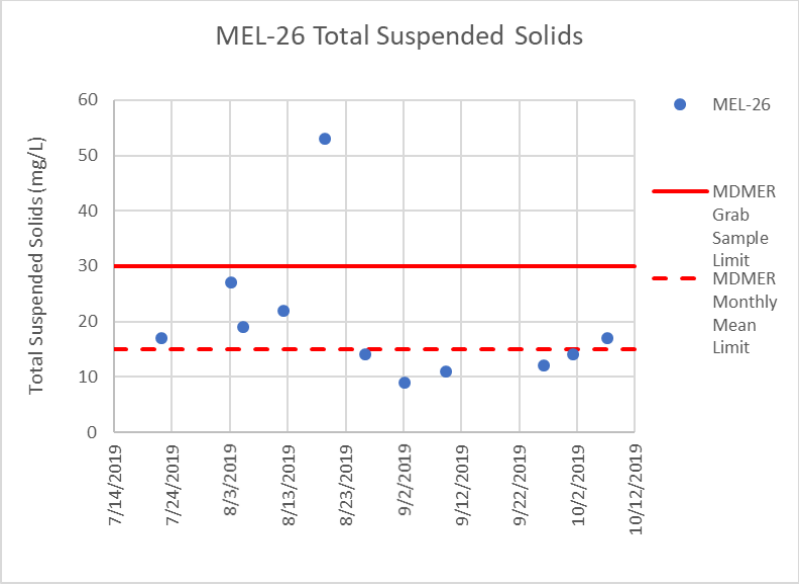
MEL-25 is sampled from the secondary containment area at the Itivia Site Fuel Storage and Containment Facility. It is a regulated monitoring station in the Water Licence. It includes discharge limits that must be achieved to maintain compliance.

Two notices for discharge from MEL-25 were sent in 2019 to the appropriate agencies. The first notice was sent on June 4th, and the second on August 21st. A follow-up was then sent on September 27th to notify appropriate agencies that September discharge remained ongoing due to heavy rainfall throughout September. All water quality results for station MEL-25 met the Type A Water Licence discharge criteria. Approximately 1,000 m^3 of water were discharged in June, and 12,000 m^3 was discharged in September.

7.3.1.24 *MEL-26 Melvin Bay Final Discharge Point*

MEL-26 is sampled at the Melvin Bay final discharge point (end of pipe before offsite release) for treated saline effluent. It is a regulated monitoring station under MDMER. It includes discharge limits that must be achieved to maintain compliance. Figure 7 below shows the TSS concentrations as a critical parameter for samples collected at station MEL-26 in 2019.

Figure 7. TSS results for MEL-26 samples



As seen in Figure 7, one sample collected at MEL-26 on August 19th showed a TSS concentration of 53 mg/L and 33 mg/L on a duplicate sample, which exceeded the limit of 30 mg/L for any given grab sample to comply with MDMER authorized limits. The exceedance was reported to the 24-hour spill reporting line as required by the Government of Nunavut's Environmental Protection Act, paragraph 5.1(a), and by the conditions under the Nunavut Water Board Licence 2AM-MEL1631 Water Licence, part H, item 8(b). During this same window of operation, the August monthly average for TSS concentration was 25 mg/L; above the maximum monthly mean allowable value of 15 mg/L.

Two grab samples were collected on October 1st and October 7th, 2019, measuring 14 mg/L and 17 mg/L TSS, respectively. Under normal circumstances, additional samples would have been collected in October. However, due to winter conditions discharge to sea was shutdown for the season on October 11th, thereby preventing additional samples from being collected. Both grab samples were below the MDMER maximum authorized concentration in a grab sample, but produced an October average above the maximum monthly mean allowable value of 15 mg/L. The exceedance was reported to the authorities as required.

Two acute lethality failures occurred for the MEL-26 sampling location over 2019. The first acute lethality failure pertained to the September 2nd, 2019 sampling event, which reported a 96-hour LC_{50} value of 25%. This result was communicated to the appropriate authorities and in response an increased frequency of tests was implemented. The second acute toxicity failure pertained to the September 9th, 2019 sampling event, which reported an LC_{50} value of 16.5%. The result was received on September 12th, 2019, following which on the same day Agnico Eagle communicated the result to the appropriate authorities and ceased discharge immediately.

The acute toxicity failures have been attributed to residual chlorine from the ammonia removal treatment which occurred as a result of saturated Granular Activated Carbon (GAC) filters. Once the cause was identified, it was rectified immediately. All other acute toxicity testing at MEL-26 passed as non-lethal, including October 1st and October 7th sampling events.

Agnico Eagle is confident that upgrades underway at the Saline Effluent Treatment Plant (SETP) will improve the treatment performance and the process reliability. Regarding TSS, a more rigorous turbidity monitoring system will be implemented in combination with a turbidity-TSS correlation in order to evaluate in real-time whether the effluent meets the TSS requirements prior to discharge. Regarding residual chlorine, additional (back-up) GAC filters and more rigorous chlorine monitoring and logging will be implemented. To the system as a whole, a review of the water treatment plant monitoring and reporting practices is underway and will be completed prior to commencement of the 2020 open water season. Lastly, organizational changes have been implemented at the site and additional resources have been allocated to the water management team. These changes are intended to further improve consistency and timeliness of the response on site.

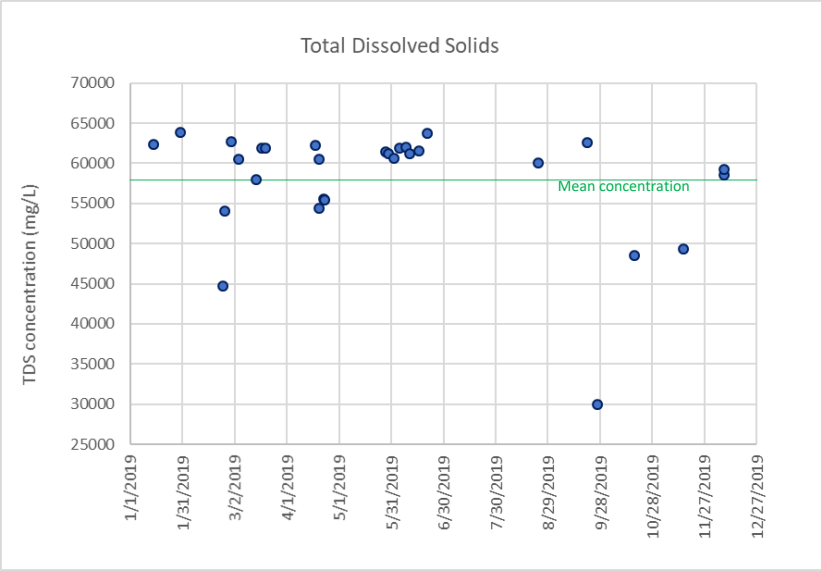
7.3.2 Underground sampling

Water samples collected in the underground mine over 2019 include diamond drillhole (DDH) water intersects and underground contact water.

DDH water intersects are flushed prior to sample collection as a means to provide representation of “non-contact” groundwater within the fractured rock surrounding underground mine. DDH water samples were collected as water was intersected (29 total samples over 2019) and analyzed for relevant parameters to provide a representation of the background “non-contact” groundwater quality, which is the primary contributor of water received by the underground mine.

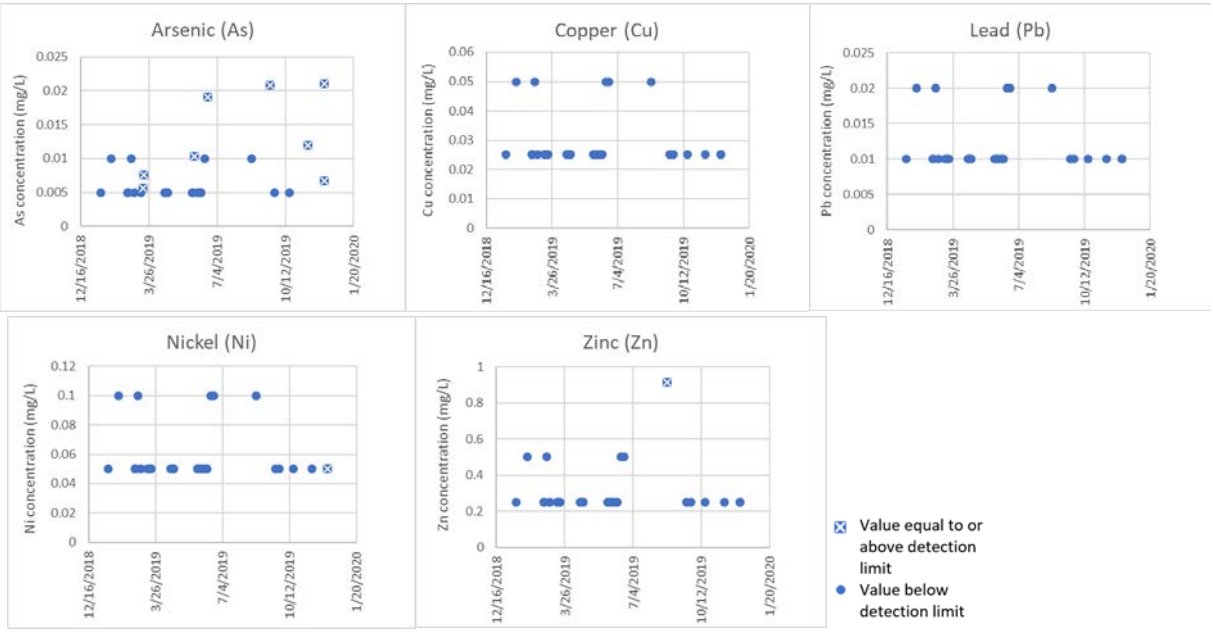
Water quality results for DDH samples collected in 2019 are provided in the Groundwater Management Plan. In general, results for the 29 samples indicate stable and consistent concentrations for most parameters. Figure 8 and Figure 9 below show concentration trends over 2019 for TDS and total metals listed under MDMER Schedule 4 (arsenic (As), copper (Cu), lead (Pb), nickel (Ni), zinc (Zn)).

Figure 8.TDS concentration in DDH water intersect samples – 2019



Results showed an average TDS concentration of 57,925 mg/L, with values ranging from 30,000 mg/L to 63,000 mg/L. TDS concentrations are lower than predicted from previously conducted groundwater investigations (further information is available in section 3.3 of the Groundwater Management Plan).

Figure 9. Total metals (As, Cu, Pb, Ni, Zn) concentration in DDH water intersect samples – 2019



Concentrations for MDMER Schedule 4 total metals (As, Cu, Pb, Ni, Zn) are almost all below the laboratory detection limits for the DDH water intersect samples. Few samples showed arsenic or nickel concentrations

equal to or slightly above the laboratory detection limits; those samples are indicted by the “x” in the graphs above.

Underground contact water samples were collected monthly for water quality analysis from a sump located on level 125 of the underground mine, and from a port located in-line with a suspended sediment treatment system located on level 300. These samples represent a combination of the contact water generated by the underground mine, including groundwater, make-up water, drilling water, and paste line flushing water. The sampling point on 125 is at a sump collecting runoff from nearby development and production, whereas the sampling point on level 300 is a combination of sump water originating from the various levels of the mine prior to clarification treatment and redistribution. Further information is available in Section 4.2.1 of the Groundwater Management Plan.

Underground contact water and non-contact groundwater sampling is a verification monitoring program carried out for operational and management purposes by the Licensee.

The Saline Water Treatment Plant (SWTP) treats contact water from the underground and saline ponds, and was commissioned during the 4th quarter of 2018. Monitoring stations (SWTP-IN and SWTP-OUT) exist at the inlet and outlet to the SWTP. This is a verification monitoring program carried out for operational and management purposes by the Licensee.

7.3.3 QA/QC Sampling

The objective of quality assurance and quality control (QA/QC) 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 external Canadian Association of Laboratory Accreditation (CALA) laboratories, and by staffing the program with experienced technicians.

All analytical chemistry analyses are performed by an external CALA accredited laboratories. In most cases, these analyses are performed by Bureau Veritas (BV) Laboratories, an accredited facility located in Ottawa, Ontario. Agnico Eagle may also require the services of other laboratories, such as BV Laboratories in Edmonton (Alberta), SGS in Lakefield (Ontario) and H2Lab in Val d’Or (Quebec). All data from these labs undergoes a rigorous internal QA/QC process, including the use of spiked samples and duplicate samples. The laboratory certificates of quality control are presented in Appendix H-1, following the corresponding certificates of analysis.

All sublethal toxicity 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 laboratory, including the use of reference toxicants, met the acceptable limits. QA/QC laboratory data is presented within the toxicity reports in Appendix H-1.

Field blanks and field duplicates were collected in 2019 as part of the internal quality control procedures. A field blank is a sample prepared in the field using laboratory-provided deionized water to fill a set of sample containers, which is then submitted to the laboratory for the same analysis as the field water samples. Field blanks are used to detect potential sample contamination during collection, shipping and analysis. Duplicate field water quality samples are collected simultaneously in the field at the same sampling location

and using identical sampling procedures. They are used to assess sampling variability and sample homogeneity. In 2019:

- MDMER and EEM monitoring programs consisted of: 8 duplicate samples and 6 field blanks which were collected from a total of 39 samples, representing 20.5% and 15.4% of samples taken, respectively;
- STP monitoring program consisted of: 1 duplicate sample which was collected from a total of 48 sampling events, representing 2.1% of samples taken; and
- Surface water monitoring programs consisted of: 12 duplicate samples and 12 field blanks which were collected from a total of 63 samples, representing 19.0 % of samples taken.

Overall, collected and analyzed duplicate samples represent 14% of the field samples collected throughout 2019, which is higher than the QA/QC duplicate program objective of 10%.

Analytical precision is a measurement of the variability associated with duplicate analysis of the same sample in the laboratory. Duplicate results were interpreted using the relative percent difference (RPD) between measurements. The equation used to calculate the RPD is:

$$RPD\ (\%) = \frac{(A - B)}{(A + B)/2} \times 100$$

Where A is the field sample concentration, and B is the duplicate sample concentration.

Large variations in RPD values are often observed between duplicate samples when the concentrations of analytes are low and approaching the method detection limit. Consequently, a RPD equal to or higher than 20% for concentrations of field and duplicates samples that both exceed 10 times 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 (RPD calculations) are presented in the tables included in Appendix H-3 for the MDMER and EEM, STP and Surface Water monitoring programs. The following is a brief summary of the QA/QC results, per sampling program:

- MDMER and EEM: All duplicate samples collected were considered as having high analytical precision. Only two duplicate samples collected at station MEL-26 showed notable RPD values for less than 10% of analyzed parameters.
- STP: The collected duplicate sample showed a high analytical precision for the related sampling event.
- Surface Water: All QA/QC sampling events conducted within the surface water quality program are rated as having high analytical precision. Two duplicates collected at stations MEL-12 and MEL-22 showed notable RPD values, for less than 10% of analyzed parameters.

Results show that the QA/QC plan was followed and samples were collected by qualified technicians. QA/QC methods are further discussed in the Quality Assurance/Quality Control Plan.

Temperature, pH, dissolved oxygen, turbidity and specific conductivity are measured in the field using hand held meters such as HACH test kit – 2100 Q Portal Turbidimeter (turbidity), Oakton PCS35 Meter (pH and conductivity), and Eureka Manta II (pH, dissolved oxygen and conductivity). The instruments are calibrated before each sample event to ensure optimal performance and record of the calibration are kept in a calibration log. The calibration data regarding these instruments is presented in Appendix H-3.

QA/QC methods and results for specific field programs (i.e., AEMP) are discussed separately in their respective reports.

7.4 SEEPAGE

As required by Water License 2AM-MEL1631 Schedule B, Item 8*: Summary of quantities and analysis of Seepage and runoff monitoring from the Landfill, Landfarm, Waste Rock Storage Facilities, Borrow pits and Quarries.*

In 2019, no seepage was observed from the landfill or the landfarm, no seepage was observed from borrow pits or quarries.

7.5 VISUAL AWAR WATER QUALITY MONITORING

Pre-freshet and freshet inspections were conducted at Itivia, crossings along the AWAR and the Bypass Road in 2019. These inspections are conducted to monitor for and document potential hazards such as blockages impeding free flow of water resulting in ponding, washing out of roads and unintentional rerouting of flow, detecting the presence/absence of flow, erosional concerns and turbidity plumes. A total of 10 Itivia inspections were carried out prior to and during freshet 2019. A total of 13 All Weather Access Road (AWAR) and Bypass Road inspections were carried out prior to and during freshet 2019. Inspections were weekly, at minimum, over freshet, with greater frequency during peak flow. During inspections, areas for concern were noted and corrected appropriately (i.e., straw log deployment, notifying the Energy & Infrastructure Department for maintenance requirements). On June 1st, snow blockage was cleared with an excavator on the AWAR to allow water to drain through Culvert 3. Straw logs were also installed at the expected runoff pathway. No other issues were observed during the conducted inspections.

Check dams were installed in the path of bulk runoff at Itivia in early May as a mitigation measure to control TSS concentrations. Furthermore, straw logs were deployed in areas expected to produce high TSS sources. On May 27th, it was observed that flow through the Itivia culvert (upstream of MEL-SR1 station) was partially sourced from visually turbid water from Itivia Street and from turbid runoff from a culvert crossing Qupanuaq Street. Straw logs were deployed at these locations and samples were collected at the Itivia Street runoff location, Qupanuaq Street runoff location, and at MEL-SR1 on May 27th. Laboratory TSS results for these samples were 810 mg/L, 82 mg/L and 23 mg/L, respectively. This supports visual assessments and effectiveness of TSS mitigation measures.

Inspections were regularly conducted at Itivia, along the AWAR and Bypass Road throughout the year, and in response to rainfall. Any visual turbidity plumes or erosion at Itivia, along the AWAR/Bypass Road, at culverts or at bridges were documented by Environmental Technicians. No issues were raised in 2019.

7.6 BLAST MONITORING

Blasts were monitored using an Instantel Minimate Blaster, which is fully compliant with the international Society of Explosives and Engineers performance specifications for blasting seismographs (Instantel, 2005). The transducer is installed as per the model specifications. For additional details on seismograph instrumentation and monitoring program detail, please refer to the Blast Monitoring Program (2020); all monitoring protocols set forth in this program are followed by Agnico.

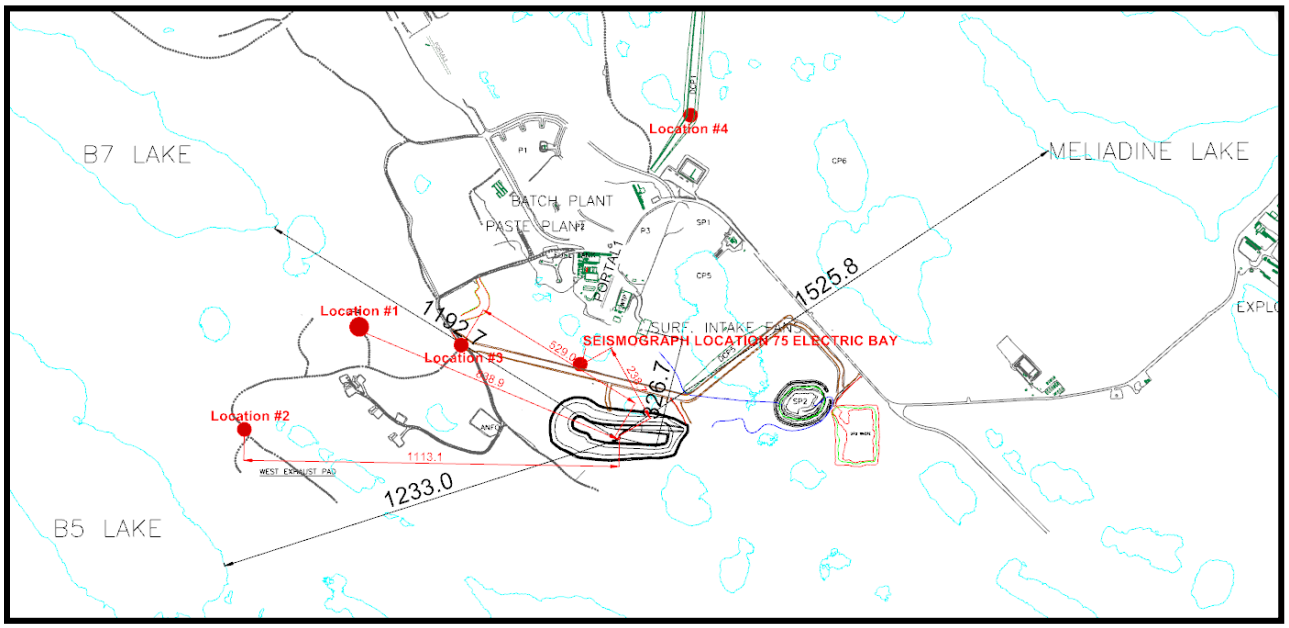
This instrument measures transverse, vertical and longitudinal ground vibrations. Transverse ground vibrations agitate particles in a side to side motion. Vertical ground vibrations agitate particles in an up and down motion. Longitudinal ground vibrations agitate particles in a back and forth motion progressing outward from the event site (Instantel, 2005). The Minimate Blaster calculates the PPV for each geophone and calculates the vector sum of the three axes. The final result is the Peak Vector Sum (PVS) and is the resultant particle velocity magnitude of the event:

$$PVS = \sqrt{(T^2 + V^2 + L^2)}$$

Where:
T = particle velocity along the transverse plane
V = particle velocity along the vertical plane
L = particle velocity along the longitudinal plane

The 2019 surface monitoring locations are identified in the below Figure 10. Blast monitoring data compilation and results are available in appendix H-4.

Figure 10. Surface Monitoring Locations

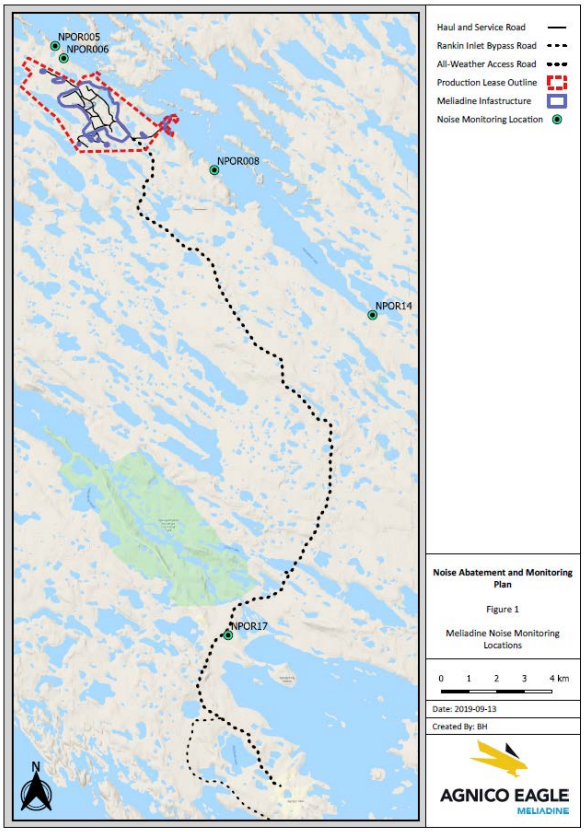


7.7 NOISE MONITORING

The objective of the noise monitoring program is to measure noise levels at four previously determined monitoring locations over at least two 24 h periods. Results are compared to FEIS predictions for the 24-h L_{eq}(24 hour equivalent energy noise level) the $L_{eq\text{-}nighttime}$ design target, and the site's noise monitoring criteria.

In 2019, Agnico Eagle conducted two or more successful rounds of monitoring events for all stations (NPOR005, NPOR006, NPOR008 and NPOR017). According to conditions of the Project Certificate, NPOR014 was not required to be monitored in 2019, since activities related to the Discovery Pit were not occurring. Monitoring was conducted for the first time at NPOR005 (alternate to NPOR006), since previously high occupancy rates at the seasonal cabin adjacent to NPOR006 have impeded data interpretation for that location. However, the cabin at NPOR006 did not appear to be occupied during monitoring in 2019, so results for both stations are presented. Figure 11 shows location of noise receptors.

Figure 11. Noise receptors (points of reception - PORs) as identified in the noise impact assessment.



Following processing of the data in accordance with standard methods (Alberta Energy Resource Conservation Board Directive 038), sufficient valid data was available for the calculation of at least two 24-h L_{eq} values for each monitoring station in 2019. Final values are shown in Table 20.

Table 20. Summary of noise monitoring results in 2019.

Location	Monitoring Start	Monitoring End	*Noise Monitoring Criterion $L_{eq(24\ h)}$ (dBA)*	*FEIS Prediction $L_{eq(24\ h)}$ (dBA)*	Measured $L_{eq(24\ h)}$ (dBA)	*Design Target $L_{eq\ (nighttime)}$ (dBA)*	Measured $L_{eq\ (nighttime)}$ (dBA)
NPOR005	09/05/2019 3:22 PM	09/07/2019 7:38 AM	*45*	*36.3*	35.6	*40*	34.0
	09/12/2019 9:02 AM	09/15/2019 4:31 PM			35.1		33.0
NPOR006	09/12/2019 8:42 AM	09/15/2019 16:19 PM	*45*	*39.8*	**40.2**	-	-
	09/20/2019 12:56 PM	09/22/2019 13:40 PM			39.6		-
NPOR008	09/08/2019 2:55 PM	09/11/2019 2:17 PM	*45*	*41.7*	39.5	*40*	36.3
	09/22/2019 3:09 PM	09/24/2019 6:59 PM			34.9		38.5
	10/03/2019 11:19 AM	10/06/2019 3:07 PM			36.9		34.6
NPOR014	NM	NM	*45*	*44.7*	NM	-	-
NPOR017	09/08/2019 9:03 AM	09/10/2019 4:06 PM	*45*	*43.4*	**45.0**	-	-
	09/22/2019 10:07 AM	09/25/2019 2:16 PM			38.6		-
	10/03/2019 3:51 PM	10/06/2019 2:32 PM			42.5		-

NM" indicates not required to be measured. Values exceeding the FEIS prediction are in bold. No values exceeded site noise monitoring criteria.

No exceedances of the site's noise monitoring criterion (45 dBA, 24-h L_{eq}) or night-time design target (40 dBA) occurred.

For NPOR005 and NPOR008, no measured values exceeded the FEIS predictions for those locations. For NPOR006, one of two 24-h L_{eq} measurements marginally exceeded the FEIS prediction of 39.8 dBA, at 40.2 dBA. Review of sound recordings indicated this was generally due to an elevated baseline environment (wind noise), mixed with intermittent but frequent backup alarms. For NPOR017, one of three 24-h L_{eq} measurements marginally exceeded the FEIS prediction of 43.4 dBA, at 45.0 dBA. This exceedance was generally caused by traffic noises and aircraft flyovers, occasionally compounded by simultaneous bird calls. For both of these cases, since the exceedance was marginal (<3 dBA), occurred during a single monitoring event, and the noise monitoring criterion was not exceeded, the events were not investigated further.

To date, no noise-related complaints have been received for the Meliadine site.

The following actions were planned for 2019 and responses of Agnico are indicated:

- Noise monitoring surveys will be conducted earlier in the ice-free season when wind speeds and animal interference (bird calls) are minimized.
    - Due to delays in receiving repaired equipment in 2019, all surveys were conducted in September and very early October. However, sufficient valid data was obtained to calculate 24-h L_{eq} values for all monitoring periods, and a second noise meter was purchased to reduce the possibility for delays in future years.
- Weather data will be reviewed during or immediately following noise monitoring events to estimate the proportion of usable data and the need for supplemental monitoring.
    - Completed
- Reconnaissance and monitoring (if feasible based on occupancy) will be conducted at NPOR005, since high occupancy rates at NPOR006 tend to interfere with assessments of mine-related noise in this location. Monitoring will also be conducted at NPOR006.
    - Completed - monitoring was conducted at NPOR005.
- Monitoring will focus on NPOR005, NPOR006, NPOR008 and NPOR017. Since activities at the Discovery Pit are not ongoing, monitoring is not required at NPOR014. However, data will be collected at this station if time and weather conditions permit.
    - Completed. Monitoring was conducted at all stations except NPOR014.

No specific supplemental actions are planned for 2020. Monitoring will be conducted at stations NPOR005 and/or NPOR006 depending on apparent cabin occupancy. No activities related to the Discovery Pit are planned, so monitoring will be conducted at NPOR014 as feasible.

The complete Noise report can be found in Appendix H-5.

7.8 AIR

7.8.1 Air Quality monitoring

Through ambient air quality monitoring program, Agnico Eagle aims to measure airborne particulates, dustfall, and the gaseous compounds (NO_2 and SO_2) using a combination of active and passive sampling methods. In accordance with the Plan, monitoring in 2019 included analysis of dustfall at seven pre-determined sampling locations, as well as NO_2 and SO_2 at two locations, over one month averaging periods throughout the year. In addition, Agnico Eagle began sampling dustfall transects at three locations along the AWAR, and one location along the Rankin Inlet Bypass Road. Units are in place for the year-round analysis of suspended particulates (TSP, $PM_{2.5}$, and PM_{10}), but sample collection only occurred for a three-month period. Persistent equipment and maintenance issues with the four Partisol sampling units prevented sample collection for the remainder of the year. Available results for all parameters were compared to regulatory guidelines and Final Environmental Impact Statement (FEIS) predictions, and spatial and temporal trends were assessed.

Dustfall results are compared to Alberta's Ambient Air Quality Guidelines (June 2016) for recreational and industrial areas, for context. In 2019, two of the seventy-seven (77) samples collected exceeded the

recreational area guideline for total dustfall, and one additional sample exceeded the industrial area guideline. Generally, an increase in measured dustfall rates has occurred since mid-2017 when the construction period began. However, exceedances of regulatory guidelines for recreational areas are still considered very infrequent, occurring in <4% of samples in 2019. For all road transects, rates of dustfall decline below regulatory guidelines for recreational areas between 25 m and 100 m from the road.

Concentrations of suspended particulates (TSP, $PM_{2.5}$, and PM_{10}) were assessed in two locations using Partisol air samplers between January and early April 2019. All available results were below regulatory guidelines (Government of Nunavut Ambient Air Quality Standards/BC Ambient Air Quality Objectives) and were below maximum concentrations predicted in the FEIS.

Calculated annual average concentrations of NO_2 and SO_2 were well below the Government of Nunavut Ambient Air Quality Standards, and were below FEIS maximum predicted values. This was the third full year of monitoring for gaseous compounds, and no clear spatial or temporal trends were observed.

As described in the Air Quality Monitoring Plan, a permanent weather station was installed at the Meliadine site, and daily averages for wind speed, direction, temperature, solar radiation, and rainfall are provided.

Incinerator stack testing was performed in December 2019. Results of that assessment are provided as appendix E-1.

Since monitoring results in 2019 were within applicable air quality criteria and FEIS predictions, no additional adaptive management measures are planned. Strategies are in place to ensure better collection of suspended particulate data in 2020.

The following items were identified in the 2018 Air Quality Monitoring Report to improve the program, and Agnico Eagle's actions in 2019 are indicated.

- Maintenance and replacement parts will be obtained to ensure all Partisol units are operating, and minimal delays occur due to service requirements.
    - Ongoing. Units are undergoing professional servicing and calibration by the supplier, who will re-install the units onsite as soon as possible and provide training to Environment Department technicians.
- Procedures will be developed for the collection of sampled filters, and deployment of new filters to reduce the potential for gaps in the data.
    - Complete.
- A schedule of annual calibration of each unit, with bi-annual or quarterly system audits will be implemented.
    - Complete.

Planned supplementary actions in 2020 include:

- Continue to investigate alternate sampling equipment for suspended particulates to potentially replace Partisols, due to persistent, ongoing equipment malfunctions.
- Enact revisions to monitoring locations and analyses as described in the updated Air Quality Monitoring Plan (Version 2, March 2020), including:
    - Analysis of certain metals in suspended particulates;
    - Supplemental dustfall monitoring at reference stations;
    - Addition of dustfall transect monitoring locations at DF-1, DF-2, DF-3, and DF-WT (completed already in 2019); and

  - Reduction in monitoring frequency for DF-1, DF-2, and DF-3 from year-round to summer-only.
- Target use of one travel blank per shipment, for each sample type.

Outside of these actions, monitoring in 2019 will be conducted according to the Operations phase schedule, as described in the Air Quality Monitoring Plan (Version 2, March 2020).

The air monitoring full report can be found in Appendix H-6.

7.8.2 Greenhouse Gas Emissions

Environment Canada's Greenhouse Gas Emissions Reporting Program will be completed by June 1st, 2020.

7.8.3 Climate

A permanent weather station was installed at the Meliadine site. The station records monthly data for the average, maximum and minimum temperature, the average and maximum wind speed and the total, daily average and maximum precipitation which can be found in Table 21. The precipitation data is from ECCC weather station in Rankin Inlet.

Table 21. 2019 Monthly climate data

Date	Temperature Average	Temperature Max	Temperature Min	Wind Speed Average	Wind Speed Max	Total Precipitation	Daily Average Precipitation	Max Daily Precipitation
	°C	°C	°C	m/s	m/s	mm	mm	mm
January	-33.70	-29.92	-37.57	19.85	39.94	18.60	1.66	13.20
February	-33.26	-29.82	-36.69	16.61	33.57	2.40	0.08	1.20
March	-24.24	-19.14	-30.23	20.12	41.91	20.80	1.49	6.20
April	-15.98	-11.58	-21.35	15.03	33.01	18.20	0.60	5.40
May	-4.42	-1.27	-8.17	18.35	35.90	37.40	1.20	13.20
June	5.47	10.14	1.20	13.49	31.19	27.20	0.91	17.80
July	10.46	14.62	6.55	14.92	37.31	112.80	3.64	23.30
August	9.96	13.20	7.13	16.50	35.90	112.90	3.64	34.00
September	5.25	7.85	2.82	19.04	39.36	79.40	2.64	22.20
October	-1.96	0.20	-4.50	17.31	37.97	31.90	1.02	7.40
November	-16.64	-12.88	-20.72	15.00	32.02	11.60	0.39	4.60
December	-24.47	-20.38	-28.25	13.02	27.97	11.60	0.37	4.20

7.9 WILDLIFE MONITORING

All Meliadine employees and contractors are required to report wildlife sightings. All supervisors ask their employees to report wildlife sightings; wildlife logs are posted throughout the Meliadine camp and are easily

accessible to employees to facilitate wildlife reporting after work shifts. All observations, problematic interactions, wildlife surveys conducted weekly along the AWAR, caribou migration, operation shut downs related to caribou migration, aerial observations when helicopters are active, onsite audits (i.e. for wildlife attractants) conducted by third parties, and mitigation actions taken following problematic issues are reported in the monthly report to the Government of Nunavut, the Kangiqliniq Hunters and Trappers Organization and Kivalliq Inuit Association.

Department toolbox meetings were completed in 2019 for environmental subjects including wildlife and caribou migration. The presentation and the attendance sheets can be found in Appendix F-1.

7.9.1 TEMMP

In 2019, Agnico Eagle retained Golder Associates to undertake the wildlife and vegetation monitoring programs, in accordance with the Terrestrial Ecosystem Monitoring and Management Plan (TEMMP).

The purpose of this report is to summarize the 2019 data collected from wildlife and vegetation monitoring programs, and to describe natural variation and potential mine-related changes in wildlife populations within and adjacent to the Mine. The 2019 report describes monitoring objectives and methodology, 2019 annual results, mitigation activities, and management recommendations based on 2019 monitoring results. Below is a summary of the monitoring/findings from the 2019 TEMMP. Full text of the 2019 annual TEMMP report can be found in Appendix H-7.

Incorporation of Inuit Quajimajatuquangit

When possible, field programs in 2019 were guided by Inuit Qaujimajatuqangit (IQ), including the assistance of local field assistants.

Direct Habitat Loss

Direct habitat loss is assessed every three years and was not assessed in 2019 as the Project footprint is unchanged from that assessed in 2018 (next assessment in 2021).

Indirect Habitat Loss

Indirect habitat loss for caribou and wildlife habitat (soils and vegetation) is assessed every three years and was not assessed in 2019 (next assessment in 2022, tied to the Vegetation Health Program).

Wildlife Observations

Between 1 January and 7 December 2019, there were 244 incidental wildlife observations among 17 different species.

Wildlife Track Surveys

On-site wildlife track surveys were conducted on various days between 6 January and 28 December 2019. A total of 322 individual tracks were recorded, including a cluster of 50 tracks of an unidentified species.

Nest Relocation

A total of 9 bird nests were observed in the Project footprint during the 2019 nesting season in July. No nests or eggs were disturbed, and none needed to be relocated.

Incidents and Mortalities

A total of 17 wildlife mortalities were recorded in 2019 – a decline of 41% compared to 2018 mortalities.

Only 29% of the total wildlife mortalities were due to direct Project-related effects, whereas the remaining 71% of the total wildlife mortalities were Arctic foxes trapped by the Government of Nunavut (GN) Department of Environment (DoE) (i.e., not Project-related).

Wildlife Deterrents

A bird deterrent canon was initially deployed in Saline Pond 2 (SP2) in accordance with Agnico Eagle's Project Certificate No.006 Term and Condition 74 on 6 June 2019, but was not used. Deterrent bird kites were deployed at several Collection Ponds at the Mine site and a snowy owl effigy was placed atop the fuel tanks to dissuade birds from nesting in these areas. No use of chemical deterrents against predatory mammals (i.e., bear sprays) were reported for 2019.

Barren-ground Caribou

Caribou Advisory

Mass migration through the Mine site and All-weather Access Road (AWAR) took place between 26 June and 6 July 2019. In total there was a complete work stoppage for 240 hours (~10 days) for the AWAR, and restricted duties for both the Mine site and AWAR for 222 hours (~9.25 days).

Caribou Behavior

Caribou behavior observations were completed by Agnico Eagle staff from 26 to 28 June and 1, 3 and 4 of July 2019 on 12 groups of caribou. Observations showed no obvious behavioral response to mine activity, including consideration of observations made between 2017 and 2019.

Hunter Harvest

A Memorandum of Understanding (MOU) was signed, in principal, by Agnico Eagle and the Kivalliq Hunters and Trappers Organization (KHTO) in March 2019. Agnico Eagle is currently working on a calendar for the Hunter Harvest Survey with the KHTO for data collection from the local community.

Birds

Shoreline Surveys

All waterbodies within 200 m of mining related infrastructure (excluding the AWAR) were surveyed on foot by trained biologists to locate and identify nesting waterbirds from 10 to 20 June 2019. A total of nine different species were observed, including a Peregrine falcon nest (*Falco peregrinus anatum/tundrius*; listed as Special Concern under Schedule 1 of the Species at Risk Act). Due to the timing of surveys, no nestlings or fledglings were observed – nests were in the nest-building stage or with eggs. A total of 26 nests were recorded – eggs were confirmed for 77% of the nests, which were observed (72 eggs in total).

Point Counts

In 2019, a total of 6 transects were completed for a total of 72 point count surveys between 10 and 20 June 2019. In total, seven passerine (i.e., songbird) species were recorded. The most abundant species was horned lark (*Eremophila alpestris*) and the least abundant species was American robin (*Turdus migratorius*).

Density of each species varied between 2018-2019 in nearly all habitat types, but was largely comparable on average. Mean density of passerine birds was significantly different among habitat types. Species richness and diversity were not significantly different among habitat types.

Modelling results for differences between years, habitat type and distance indicate that bird density may increase with increasing distance from the AWAR, but there was no change in overall bird density between 2018 and 2019.

PRISM

Agnico Eagle contributed to the Environment and Climate Change Canada (ECCC) PRISM surveys in 2018 and 2019 and will continue to do so every five years. Ten 12 ha plots were surveyed from 19 to 21 June 2018, and 16 plots from 14 to 18 June 2019.

A total of 14 breeding bird species were observed in both years combined. The most common bird species observed in the plots were Lapland longspur (*Calcarius lapponicus*), and Savannah sparrow (*Passerculus sandwichensis*). A total of 243 non-breeding bird species were observed in both years combined.

One species-at-risk was observed – a single short-eared owl (*Asio flammeus)*; but sex was undetermined, and this species is listed as Special Concern under Schedule 1 of the Species at Risk Act. Breeding evidence of two species of shorebirds was found during the surveys - Dunlin (*Calidris alpina*) in 2018, and Semipalmated plover (*Charadrius semipalmatus*) in both 2018 and 2019.

Raptors

For the period of 2013 to 2019, two nesting sites are confirmed within the footprint of the mine infrastructure, three are within 600 m of the AWAR and another four are within 1.5 km of the AWAR. Mean distance from known occupied nesting sites to the Meliadine Lease footprint was 12.48 km (range of 0 – 29 km). Nest occupancy rates for Peregrine falcons (*Falco peregrinus tundrius)* have been stable between 2013 and 2019, while Rough-legged hawk (*Buteo lagopus)* nest occupancy rates have been more variable over the same period. Gyrfalcons (*Falco rusticolus*) have not been recorded.

Soil and Vegetation Monitoring

A field program was carried out by a vegetation ecologist from 19 to 24 July 2019. No dustfall was visually observed at the treatment and reference locations. However, dustfall on vegetation was observed at some of the locations along the AWAR. Agnico Eagle will continue inspecting vegetation visually to assess possible impacts of dustfall on vegetation.

Overall there was no significant difference between the soil and vegetation metal concentration results from 2017 (Golder 2018) and 2019. Despite some elevated soil parameter concentrations for arsenic and high variability in soil pH observed, these are comparable to baseline measurements (Golder 2014a) and the vegetation analysis supports that there is no stress to vegetation.

Environmental Variables

In 2019, the maximum daily temperature of 21.8°C was recorded on 23 July 2019 and the minimum daily temperature of -45.4°C was recorded on 26 January 2019. Snowmelt began 6 June 2019 when the average daily air temperature exceeded 0°C. Environmental variables will continue to be monitored on an on-going basis.

7.9.2 Marine Environment

A Marine Mammal and Seabirds Observation (MMSO) report was completed for all observations done during the 2019 sealift season. The purpose of the MMSO program is to mitigate interactions between marine mammals and seabirds and Project vessels and to collect information on marine wildlife presence. This report provides an interpretation and discussion of the MMSO data collected in 2019 by the shipping contractor Transport Desgagnés.

Four marine mammal species were recorded in 2019. None were recorded in 2018 and seven marine mammal species were recorded in 2017. Killer whale *(Orcinus orca),* harp seal (*Pagophilus groenlandicus*), fin whale (*Balaenoptera physalus*), and bowhead whale (*Balaena mysticetus)* were recorded in 2019. None of the species observed in 2019 were observed in 2017. The total temporal (hr) and spatial (km) survey effort of the 2019 MMSO program was greater than both 2018 and 2017. Efforts included four vessels in 2019 compared to two in 2017 and one in 2018. The 2019 MMSO Program was conducted over five months (July to November), while the program in 2017 and 2018 were conducted over three months (July to September) and one month (June to July), respectively.

A total of 14 and 20 identified bird species have been observed from 2017 to 2019 on the stationary platform and moving platform surveys, respectively. Three seabird species have been recorded on moving platform transects in all survey years (common eider [*Somateria mollissima*], dovekie [*Alle alle*], and thick-billed murre [*Uria lomvia*]), with thick-billed murre being one of the most commonly observed species in all survey years. Common eider (Somateria mollissima) and glaucous gull (*Larus hyperboreus*) were observed during stationary platform surveys all survey years. Thick-billed murre was the most abundant species observed on stationary platform surveys in 2017, while glaucous gull was the most abundant species observed in 2018 and 2019 and the second most abundant species recorded in 2017. Considerably more species and individuals were observed in 2019 due to greatly increased survey effort in 2019 vs 2017 and 2018. The density of seabirds reported in all years is low.

A total of eight Transport Desgagnés vessels serviced the Project via Rankin Inlet between July and early November during the 2019 shipping season. Four of the eight vessels serviced Rankin Inlet twice during the shipping season. Two Transport Desgagnés vessels (*Acadia Desgagnés* and *Claude A. Desgagnés*) traveled north of Coats Island during 2019 shipping season. Each vessel only had one passage north of Coats Island. In both cases the passage north was made due to safety concerns for the vessel, crew and cargo due to weather and sea conditions (i.e. high winds).

No marine mammal-vessel interactions or bird-vessel interactions (e.g., strikes) were recorded in 2019, 2018 and 2017.

The complete report can be found in appendix H-8.

7.10 VEGETATION

On June 1, 2018 Agnico Eagle and the University of Saskatchewan were successful in receiving a Natural Sciences and Engineering Research Council (NSERC) 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. The primary objective of this research is to address Term and Condition no. 41 of the Project Certificate for the Meliadine site: “Prior to the commencement of operations, the Proponent shall develop a progressive re-vegetation program for

disturbed areas that are no longer required for operations, such program to incorporate measures for the use of test plots, reseeding and replanting of native plants as necessary." The specific objective is the characterization of initial and realized niches of biological soil crusts and tundra vascular plants across a chronosequence of naturally recolonized drilling waste dumps.

Work started during the 2018 summer and continued in 2019, with both educational activities and a field revegetation trial.

In May 2019, University of Saskatchewan Alix Conway (Education coordinator) traveled to Baker Lake and taught a class at the Jonas Amitnaaq Secondary School about sampling techniques and in July 2019, a revegetation restoration trial at three different locations on the Meliadine site was established.

More information on the project can be found on the project website: https://www.tundrarestoration.com/ and additional information regarding the vegetation can be found in the TEMMP report in Appendix H-7

SECTION 8. CLOSURE

8.1 PROGRESSIVE RECLAMATION

8.1.1 Mine Site

As required by Water License 2AM-MEL1631 Schedule B, Item 15: ***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 Water License 2BB-MEL1424 Part B, Item 6k: A description of all progressive and/or final reclamation work undertaken, including photographic records of site conditions before, during and after completion of operations;

In 2019, the following eskers were reclaimed at the mine site: Emulsion, Meliadine, Meliadine North, Meliadine North North, and Wesmeg. They were regraded to re-establishe natural drainage.

Site D (the Char River Pit at km 6 of the AWAR) was also reclaimed in 2019.

8.1.2 AWAR

In 2019, the following eskers were reclaimed and regraded to re-established natural drainage along the AWAR : B5, B5a, B6, B10, B11a, B12, B13, B15 and B15a.

8.1.3 Quarries

In 2019, no reclamation occurred at quarries.

8.2 RECLAMATION COSTS

As required by Water License 2AM-MEL1631 Schedule B, Item 17: ***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 Water License 2BB-MEL-1424 Part B Item 6h: An updated estimate of the current Meliadine West Gold Project restoration and liability, as required under Part B, Item 3, based upon the results of the restoration research, project development monitoring, and any modifications to the site plan;

A permanent closure and reclamation financial security cost estimate was prepared in March 2014 using the RECLAIM model, version 7.0. According to that estimate, the closure and reclamation of all Project

facilities amounted to $47,449,337. This estimate was included in the Preliminary Closure and Reclamation Plan (April 2015) prepared as part of the Type A Water License application. In negotiations between CIRNAC, Agnico Eagle and KIA the quantum of security was increased to $49,555,000.

On July 1, 2017, the Production Lease KVPL11D01 between KIA and Agnico Eagle came into effect; the security was confirmed at $49,555,000. Agnico Eagle posted a Reclamation Security Deposit, equal to 50% of this estimate ($24,777,500) with KIA.

In 2019, an Interim Closure and Reclamation Plan was prepared. CIRNAC's RECLAIM Reclamation Cost Estimating Model Version 7.0 workbook has been used for this estimate, as per the Guidelines for Closure and Reclamation Cost Estimates for Mines, issued by CIRNAC, Mackenzie Valley Land and Water Board and the Government of the Northwest Territories (CIRNAC, MVLWB, GNWT, 2017). The 2019 estimated closure and reclamation costs for the Meliadine Mine represent a total of $ 59,514,717. This total includes $ 34,462,041 of direct costs and $ 25,052,677 of indirect costs. As per discussions between Agnico Eagle and the NWB, discussions regarding the cost estimate will be held in 2020 between Agnico Eagle, CIRNAC and KIA to finalize the financial security and potential subsequent water licence amendment.

SECTION 9. STUDIES/REVISIONS/MODIFICATIONS

9.1 SUMMARY OF STUDIES

As required by Water License 2AM-MEL1631 Schedule B, Item 18: ***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.***

And

As required by Water License 2BB-MEL1424 Part B, Item 6l summary of any specific studies or reports requested by the Board, and a brief description of any future studies planned or proposed;

No studies were requested by the NWB in 2019.

9.2 SUMMARY OF REVISIONS

As required by Water License 2AM-MEL1631 Schedule B, Item 19: ***Where applicable, revisions will be completed as Addendums, with an indication of where changes have been made, for Plans, Reports, and Manuals.***

And

As required by Water License 2BB-MEL-1424 Part B Item 6g: Any revisions to the Spill Contingency Plan, Site Water Management Plan, Used Water Management Plan, Waste Management Plan, Waste Rock and Ore Storage Plan, Landfill and Landfarm Management Plans, Abandonment and Restoration Plan, as required by Part B, Item 12, submitted in the form of an Addendum;

The following monitoring and management plans were updated and are included in Appendix I-:

- Water Management Plan (Appendix I-1)
- Groundwater Management Plan (Appendix I-2)
- Mine Waste Management Plan (Appendix I-3)
- Ore Storage Management Plan (Appendix I-4)
- Explosives Management Plan (Appendix I-5)
- Blast Monitoring Plan (Appendix I-6)
- Ammonia Management Plan (Appendix I-7)
- Noise Abatement and Monitoring Plan (Appendix I-8)
- Air quality Monitoring Plan (Appendix I-9)
- Oil Pollution Emergency Plan (Appendix I-10)
- Mine Plan (Appendix I-11)

9.3 MODIFICATIONS

As required by Water License 2AM-MEL1631 Schedule B, Item 12: ***A summary of modifications and/or major maintenance work carried out on all water and waste related structures and facilities.***

And

As required by Water License 2BB-MEL-1424 Part B Item 6e: ***A summary of modification and/or major maintenance work carried out on the Water Supply Facilities, Bulk Fuel Storage Facility, Bermed Fuel Containment Facilities, and Wastewater Treatment Facility, including all associated structures, and an outline of any work anticipated for the next year***

From October 6th to November 23rd, 2019, mandatory corrective maintenance to the boiler system at the SWTP was completed. This mainly included re-leveling of the boilers. In parallel to boiler maintenance, additional maintenance at the SWTP was completed over the 48 day period. This included radiator cleaning, evaporator packing replacement, raw water tank cleaning and heat exchanger inspections.

As per maintenance requirements, the incinerator refractory was rebuilt from mid-September 2019 to mid-November 2019.

At this time, no major maintenance is planned for next year.

SECTION 10. OTHERS

10.1 ACTIVE PERMITS

Below is the list of all active permits and authorizations for Meliadine

Table 22. List of all active permits and authorizations for Meliadine

Issued By	ID	Description	Issue	Expiry
KIA	KVPL11D01	Production lease	2017/06/30	2029/06/30
KIA	KVCA07Q08	Tiriganiaq/Westmeg/Meliadine quarry permit	2018/07/19	2021/09/12
KIA	KVCA11Q01	Exploration road quarries	2018/04/19	2021/04/19
KIA	KVRW11F02	Exploration road right-of-way	2012/04/19	2027/06/29
KIA	n/a	Water Compensation Agreement	2016/02/11	2031/03/31
NWB	2BB-MEL1424	Bulk Sampling and exploration drilling water license	2009/07/31	2024/07/21
NWB	2AM-MEL1631	Mining undertaking water license	2016/04/01	2031/03/31
NIRB	006	Project certificate (Meliadine Phase 1)	2015/02/26	N/A
NIRB	16QN071	Screening decision (Itivia Quarry)	-	-
GN-NAD	102631	Land lease, laydown Itivia		2021/07/01
GN-CGS	01-600-23	Quarry permit – site D	2019/07/16	2020/07/01
GN-CGS	L-51809T	Right-of-Way permit AWAR on Municipal land	2017/06/01	2027/05/31
GN-CGS	L-51808T	Right-of-Way Lease Bypass Road km 2-7	2017/06/01	2027/05/31
GN-NAD	102893	Right-of-way lease bypass road km 1-2	2017/07/01	2027/07/01
GN-ENV	2019-058	Wildlife Research Permit	2019/08/06	2020/09/30
CIRNAC	55K/16-42-2	Saline Effluent Discharge and Diffuser Lease	2019/07/19	15 years after issued

10.2 INSPECTIONS

As required by Water License 2AM-MEL1631 Schedule B, Item 21: ***A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.***

Table 23. Inspections and site visits by regulators

Month	Authority	Topic	Feedback/Outcome
April 10th and 11th	CIRNAC	Inspection for activities at site related to the Nunavut Water Board Water Licence No. 2AM-MEL1631 and 2BB-MEL1424	Letter sent by Agnico Eagle to CIRNAC April 20th with information requested during site inspection
May 9th	CIRNAC KIA	Site tour conducted	Letter sent by Agnico Eagle to CIRNAC and KIA May 13th with information requested during site inspection
June 10th and June 11th	CIRNAC	Inspection for activities at site related to the Nunavut Water Board Water Licence No. 2AM-MEL1631 and 2BB-MEL1424	Paper copies of the document requested provided on site by Agnico Eagle to the inspectors
August 20th	NIRB	Site tour conducted	Site visit report was provided by NIRB with observations, recommendations and direction
September 4th	CIRNAC KIA	Inspection for activities at site related to the Nunavut Water Board Water Licence No. 2AM-MEL1631 and 2BB-MEL1424 which included Landfarms A and B, EWTP, spill locations still opened, quarry reclamation sites	No specific requests were made by CIRNAC nor KIA following this inspection
September 25th and 26th	ECCC	Inspection at Itivia and Meliadine	No specific requests were made by ECCC following this inspection
December 2nd	CIRNAC	TSF Inspection following complains regarding dust deposition from the TSF	Inspection report sent by CIRNAC December 3rd, no non-compliances nor failure to comply noted, information requested by CIRNAC was sent by Agnico Eagle December 5th and December 11th

10.3 AWAR

In 2019 Agnico Eagle began transporting treated saline water by truck (from the underground mine to the Itivia area) for discharge to sea, resulting in increased traffic on both the AWAR and the Bypass road. Table 24 shows the 2019 traffic observed on the AWAR in comparison to the FEIS's predictions. Appendix J-1 shows detail of the AWAR traffic data.

Despite higher than anticipated traffic volume, only one exceedances of Alberta's Ambient Air Quality Guidelines (June 2016) for industrial areas occurred for any dustfall sample location. These results indicate low rates of dustfall overall, as discussed in the Air Quality Monitoring Report in Appendix H-6.

In order to monitor rates of dust deposition along the Meliadine All-Weather Access Road (AWAR), Agnico Eagle has refined its dustfall monitoring by establishing 3 transects at kilometers 4, 10, and 23 (DF-1, DF-2, and DF-3, respectively). Each transect includes samples at 25 m, 100 m, and 300 m on the east (downwind) and west (upwind) side of the road. The use of transects rather than single samplers is in line with common practice and allows Agnico Eagle to verify if dustfall rates decline from the AWAR as predicted in the FEIS.

Agnico Eagle is working on implementing ways to reducing dust emission at the source, such as diminishing the traffic by using a waterline rather than water trucks for saline discharge, an application to this effect will be made in first quarter of 2020.

Table 24. 2019 AWAR monthly traffic summary

Month	Total traffic	**Predicted traffic (FEIS)**
January	1076	1178
February	1028	1064
March	1202	1178
April	1333	1140
May	1333	1178
June	1530	1062
July	2177	1087
August	3014	1099
September	2980	1056
October	2523	1178
November	1412	1140
December	1169	1178
Total	20777	13538

10.4 MARITIME TRANSPORTATION

In 2019, 4 marine-based fuel transfers occurred at Rankin Inlet related to the Meliadine project, on August 9th, October 7th, October 16th and to October 25th. All events occurred when the Melvin Bay was free of ice and the weather was not a risk to the activity. Post Oil Transfer Report were submitted to Transport Canada and can be found in Appendix J-2.

The cargo shipping date related to the Meliadine project, including vessel names and dates, can be found in Table 26. No incident was reported during the 2019 maritime transportation.

Table 25. 2019 cargo ship related to the Meliadine project

		ETA	ETD
Miena Desgagnés	**Bécancour**	**15/06**	**19/06**
	Ile aux Coudres	20/06	20/06
	Rankin Inlet	02/07	23/07
	Bécancour	30/07	
Nordika Desgagnés	**Bécancour**	**20/06**	**27/06**

	Rankin Inlet	06/07	26/07
	Baie Comeau	01/08	
Zélada Desgagnés	**Bécancour**	**30/06**	**04/07**
	Baker Lake	20/07	23/07
	Rankin Inlet	24/07	28/07
	Bécancour	05/08	
Rosaire A. Desgagnés	Bécancour	01/08	02/08
	Rankin Inlet	09/08	10/08
	Baker lake	13/08	
Thorco Isadora	**Bécancour**	**11/08**	**16/08**
	Baker Lake	23/08	28/08
	Rankin Inlet	29/08	05/09
	Bécancour	13/09	
Nunalik	**Bécancour**	14/08	18/08
	Rankin Inlet	25/08	03/09
Acadia Desgagnés	**Bécancour**	**19/08**	**23/08**
	Grande Anse	24/08	24/08
	Rankin Inlet	05/09	06/09
	Baket Lake	07/09	10/09
	Bécancour	18/09	20/09
Nordika Desgagnés	**Bécancour**	**27/09**	**01/10**
	Rankin Inlet	**09/10**	**15/10**
	Quebec	22/10	
Rosaire A. Desgagnés	**Bécancour**	26/09	30/09
	Rankin Inlet	08/10	11/10
	Baker Lake	12/10	13/10
	Rankin Inlet	14/10	16/10
	Becancour	23/10	26/10
Miena Desgagnés	**Bécancour**	**30/09**	**05/10**
	Rankin Inlet	13/10	21/10
	Bécancour	02/11	04/11
Claude A. Desgagnés	**Bécancour**	**12/10**	**15/10**
	Rankin Inlet	24/10	26/10
	Bécancour	04/11	05/11
Zelada Desgagnés	**Bécancour**	12/10	19/10
	Rankin Inlet	27/10	31/10
	Bécancour	06/11	

SECTION 11. PUBLIC CONSULTATION

As required by Water License 2AM-MEL1631 Schedule B, Item 22: ***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.***

And

As required by Water License 2BB-MEL1424 Part B, Item 6m: A summary of public consultation/participation, describing consultation with local organizations and residents of the nearby communities, if any were conducted;

And

As required by NIRB Project Certificate No.006 Condition 103: ***The Proponent is encouraged to consult with the Kangiqliniq Hunters and Trappers Organization and the Kivalliq Socio-Economic Monitoring Committee and to make all reasonable efforts to engage Elders and community members of the Kivalliq communities in order to have community level input into updates to its monitoring plans, programs and mitigative measures. This type of engagement will ensure that these programs and measures have been informed by traditional activities, cultural resources, and land use as such may be implicated or impacted by ongoing Project activities. All plans are to include a feedback mechanism for consulting with residents of the Kivalliq, including the provision of results from the Proponent's wildlife monitoring programs to each community. The Proponent shall submit updated plans to the NIRB within 30 days' of their revision and/or finalization.***

11.1 COMMUNITY MEETINGS IN CHESTERFIELD INLET

During the stakeholder and public meetings in both Chesterfield Inlet and Coral Harbour, Agnico Eagle collected the following concerns and Inuit Quajimajatunqangit:

- Belugas are getting stuck in the river and not making it out to sea, possible due to shipping traffic, which affects their fat
- Inuit cadets that do monitoring are not always hired from the area, or are young, and therefore may not know the wildlife
- Concerned about compensation (ex. for wildlife fatality, impact on wildlife habits due to noise pollution, traffic, shipping routes)
- Concerned about oil spills, especially with strong currents in the area, and want to ensure that captains are aware of the dangerous areas around the inlet, including rocky areas or sharp navigational turns
- Concerned about noise during the offloading at Helicopter island
- There is a strong current between Coates Island and Walrus Island that captains should be aware of

- It disrupts hunting practices when traffic is going between Walrus and Coates Island, captains should stay south of Coats

- Concerned that commercial cruise ships around Walrus Island are impacting the walrus population and that global warming will mean increased tourist traffic around Coral Harbour

In order to continue to address these concerns, the following outcomes were decided upon:

- Provide more information on the cadet program and advertise within Chesterfield Inlet and collaborate on ways to make the wildlife monitoring program more effective

- Bring a ship captain and navigational maps to the next meeting, to discuss shipping routes with HTO/Elders

- Reinforce message to captains about taking the route south of Coats whenever possible

For the full consultation report refer to Appendix K-1. For other meetings conducted with Chesterfield Inlet, please refer to Appendix K-2.

11.2 COMMUNITY MEETINGS IN RANKIN INLET

Agnico held a community meeting in Rankin Inlet on May 29th, 2019 focusing on the saline diffuser project, Meliadine project updates, Itivia and shipping, caribou migration and AWAR, including discussions on safety rules, procedures to access road, wildlife and road closure

More details regarding Community meetings can be found in Appendix K-1.

11.3 MEETINGS WITH RANKIN KHTO

In 2019, about twelve (12) meetings were held with the Rankin Inlet KHTO. The Meliadine Environment department and HTO Wildlife Monitor kept communication regularly throughout the year through email and phone. General topics included wildlife monitoring, a major aspect of the wildlife monitoring agreement established with KHTO in 2019, and the hunter harvest study.

More details regarding meetings with KHTO can be found in Appendix K-1.

11.4 COMMUNITY LIAISON COMMITTEE MEETINGS

In 2019, Agnico Eagle continued to attend meetings with the Meliadine Community Liaison Committee in Rankin Inlet, which was established to inform stakeholders on the activities at the mine and to consult them on specific issues and projects. The Committee is currently facilitated and chaired by the Hamlet of Rankin Inlet as a specific working group of the Hamlet, and does sometimes include representation from various groups and organizations, however Agnico Eagle will look at establishing its own Community Liaison Committee in 2020 to ensure that groups such as Elders, youth, Hunters and Trappers Organizations,

RCMP, etc. are regularly consulted on the operations. Agnico Eagle would continue to participate in the Agnico Eagle Hamlet working group.

Meetings are scheduled quarterly in both English and Inuktitut, with the understanding that the minimum number of meetings is two (2) annually. In 2019, Agnico Eagle attended two (2) Community Liaison meetings with the working group.

11.5 ELDERS

Engaging with Elders is ongoing – during the Meliadine Open House on November 9, 2019, many Elders came to Meliadine site to have a tour, talk and ask questions with the Operations staff. Also, on November 17, 2019, Elders were invited to Meliadine site to participate in a country food night. Agnico Eagle ensures to consult with Elders for new projects and on IIBA socio-economic studies, such as the 2018 Socio-Economic Inuit Impact Benefit Review (SEIIBR) and the Inuit Workforce Barriers Study (IWBS).

11.6 SITE TOURS FOR RANKIN INLET RESIDENTS

Each year, Agnico Eagle offers a variety of ways for the residents of Rankin Inlet, as well as various other groups or individuals from the Kivalliq, to visit Meliadine site. The list below outlines the major visits to the site during 2019:

- Agnico Eagle invited residents of Rankin Inlet to come on a site tour during the annual 'Open House'. On November 9, 2019. Agnico Eagle organized the regular tour for residents with five (5) buses from Rankin Inlet with almost 80 attendees. Participants were given a tour, and five (5) operational departments (HR/Training, Community Relations, Mine/Engineering, Geology & Environment) had booths or were present to interact and answer questions from community members.
- On May 1st, 2019, Agnico Eagle welcomed a group of high school students on site to do a tour. The visit objective was to expose students to the mining reality by showing them the Meliadine site and by exploring the variety of potential job possibilities that could be accessed.
- On May 13th, Agnico Eagle welcomed the GN Culture and Heritage department to tour Meliadine site and provide information on 2019 education, training and development objectives.
- On November 17th, Agnico Eagle brought Elders from Rankin Inlet to Meliadine to participate in a country food night with employees.
- On September 13th, Agnico Eagle hosted Inuit Tapiriit Kanatimi (ITK) to do a tour, including an underground visit.

More details on site visits in 2019 are summarized in Appendix K-1.

11.7 COMMUNITY ENGAGEMENT INITIATIVES

Community initiatives that Agnico Eagle participated in during 2019 are summarized in Appendix K-1.

11.8 COMMUNITY COORDINATORS PROGRAM

The Community Coordinators program consists of full or part-time Agnico Eagle Coordinators in all Hamlets in the Kivalliq Region, including in Agnico Eagle's offices in the communities of Rankin Inlet and Baker Lake.

The objective of the community-based Agnico Eagle Coordinators is to provide a point of contact in each community to facilitate communications, provide services, and coordinate activities in the following areas:

- Support to the HR department by:
    - Assisting HR and other Agnico Eagle departments to locate employees or potential employees as required; and
    - Contact employees in advance of their shift departure times;
- Support to the Recruitment team by guiding interested individuals in the application process outlined by the Labour Pool Process;
- Provide advice and assistance to Agnico Eagle to organize and hold information sessions in the community on Agnico Eagle projects and initiatives, including those Labour Pool and business opportunities initiatives outlined in the Meliadine IIBA;
- Provide updates to the Hamlet Council on Agnico Eagle activities; and
- Distribute Agnico Eagle information and promotional materials.

The increased community involvement requirements for Agnico Eagle to achieve recruitment goals and the obligations for the NIRB and IIBA renders the Community Coordinators essential for Agnico Eagle's Nunavut operations.

11.9 COMMUNICATION

In 2018, Agnico Eagle launched a Facebook page for Meliadine 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.

SECTION 12. SOCIO ECONOMIC

12.1 SOCIO-ECONOMIC MONITORING PROGRAM (SEMP, SEMC, SEMWG, SEMR)

As required by NIRB Project Certificate No.006 Condition 87: ***The Proponent is strongly encouraged 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.006, Condition 88: ***The Proponent is encouraged to work in collaboration with other socio-economic stakeholders including for example, the KIA, GN, AANDC, and communities of the Kivalliq region, to establish a socio-economic working group for the Project to develop and oversee the Meliadine Socio-economic Monitoring Program. The working group should 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 Project. The Terms of Reference are to be provided to the NIRB upon completion, and within one year of issuance of the Project Certificate.***

And

As required by NIRB Project Certificate No 006, Condition 89: ***The Proponent shall develop the Meliadine Socio-economic Monitoring Program to monitor the predicted impacts outlined in the FEIS as well as regional concerns identified by the Kivalliq Socio-economic Monitoring Committee (SEMC). Where possible, the Proponent is encouraged to work in collaboration with all other socio-economic stakeholders such as the KIA, GN, AANDC 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. Details of the Meliadine Socio-economic Monitoring Program are to be provided to the NIRB upon finalization, and within one year of issuance of the Project Certificate.***

In 2019, 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. Agnico Eagle developed and submitted the Agnico Eagle Kivalliq Projects Socio-Economic Monitoring Program (SEMP) to NIRB on June 29th, 2019, which included both the Meadowbank SEMP, Meliadine SEMP, and Whale Tail SEMP.

- The Socio-Economic Monitoring Working Group (SEMWG), which includes GN and CIRNAC, aims to support Agnico Eagle's SEMP and the KvSEMC. The SEMWG submitted its most recent Terms of Reference on March 11, 2019. Agnico Eagle met with the SEMWG on February 26th, 2019 to discuss the 2018 Socio-Economic Monitoring Report, the update of the Terms of Reference of the

Working Group to include Whale Tail Project Certificate requirements, to prepare for the 2019 Kivalliq SEMC, and to receive an update on the GN Territorial Monitoring Project.

- 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 2019, the Kivalliq Socio-Economic Monitoring Committee meeting was held on April 16, 2019 in Baker Lake.

- 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). It is reviewed by both the SEMWG and the KvSEMC prior to its submission, to allow for those groups to provide insight or data. It is submitted to NIRB on or by June 30 annually as per the SEMWG Terms of Reference. The 2018 SEMR was submitted to NIRB on June 29th, 2019.

12.1.1 Socio-Economic Monitoring Report (SEMR)

As required by NIRB Project Certificate No.006, Condition 111: ***In its annual reporting to the NIRB, the Proponent is strongly encouraged to provide detailed descriptions of all employee programs and training including: a. Descriptions of the goals of each program offered; b. Language of instruction; c. Schedules and location(s) of when each program was offered; a. Uptake by employees and/or family members where relevant, noting Inuit and non-Inuit participation rates; and, b. Completion rates for enrolled participants, noting Inuit and non-Inuit rates.***

And

As required by NIRB Project Certificate No.006, Condition 97*: The Proponent's project-specific socio-economic monitoring program should be updated to address the potential impacts to education and training which may arise from temporary, final and/or post-closure phases.*

And

As required by NIRB Project Certificate No.006, Condition 98: ***The Proponent is encouraged to work with the members identified as potential stakeholders in the socio-economic monitoring working group and with the Kivalliq Socio-Economic Monitoring Committee to review and monitor education utilization rate trends on an on-going basis to understand if the Project can be determined to be having an impact on the education system of the Kivalliq region and/or on any communities in particular.***

And

As required by NIRB Project Certificate No.006 Condition 108*: The Proponent is encouraged to consider providing access to counseling and treatment programs for substance and gambling addictions, and programs which address domestic, parenting, and marital issues that could affect employees and/or their families.*

And

As required by NIRB Project Certificate No.006, Condition 101: *The Proponent shall include with its annual reporting to the NIRB a summary of employee origin information as follows: a. The number of Inuit and non-Inuit employees hired from each of the Kivalliq communities, specifying the number from each; b. The number of Inuit and non-Inuit employees hired from each of the Kitikmeot and Qikiqtani regions, specifying the number from each; c. The number of Inuit and non-Inuit employees hired from a southern location or other province/territory outside of Nunavut, specifying the locations and the number from each; and d. The number of non-Canadian foreign employees hired, specifying the locations and number from each foreign point of hire.*

And

As required by NIRB Project Certificate No.006, Commitment 99*: The Kivalliq Socio-Economic Monitoring Committee and its membership are encouraged to engage in the monitoring of demographic changes including the movement of people into and out of the Kivalliq communities and the territory as a whole. This information may be used in conjunction with monitoring data obtained by the Proponent from recent hires and/or out-going employees in order to assess the potential effects of the Project on migration.*

And

As required by NIRB Project Certificate No.006, Commitment 109*: The Proponent is encouraged to work with the Kivalliq Socio-Economic Monitoring Committee to monitor potential indirect effects of the Project, including indicators such as the prevalence of substance abuse, gambling issues, family violence, marital problems, rates of sexually transmitted infections and other communicable diseases and others as deemed appropriate.*

And

As required by NIRB Project Certificate No.006, Condition 110: *The Proponent shall provide the NIRB with a description of wellness and cultural diversity/acceptance programming made available to employees and family or community members and shall report the following information with respect to each program to the NIRB annually: a. Language of instruction; b. Uptake by employees and/or family members where relevant, noting Inuit and non-Inuit participation rates; c. Completion rates for enrolled participants, noting Inuit and non-Inuit rates; and d. Issues as may relate to program content which may have been noted or present either on site or in the community and which affect Project employment or employee wellness.*
And

As required by NIRB Project Certificate No.006, Condition 115: *The Proponent is encouraged to work collaboratively with the Government of Nunavut Department of Health to monitor the impacts of the Meliadine Gold Project on health services within the LSA communities and specifically, Rankin Inlet*.

And

As required by NIRB Project Certificate No.006, Condition 93: ***The Proponent is encouraged to register all trades occupations, journeypersons and apprentices working with the Project and to register any trades occupations listed in its forecast, as well as to provide the Government of Nunavut with information regarding the number of registered apprentices and journeypersons from other jurisdictions employed at the Project during each year of the Project's life.***

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 both the SEMWG and the KvSEMC prior to its submission, to allow for those groups to provide insight or data. It is submitted to NIRB on or by June 30 annually as per the SEMWG Terms of Reference. The 2018 SEMR was submitted to NIRB on June 29, 2019 .

At a SEMWG meeting on February 6th, 2020, 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 both the 2018 Agnico Eagle Kivalliq Projects Socio-Economic Monitoring Report, which was submitted to NIRB on June 29, 2019, as well as the 2019 Agnico Eagle Kivalliq Projects Socio-Economic Monitoring Report.

The section below summarizes Agnico Eagle's key socio-economic reporting, related primarily to employment and training. For the full report on the Project's socio-economic monitoring, please refer to Appendix K-3.

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/

12.2 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 (headcount) working at Meliadine on December 31, 2019 was 611, of which 87 employees were Inuit employees.
    - The respective full-time equivalencies were 535 Agnico Eagle employees in total, with 64 full-time (FTE) Inuit Agnico Eagle employees – this represents an increase of the equivalent of 19 full-time Agnico Eagle Inuit jobs at Meliadine since 2018.

- 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 2019 there were

approximately 583 full time equivalent (FTE) contractor positions, of which approximately 120 are filled by Inuit.

Taken together, there were 1,193 active employees (Agnico Eagle permanent, temporary, on-call, students and contractors), working full- and part-time jobs, at the end of 2019.

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.

The table below indicates the employment demographics for community of hire by headcount and full-time equivalents.

Table 26. Home communities of Agnico Eagle Inuit employees (by headcount)

Community of Hire	2018 Agnico Eagle headcount	2019 Agnico Eagle headcount
Arviat	5	7
Baker Lake	5	7
Naujaat	2	3
Rankin Inlet	31	40
Chesterfield Inlet	2	3
Whale Cove	1	1
Coral Harbour	7	13
Outside of Kivalliq	9	15
Total	**62**	**87**

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, and/or Whale Cove, Agnico Eagle has a service contract with Calm Air to transport employees by charter plane to Rankin Inlet. For employees coming from Coral Harbour and/or Naujaat, a commercial ticket is bought from their home communities to the Rankin Inlet airport. All employees are then driven by bus to site, including those from Rankin Inlet. 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.

12.2.1 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 to.

Exit interviews support this assumption and the table provides the reasons given for voluntary terminations:

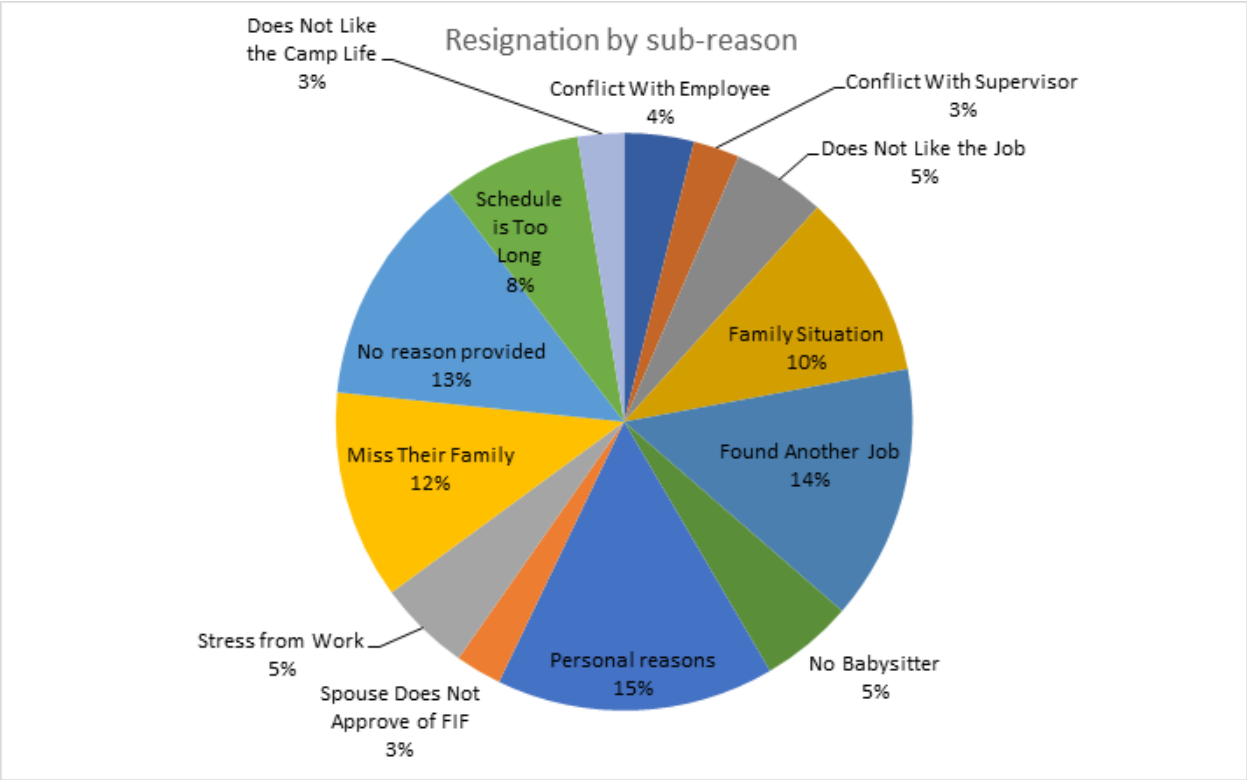


Figure 12. Reasons for voluntary terminations

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 Program that consists of a linked series of activities, including:

- Community-based information sessions
- Community-based Work Readiness training
- E-learning for mandatory training
- Site Readiness training at Meliadine
- Employment with Agnico Eagle or contractors

The Labour Pool Program consists of a suite of activities that provide future employees with information, skills, and education for working life and conditions in a remote, fly in/fly out, industrial workplace. Supervisors have commented that due to the suite of Labour Pool activities, Inuit employees are better prepared to cope with the mine employment environment. The program also allows Agnico Eagle to assess employees to ensure proper placement within the Company.

12.2.2 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 2019, Agnico Eagle had one (1) Inuk employee hired through this posting. Agnico Eagle will continue to offer both programs in 2019 and continue to work in collaboration with the KIA to encourage Kivalliq applicants to apply for the programs.

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.

12.3 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 L-1.

12.3.1 Pre-employment training

The Labour Pool Process (formerly 'Labour Pool Initiative'), implemented in 2014 and revised in 2015, is based on an agreement between Agnico Eagle and the KIA through the IIBAs to offer pre-employment opportunities to Inuit from all Kivalliq communities.

The goal of the program is to pre-qualify candidates from Kivalliq communities through 5 steps: employment information sessions, online application (facilitated by Employment Information Sessions), the Work Readiness Program, mandatory trainings (more details provided below), and the Labour Pool List (facilitated by the Labour Pool Coordinator).

All applicants that have the minimal requirements to be hired (must be at least 18 years old and have a clean record of employment with Agnico Eagle) are required to complete mandatory training by e-learning as well as participate in the 5-day Work Readiness and Site Readiness training programs. The objective is to create a pool of candidates ready to work that Agnico Eagle and its contractors can draw future employees from.

Figure 13. Labour Pool Process

12.3.2 Work Readiness Training Program

Agnico Eagle continues to utilize the Work Readiness Training program that was developed as a pre-employment initiative. In 2019, the Work Readiness Training was delivered in collaboration with Aglu Consulting. The Work Readiness program is the first step of the Labour Pool Process for those individuals who have applied online 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. Graduates of the program are eligible to continue the Labour Pool Process and attend the mandatory trainings given on-site. 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.

The program was implemented in April 2013. The program is delivered over a five-day period at the community level and is scheduled throughout the year. In 2019, the program was delivered by a visiting instructor in all seven Kivalliq communities resulting in 138 participants from various communities.

12.3.3 Mandatory Training (Site Readiness)

Participants that have successfully completed the Work Readiness Program will be retained for the Mandatory Training Program (called "Site Readiness") and then will become part of the Labour Pool.

The Mandatory Training Program is a five-day training provided at the Meadowbank and Meliadine site. Throughout the week, participants are enrolled in diverse activities such as mandatory training sessions, site visits, job initiation, information sessions on training and career opportunities, as well as interviews and discussions on employment opportunities with a Human Resource representative to assess career ambitions and identify work interest.

Afterwards, candidates wanting to work for the Camp Department are given short term on-call assignments. All other applicants become part of the Labour Pool list until a job opportunity matching their interest and competencies becomes available.

In 2019, 178 candidates participated in the Mandatory Training (combined at both sites).

12.3.4 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 AEM 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.

- Emergency Response Training (ERT).

The following table provides the training hours provided to Agnico Eagle employees at Meliadine (excluding contractors) in 2019:

Table 27. Training hours provided to Agnico Eagle employees at Meliadine

Type of Training	Inuit	Non-Inuit	Total
Mandatory	855	6,770	7,625
General	730	3,382.5	4112.5
Specific	10,381	19,594	29,975
ERT	374	4,278	4,652
Total	**12,340**	**34,024.5**	**46,364.5**

12.4 TRAINING PROGRAMS

12.4.1 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, as well as information on the IIBAs and archaeological awareness. The e-learning training material has been translated into English, French, and Inuktitut

In 2019, the revision of the 6 e-learning modules of the Mandatory Training started. They will be re-built in 2020.

12.4.2 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 in order 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 program is mandatory for all Agnico Eagle employees and contractors who will be on site for six months or more. The training is in English, Inuktitut and French, and is offered at Meliadine.

In 2019, Meliadine had 21 sessions.

12.4.3 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 2019, five (5) Career Paths were used at Meliadine: Energy and Infrastructure, Process Plant, Underground, Mine, and Drill & Blast.

12.4.4 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, we offer (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 2019, one (1) employee completed his apprenticeship training with Agnico. Two (2) apprentices went to technical training in Nunavut and six (6) in Alberta. At the end of 2019, there were 8 apprentices and pre-apprentices at Meadowbank and 2 apprentices and pre-apprentices at Meliadine.

Since 2015 a total of (6) six employees, completed their apprenticeship training within Agnico Eagle.

12.4.5 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 purpose is to support Agnico Eagle employees in developing their numeracy, literacy, and soft skills in order to assist employees in accessing higher job positions and to be successful in their apprenticeships. 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 week.

At the end of 2019, at Meliadine, the program just started to be developed with the new Adult Educator. The program should be launched in 2020.

12.4.6 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. In Meliadine, ERT practice took place weekly and each member must attend at least six (6) practices throughout the year. In 2019 there were 7 Inuit members.

12.5 GENERAL SOCIO-ECONOMIC PROVISIONS

12.5.1 Housing and Home Ownership

As required by NIRB Project Certificate No.006 Condition 112: ***The Proponent is encouraged to investigate measures and programs designed to assist Project employees with pursuing home ownership or accessing affordable housing options.***

And

As required by NIRB Project Certificate No.006 Condition 114: ***The Proponent is encouraged to collaborate with the Government of Nunavut – Nunavut Housing Corporation prior to the development and inception of its programs relating to financial literacy and planning to ensure that relevant and accurate information about housing and home ownership is available and considered for inclusion.***

Agnico Eagle actively engaged with NHC throughout 2019 through the GN MOU Housing Committee. An additional meeting took place on April 12th, 2019. NHC is currently working on a curriculum and tools for financial literacy that will be shared with Agnico Eagle.

12.5.2 Labour Force

Agnico Eagle submitted the latest staff schedule on May 27, 2019. Agnico Eagle also submitted the IIBA-required Labour Market Analysis (LMA) to NIRB in March 2019.

12.5.3 Training and Development

Agnico Eagle works with training organizations and government departments regularly through the Kivalliq Socio-Economic Monitoring Committee, through the IIBA with the Kivalliq Inuit Association, through the Memorandum of Understanding with the Government of Nunavut, and through one-on-one partnerships and collaboration with organizations such as the Hamlet of Arviat, the Nunavut Literacy Council, Nunavut Arctic College, Aglu Consulting, and more.

The listing of formal certificates and licenses was sent to NIRB on November 7, 2018. There have not been any updates since the last submission.